Riverside
TOOL CORP.

July 8, 2014

Leslie,

Please find enclosed Riverside Tool Corp.'s response to your Request for Information Pursuant to Section 104(e) of CERCLA regarding the Lane Street Ground Water Contamination Site located in Elkhart, Elkhart County, Indiana CERCLIS ID No: INN000510229 which we received June 11, 2014.

Riverside Tool Corp. made every effort possible to cooperate with your request and if you have any further questions related to our response please do not hesitate to contact me.

Sincerely,

Ron Migedt
President
Riverside Tool Corp.

MAILING - P.O. BOX 1425, ELKHART, IN 46515 • SHIPPING - 3504 HENKE ST, ELKHART, IN 46514 • PH 574.522.6798 • FAX 574.522.6712 • TF 800.4

Question 1

Exemption 6, 5 U.S.C. §552(b)(6)

Riverside Tool Corp. currently operates at 3504 Henke St, Elkhart, IN 46514 and has done so since 2004. Riverside Tool Corp. does not own the building but leases it from RJM Enterprises LLC ([redacted]). Riverside Tool Corp. did not have any knowledge of hazardous substance disposal on or at the site when it moved to the site in 2004. Riverside Tool Corp. was aware that RJM Enterprises LLC commissioned a Phase 1 site survey which showed no major issues to Riverside's knowledge. A copy of the Phase 1 site survey and other previous site surveys (performed on the Site but for other companies) are enclosed (Attachment 1) for your review.

Question 2

Riverside Tool Corp. manufactures and services cutting tools for the woodworking and plastics industries. The products it produces typically consist of aluminum, steel, and tungsten carbide. None of the products it produces contain hazardous materials, and none of the core production processes produce hazardous wastes. However, there are a few items used by Riverside Tool that have components that are classified as hazardous according to information provided within the MSDS / SDS Sheets (Attachment 2). These items are mostly used for housekeeping, maintenance, and auxiliary processes and are covered in more detail in our response to Question 6.

Question 3

The cutting tools manufactured and serviced by Riverside Tool are machined and ground within the facility and many times are put through a black oxide process or electroplating process before shipment.

Two flow diagrams illustrating these processes, referenced as 'New Tooling Flow Diagram' and 'Tool Servicing Flow Diagram' , are attached as separate documents (Attachment 3). Also attached are all of our MSDS and/or SDS Sheets (Attachment 2) that we have on file.

For cutting tool service and manufacturing (SIC 3545), coolants, lubricants, and cleaning solutions are utilized during machining, grinding, and cleaning of metal. These chemicals are as follows (See MSDS/SDS Sheets for details):

- Clearedge 6519
- SharpCool Premium Semi-Synthetic Metalworking Fluid
- IonoPlus 3000 ET
- GrindKlean
- Transogrind 250
- Transogrind EXP Grinding Fluid
- De-ionized water
- X10

All liquids are re-circulated within the machine. When machines require cleaning or maintenance, the lubricant/coolant/cleaning solution is transferred out of the machine into the designated container (Disposal Tote 2) which is periodically pumped out by Safety Kleen Systems, Inc for proper disposal at on off-site, permitted facility. All of the invoices from Safety Kleen Systems, Inc that we have on file have been included as Attachment 4.

For Electroplating and Black Oxide conditioning of tools (SIC 3471), tools are dipped in various liquids. Below is a sequential listing of the chemicals that tools are moved through for each process (See MSDS Book for details):

Black Oxide Process

- Safe Scrub ST Biodegradable Cleaner
- De-Ionized Water
- Birchwood Casey Oxyprime Surface Conditioner
- De-Ionized Water
- Tru Temp XL Blackener
- De-Ionized Water
- Dri-Touch Plus IPR3 Rust Preventative

Electroplating Process

- Electroscrub
- De-Ionized Water
- De-Ionized Water
- Metal Activator Solution
- De-Ionized Water
- De-Ionized Water
- Bright Nickel Solution
- De-Ionized Water
- De-Ionized Water
- Bright Copper Catalyst & Bright Copper MakeUp (Combined)
- De-Ionized Water
- De-Ionized Water
- Bright Nickel Solution
- De-Ionized Water

Stripping of ElectroPlating

- Electro-Strip
- De-Ionized Water & Baking Soda (Combined)
- De-Ionized Water

The De-Ionized Water listed above is transferred to a designated container (Disposal Tote 1) periodically for proper disposal with Safety Kleen Systems, Inc. and refilled with De-Ionized Water. The need for off-site disposal of any other chemicals listed is rare, and if needed are

transferred to the designated container (Disposal Tote 1) for removal/disposal using Safety Kleen Systems, Inc..

A common byproduct of processing tungsten carbide, tool steel, and PCD (Polycrystalline Diamond) is sludge. Riverside Tool Corp. filters this sludge from the grinding coolant and recycles the filters with the manufacturer of the filters. Accumulated sludge is stored in a labelled container and periodically shipped to a recycler.

Question 4

Riverside Tool Corp. had laboratory analyses performed on samples collected from the disposal totes that contain liquid produced from it's manufacturing processes. The results of the lab analysis for each disposal tote are included as Attachment 6. You will note that the lab tests did indicate the presence of Tetrachloroethene which we believe to be the result of our limited use of an aerosol chlorinated Brake Cleaner during machine maintenance, remnants of which are discharged to the disposal tote as a result of floor clean-up (wash down). Additional details of this operation are provided in the Question 6 response.

Question 5

The only rinse water used at Riverside Tool Corp. is used in the black oxide and electroplating processes. All rinse water is contained in 5 gallon buckets and poured into the disposal tote when it needs to be refreshed. No rinse water is discharged into the sewer, on to the ground, or direct to waterways (off-site disposal by Safety-Kleen only).

Riverside does not require a wastewater discharge permit, but the City of Elkhart, as a procedural policy asked Riverside to fill out an application for a discharge permit in order to prove it had no need for one. A copy of that application has been included as Attachment 6.

Question 6

As previously noted, Riverside Tool has identified through our review of MSDS/SDS Sheets, certain hazardous substances contained within some of the products used as part of our processes.

a. As per a phone call with Leslie Blake on 6/26/2014, we will be reading sub-question (a.) as pertaining to "hazardous substances", not "non-hazardous" as the original copy indicates. Riverside Tool Corp. does not handle a large quantity of hazardous substances. However our MSDS / SDS book does show some items in our facility to contain varying amounts of hazardous substances. Because you noted in Enclosure 1 that your investigation is focusing on potential sources of trichloroethylene and other chlorinated solvents, we will address the items in

our inventory that contain those substances first, then we will list the remaining hazardous materials in our inventory:

Riverside Tool Corp. has found one item in our inventory which contained Tetrachloroethylene and/or Dichloromethane. This item is an 19 or 20 oz. aerosol can of Chlorinated Brake Cleaner. The aerosol spray is used for machine clean-up as a part of routine maintenance. Some overspray likely occurs to the concrete that surrounds the machines/parts during application; however washdown of the area on a routine basis minimizes any build-up of the aerosol contents over time. Use of the aerosol has always been performed inside of the building (overspray to an impermeable surface), and use has been limited (i.e., no more than 20 cans in stock at any given time, aerosol application from 19 or 20 ounce can).

Riverside's average per-year consumption of Chlorinated Brake Cleaner is 83 cans with a chlorinated solvent content of 60% by weight, and some variations as low as 15% by weight.

A table of information relating to the general terms, nature, and quantity of the hazardous substances found in our inventory is enclosed as Attachment 7.

b.

- AMMONIUM BIFLUORIDE - CAS 1341497 - Liquid
- BENZENE - CAS 71432 - Liquid
- Beryllium - CAS 7440417 - Solid
- CADMIUM - CAS 7440439 - Solid (In battery)
- CHROMIUM - CAS 7440473 - Solid (In alloys and powder)
- COPPER SULFATE - CAS 7758987 - Liquid
- Dichloromethane - CAS 75092 - Liquid (Aerosol)
- DIPHENLMETHAN DIISOCYANATE - CAS 101688 - Liquid
- ETHYLBENZENE - CAS 100414 - Liquid
- HEXANE - CAS 110543 - Liquid
- Hydrogen Chloride - CAS 7647010 - Liquid
- Lead - CAS 7439921 - Solid
- Nickel - CAS 7440020 - Solid
- Nickel (II) Chloride (1:2) - CAS 7718549 - Liquid
- NICKEL HYDROXIDE - CAS 12054487 - Solid (In Battery)
- PENTYL ACETATE - CAS 628637 - Liquid (Aerosol)
- Phosphoric Acid - CAS 7664382 - Liquid
- Phosphorous - CAS 7723140 - Solid
- Potassium Hydroxide - CAS 1310583 - Liquid, Solid (In Battery)
- Silver - CAS 7440224 - Solid
- SODIUM BISULFITE - CAS 7631905 - Liquid
- Sodium Hydroxide - CAS 1310732 - Liquid, Powder
- Sodium Hypochlorite - CAS 7681529 - Liquid

- Sodium phosphate, tribasic (TSP) © - CAS 7601549 - Liquid
- Sodium Tripolyphosphate - CAS 7758294 - Liquid, Powder
- Sulfuric Acid - CAS 7664939 - Liquid
- Tetrachloroethylene - CAS 127184 - Liquid (Aerosol)
- TOLUENE - CAS 108883 - Liquid
- XYLENES - CAS 1330207 - Liquid

c.

- AMMONIUM BIFLUORIDE - P & A Sales
- BENZENE - Various Gas Stations
- Beryllium - Alcoa, Menards
- CADMIUM - Various Battery Retailers
- CHROMIUM - Kaiser Aluminum, Crobalt, Wall Colmonoy, Schupan
- COPPER SULFATE - P & A Sales
- Dichloromethane - MSC Industrial Supply Co, Fastenal
- DIPHENLMETHAN DIISOCYANATE - Uline, Sealed Air
- ETHYLBENZENE - Various Gas Stations
- HEXANE - Various Gas Stations
- Hydrogen Chloride - Menards, Sams Club
- Lead - Kaiser Aluminum, McMaster Carr
- Nickel - Alcoa, Crobalt, Eagle International, Lucas Milhaupt, The Prince/Izant Company
- Nickel (II) Chloride (1:2) - P & A Sales
- NICKEL HYDROXIDE - Various Battery Retailers
- PENTYL ACETATE - MSC Industrial Supply Co, Fastenal
- Phosphoric Acid - Meredith Machinery, PMS Products, Inc.
- Phosphorous - Crobalt, Eagle International, MSC Industrial Supply Co, Fastenal
- Potassium Hydroxide - Birchwood Casey, PMS Products, Inc., Various Battery Retailers
- Silver - Eagle International, Lucas Milhaupt, Inc., The Prince/Izant Company
- SODIUM BISULFITE - P & A Sales
- Sodium Hydroxide - Sprayway, Birchwood Casey, Moon's Saw Shop Supplies
- Sodium Hypochlorite - Sam's Club, Menards
- Sodium phosphate, tribasic (TSP) - Beaver Research Company
- Sodium Tripolyphosphate - CAS 7758294 - Beaver Research Company, Moon's Saw Shop Supplies
- Sulfuric Acid - P & A Sales
- Tetrachloroethylene - MSC Industrial Supply Co, Fastenal
- TOLUENE - MSC Industrial Supply Co, Various Gas Stations
- XYLENES - Various Gas Stations

d.

- AMMONIUM BIFLUORIDE - Used in electroplating, stored in poly bucket, has never been disposed of.
- BENZENE - Purchased in the form of Gasoline for facility maintenance.

- Beryllium - Present in 6061 aluminum in solid form that is machined to produce cutting tools, chips are collected and sent to Omnisource, Inc. of Elkhart as scrap. Also small quantity present in sandblasting abrasive.
- CADMIUM - Present in various NiCad batteries around the facility in tools and exit signs, emergency lights, etc.
- CHROMIUM - Present in materials such as Aluminum and Crobalt alloy that is raw material for finished parts. Chips and scrap are collected and sent for recycling. Also present in cutting tools used to machine parts.
- COPPER SULFATE - Used in electroplating process. Use does not result in generation of any wastes.
- Dichloromethane - Present in aerosol cans of Chlorinated Brake Cleaner. Used for machine maintenance and miscellaneous cleaning.
- DIPHENLMETHAN DIISOCYANATE - Present in sealed packets that expand with internal foam when activated for packing parts in shipping boxes.
- ETHYLBENZENE - Purchased in the form of Gasoline for facility maintenance.
- HEXANE - Purchased in the form of Gasoline for facility maintenance.
- Hydrogen Chloride - Present in toliet bowl cleaner that is used for facility maintenance and cleaning.
- Lead - Present in alloys that Aluminum alloys can contain and some cutting tools used to produce finished parts. Also present in lead tape used in electroplating process. All scraps are held and sent out for recycling.
- Nickel - Present in raw materials used to make finished parts, grinding wheels, sand-blasting abrasive, brazing materials, and cutting tools used to produce finished parts. All scraps are held and sent for recycling. Grinding wheel abrasive gradually wears off into machine sumps in which the liquid is retained within a disposal tote and pumped by Safety Kleen for proper treatment and disposal.
- Nickel (II) Chloride (1:2) - Used in electroplating process. Use does not result in generation of any wastes.
- NICKEL HYDROXIDE - Present in various NiCad batteries around the facility in tools and exit signs, emergency lights, etc.
- PENTYL ACETATE - Used in aerosol form to spray small parts before brazing process. Overspray evaporates completely upon application.
- Phosphoric Acid - Used sparingly for cleaning rust or mineral deposits from machines.
- Phosphorous - Present in raw materials used to make finished parts, grinding wheels, and cutting tools used to produce finished parts. All scraps are accumulated and sent for recycling. Grinding wheel abrasive gradually wears off into machine sumps in which the liquid is retained in a disposal tote and pumped by Safety Kleen for proper off-site treatment and disposal.
- Potassium Hydroxide - Present in black oxide process which has all waste liquid transferred to a disposal tote which is pumped out by Safety Kleen for proper off-site treatment and disposal. Also present in cleaner used on tools that are being serviced, with liquid generated by the process transferred to a disposal tote. Was used at one time

in brazing process but is no longer in use. Also present in various NiCad batteries around the facility.

- Silver - Present in raw materials used to make finished parts, grinding wheels and brazing supplies. All scraps are accumulated and sent for recycling. Grinding wheel abrasive gradually wears off into machine sumps in which the liquid is retained in a disposal tote and pumped by Safety Kleen for proper treatment and disposal.
- SODIUM BISULFITE - Used in electroplating process. Use does not result in generation of any wastes.
- Sodium Hydroxide - Present in black oxide process which has all waste liquid transferred to a disposal tote which is pumped out by Safety Kleen for proper treatment and disposal. Also used to clean tools sent to the Site for service, with all liquid transferred to the disposal tote.
- Sodium Hypochlorite - Used to clean bathrooms and other miscellaneous cleaning.
- Sodium phosphate, tribasic (TSP) - No longer in use. Was used for miscellaneous machine cleaning.
- Sodium Tripolyphosphate - CAS 7758294 - Was used for miscellaneous machine cleaning (no longer used for that purpose). Is in use to clean tools sent to the Site for service, all liquid is retained within a disposal tote which is pumped out by Safety Kleen for proper treatment and disposal.
- Sulfuric Acid - Used in electroplating process. Never disposed of.
- Tetrachloroethylene - Present in aerosol cans of Chlorinated Brake Cleaner. Used for machine maintenance and miscellaneous cleaning.
- TOLUENE - Purchased in the form of Gasoline for facility maintenance.
- XYLENES - Purchased in the form of Gasoline for facility maintenance.

e.

The listed hazardous substances have been in use since Riverside Tool Corp. moved to the subject site in 2004.

f.

As noted the building Riverside Tool Corp. occupies was constructed with concrete flooring (as an impermeable surface), and great care is taken to make sure that the use of any hazardous materials occurs away from any existing floor drains so as to avoid any potential point of entry to the subsurface environment. At no time are there any process related activities conducted outside of the building. Care is also taken to periodically clean (mop) the work areas with liquids being discharged to a designated waste tote.

g.

- AMMONIUM BIFLUORIDE - Comprises <1% of 15 gallons purchased.
- BENZENE - Unknown quantity since records are not kept for gasoline purchases.
- Beryllium - Unknown quantity because aluminum alloys vary per order; records are not available to determine which aluminum orders contained beryllium, however beryllium would only comprise of .00036 to .002 percent of the aluminum.

- CADMIUM - Records are not available for which exit signs or emergency lights have NiCad batteries present. There are currently an estimated 3-5 power tool batteries that contain NiCad batteries.
- CHROMIUM - Unknown quantity because aluminum alloys vary per order; records are not available to determine which aluminum orders contained chromium, however chromium would only comprise of .1 to .36 percent of the aluminum. The Crobalt raw material product contains 25-30% Chromium but our records do not indicate a weight of the item per order so we are unable to quantify the amount of Chromium purchased. We have purchased approximately 12 gallons of Nicrobraz LM product which is 5-10% chromium since 2004. Our orders of taps and dies do not indicate in our records if they contained Chromium or their weight so we are unable to calculate our consumption of chromium within taps and dies.
- COPPER SULFATE - Comprises 1-3% of the 30 gallons purchased since 2004.
- Dichloromethane - Total of 497 aerosol cans (19 ounces) of Chlorinated Brake Cleaner containing Dichloromethane were purchased since 2004. Dichloromethane comprises 30-60% of each can of Chlorinated Brake Cleaner.
- DIPHENLMETHAN DIISOCYANATE - Records are not immediately available to indicate the quantity of Sealed Air Instapaks purchased. Diphenlmethan Diisocyanate comprises less than 1% of the product.
- ETHYLBENZENE - Unknown quantity since records are not kept for gasoline purchases.
- HEXANE - Unknown quantity since records are not kept for gasoline purchases.
- Hydrogen Chloride - Records are not kept for cleaning miscellaneous products.
- Lead - Unknown quantity because aluminum alloys vary per order; records are not available to determine which aluminum orders contained lead, however lead would only comprise of .1 to 2 percent of the aluminum. Our orders of taps and dies do not indicate if they contained Lead, or their weight; so we are unable to calculate our consumption of Lead within taps and dies. Our orders of lead foil tape do not indicate the weight so we do not have records of the consumption of lead foil tape.
- Nickel - Unknown quantity because aluminum and tool steel alloys vary per order; records are not available to determine which aluminum/steel orders contained nickel, however nickel would only comprise of 1.5 percent of the aluminum or .01-4.0% of the tool steel. The Crobalt raw material product contains 1-5% nickel;however, our records do not indicate a weight of the item per order so we are unable to quantify the amount of nickel contained in crobalt purchased. We have purchased approximately 12 gallons of Nicrobraz LM product which is 60-100% nickel since 2004. Records are not available for which exit signs or emergency lights have NiCad batteries present. There are currently an estimated 3-5 power tool batteries that contain NiCad batteries. Silver brazing alloys do not have records available that indicate the weight so we are unable to calculate our consumption.
- Nickel (II) Chloride (1:2) - 30 gallons since 2004 (15% Nickel Chloride).
- NICKEL HYDROXIDE - Records are not available for which exit signs or emergency lights have NiCad batteries present. There are currently an estimated 3-5 power tool batteries that contain NiCad batteries.

- PENTYL ACETATE - Estimated 312 cans per year comprised of 1-5% pentyl acetate. Riverside Tool Corp. began using the product in 2005.
- Phosphoric Acid - Only 2 gallons of AC500 has ever been purchased (45-55% Phosphoric Acid). 12 8oz bottles of Rust Free have been purchased per year since 2004(<30% Phosphoric Acid)
- Phosphorous - The Crobalt raw material product contains .001-.02% phosphorous but our records do not indicate a weight of the item per order so we are unable to quantify the amount of phosphorous contained in Crobalt purchased. Our orders of taps and dies do not indicate if they contained phosphorous or their weight, so we are unable to calculate our consumption of phosphorous within taps and dies.
- Potassium Hydroxide - Riverside purchases on average 15 gallons of Safe Scrub per year (20% Potassium Hydroxide). Blade & Bit averages 33.5 gallons per year of the product. Some of it is resold and some of it is used internally. (<5% Potassium Hydroxide). We have no records of our consumption of Daraclean 282 GF and are not sure if we ever consumed more than a sample of the product (1-5% Potassium Hydroxide). Records are not available for which exit signs or emergency lights have NiCad batteries present. There are currently an estimated 3-5 power tool batteries that contain NiCad batteries (<3% Potassium Hydroxide).
- Silver - Silver brazing alloys and Eagle grinding wheels do not have records available that indicate the weight, so we are unable to calculate our consumption.
- SODIUM BISULFITE - 15 gallons of Metal Activator since 2004 (7% Sodium Bisulfite)
- Sodium Hydroxide - 15 gallons of Electroscrub since 2004 (17% Sodium Hydroxide.), 12 aerosol cans of Saw Cleaner Pitch and Gum Remover per year since 2004 (5-8% Sodium Hydroxide), 27.5 gallons of Tru Temp XL Blackener per year since 2004 (30% Sodium Hydroxide), Less than 1 per year of X10 since 2004 (concentration N/A).
- Sodium Hypochlorite - Records are not kept for cleaning miscellaneous products.
- Sodium phosphate, tribasic (TSP) - 60 gallons of S722 since 2004 (concentration N/A)
- Sodium Tripolyphosphate -60 gallons of S722 since 2004 (concentration N/A), Less than 1 per year of X10 since 2004 (concentration N/A).
- Sulfuric Acid - 15 gallons of Bright Copper Make Up (<1% Sulfuric Acid), 15 gallons of Electrostrip (95% Sulfuric Acid)
- Tetrachloroethylene - 325 cans of aerosol chlorinated brake cleaner since 2004 (20 oz cans with 15% concentration of Tetrachloroethylene). 497 cans of aerosol chlorinated brake cleaner since 2004 (19 oz cans with 30-60% concentration of Tetrachloroethylene)
- TOLUENE - Unknown quantity since records are not kept for gasoline purchases.
- XYLENES - Unknown quantity since records are not kept for gasoline purchases.

Question 7

Riverside Tool Corp. has been inspected by the Elkhart Fire Department in July of 2011 and June of 2014. A copy of the inspection reports have been included as Attachment 8. All the

issues found were quickly resolved and upon any fire inspectors return visit no further issues were identified.

Riverside has also been inspected by the Elkhart County Health department on 8/24/2009 and 1/13/2013. Both inspection records have been included in Attachment 9. Neither inspection found any environmental concerns, and both were classified as routine.

In April of 2011 Riverside was inspected by the City of Elkhart Public Works & Utilities Wastewater Department. The purpose of the inspection was to determine if Riverside Tool Corp. discharged any process wastes into the municipal sewer from any of our processes. The inspection found no direct discharge of process wastes; however Riverside Tool Corp. was requested to complete an Industrial Wastewater Discharge Permit Application as verification that a permit was not required. A copy of that application has been included as Attachment 6.

Question 8

Other than the miscellaneous issues found in the July 2011 fire safety inspection (As covered in Question 7), no violations, citations, deficiencies and/or accidents have occurred at the Site since Riverside Tool Corp. has occupied the Site.

Question 9

Riverside Tool Corp. does not hold any environmental permits from local, state, or federal agencies.

Question 10

No, Riverside Tool Corp. has never filed a Hazardous Waste Activity Notification.

Question 11

No, the Site has never had an "interim status" under the Resource Conservation or Recovery Act.

Question 12

As previously mentioned in other questions, a copy of the Phase 1 and Phase 2 site surveys and other previous site surveys (performed on the Site but for other companies) are enclosed (Attachment 1) for your review.

Question 13

Riverside Tool Corp. knows of no release of hazardous substances at the site.

Question 14

Riverside Tool Corp. knows of no leaks, spills, or releases into the environment of any hazardous substances, pollutants, or contaminants.

Question 15

Riverside Tool Corp. knows of no spill, leak, release, or discharge of hazardous substances into any subsurface disposal system or floor drain inside or under any building located at the Site.

Question 16

Riverside Tool Corp. knows of no soil excavations or removal activities having been performed at the site during our period of operation at the site.

Question 17

All records of audits and correspondence available from Riverside Tool Corp.'s insurance companies have been enclosed in Attachment 10.

--

I certify under a penalty of law that this document and all enclosures were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted.

Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant

penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Ronald Migedt, President of Riverside Tool Corp.

Riverside Tool Corp. Response
Attachment 1

Site Survey

REPORT OF
PHASE I ENVIRONMENTAL SITE ASSESSMENT

ENVIRONMENTAL TEST SYTEMS FACILITY
23575 County Road 106
Elkhart, Indiana

Prepared For:

RJM ENTERPRISES, LLC
C/O FM STONE COMMERCIAL
421 S. Second Street
Elkhart, Indiana 46516

Prepared By:

Wightman Petrie Environmental, Inc.
713 S. Scott Street
South Bend, Indiana

September 27, 2004

PROJECT NO: 24134

Wightman Petrie Environmental, Inc.

ENVIRONMENTAL, GEOTECHNICAL & MATERIAL TESTING

713 S. Scott St.
South Bend, IN 46601
574-232-4388
Fax 574-232-4333

4703 Chester Drive
Elkhart, IN 46516
574-295-3763
Fax 574-294-3717

September 27, 2004

Mr. Ron Migedt
RJM Enterprises, LLC
C/o FM Stone Commercial
421 S. Second Street
Elkhart, Indiana 46516
Phone: (574) 522-0390
Fax: (574) 295-1711

Subject: **Report of Phase I Environmental Site Assessment**
Environmental Test Systems Facility
Research & Development/Sales Building
23575 County Road 106
Elkhart, Indiana
Project No: 24134

Dear Mr. Migedt:

Wightman Petrie Environmental Services, Inc. is pleased to submit this Report of Phase I Environmental Site Assessment for the property referred to as the Environmental Test Systems Facility, Research and Development/Sales Building, located at 23575 County Road 106 in Elkhart, Indiana. The purpose of our services was to identify recognized environmental conditions in connection with the property.

This report is intended for the use of RJM Enterprises, LLC, subject to the qualifications and certifications presented herein. Use of this report for purposes beyond those reasonably intended by RJM Enterprises, LLC and Wightman Petrie Environmental, Inc. will be at the sole risk of the user. If other parties wish to rely on this report, please have them contact us so that a mutual understanding and agreement to the terms and conditions for our services can be established prior to their use of this information.

This report presents project information, which includes survey procedures and limitations, along with our findings, conclusions and recommendations. We appreciate your selection of Wightman Petrie Environmental, Inc. for this project and look forward to assisting you on other future projects. If you have any questions, please do not hesitate to contact us.

Sincerely,
WIGHTMAN PETRIE ENVIRONMENTAL SERVICES, INC.

Conley B. Phifer
Senior Project Manager

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1.0 EXECUTIVE SUMMARY

PROPERTY NAME: Environmental Test Systems Facility
Research and Development/Sales Building
23575 County Road 106
Elkhart, Indiana

This executive summary is provided for convenience and should not substitute for review of a complete report.

On-Site

The subject site, located at 23575 County Road 106, totals approximately 4.4 acres that has been developed with three interconnected concrete slab, steel frame and metal sided buildings, as well as paved parking lots for employees and visitors located along the eastern and northern property boundaries. Access to the facility is via an entrance drive off of County Road 106, located immediately south of the subject site. Historically, we note that the first phase of building construction was initiated in 1985, with the additions of Building #2, and the larger Building #3 occurring in 1989 and 1994, respectively. Prior to construction, the subject site and much of the surrounding area served as agricultural farmland. Overall, a total of approximately 35,545 square-feet of building are under roof.

The facility is currently owned and occupied by Environmental Test Systems, Inc., a wholly-owned subsidiary of Hach Company, Inc., as research and development laboratories, as well as sales center, of color indication test strips for chemical analysis. According to Mr. Miller, of FM Stone Commercial, real estate agent for the property, Environmental Test Systems, Inc. will be selling the subject property to RJM Enterprises, LLC for conversion to a specialty tool fabrication/grinding operation known as Riverside Tool, Inc. Environmental Test Systems will essentially relocate all existing operations (research and development/sales) to Building #1, with Riverside Tool occupying Buildings #2 and #3. At the time of our site reconnaissance, Riverside Tool was in the process of installing the various milling and grinding machinery within Building #3.

Environmental Test Systems, Inc. historically performed manufacturing operations associated with the production of paper test strips. The majority of finished products (60 percent) historically manufactured by Environmental Test Systems at the subject site were associated

with the chemically coated disposable strips for the testing of waters (i.e., chlorine levels, pH, alkalinity, etc.) for the pool and spa industry under the brand name of AquaCheck. Approximately 25 percent of the finished products sold were utilized to test chloride levels in mortar under the brand name QuanTab. The remainder of finished products sold included test strips for the testing of chemical levels in soil, industrial water and automotive fluids. We note that with the purchase of Environmental Test Systems, Inc. by Hach Chemicals in 1998, manufacturing operations at the facility were phased out and subsequently transferred to Hach Chemical's facilities in Ames, Iowa. Currently the facility serves as a research and development operation for new and/or improved test strip applications. Marketing operations for the sale of test strips are also conducted from the facility. Current Environmental Test Systems operations are generally confined to Building #2, with Building #1 presently unoccupied.

The subject property was identified by the regulatory database as a "Conditionally Exempt" RCRA Small Quantity Generator, with no reported violations of record. Conditionally Exempt Small Quantity Generators generate less than 100 kilograms of hazardous waste, or less than 1 kilogram of acutely hazardous waste per month. According to Ms. Jean Davis of Environmental Test Systems, hazardous wastes generated by the facility are limited to wastes from the research and development operations (i.e., laboratories). Historically, the facility also produced wastes associated with manufacturing of the chemical test strips, however all manufacturing operations were suspended and transferred to the Ames, Iowa facilities of Hach Company with its purchase of Environmental Test Systems, Inc. in 1998. Manifests for wastes removed from the facility during 2003 and 2004 are typical of laboratory wastes and consist of combustible liquids, corrosive liquids, flammable liquids, peroxides, alcohols and inorganic solids. All such wastes were characterized prior to off-site disposal by a licensed hazardous waste contractor.

During the reconnaissance of the laboratory facilities, WPE noted the presence of three 5-gallon containers of hazardous wastes staged on a secondary containment pedestal. An additional 5-gallon container was noted to be adjacent to a laboratory bench where work was being performed. According to the Laboratory Director, such waste chemicals are transferred in small quantities to the containers, which when full are transferred to the secondary containment pedestal, for subsequent disposal (typically twice per year). WPE did not identify any indications of spillage associated with the transfer or accumulation of the wastes. WPE also noted an accumulation of no longer used reagents/chemicals within the former Mix Room of

Building #1. The accumulations consisted of numerous 5-gallon, gallon, quart and pint-sized containers. According to Ms. Davis, Environmental Test Systems is awaiting direction from Hach Company with respect to whether such chemicals are to be disposed or shipped to the Ames, Iowa facility for potential use. WPE recommends that the disposition of such chemicals be determined for transfer to the Ames, Iowa facility and/or disposal in accordance with applicable regulatory criteria.

Underground or aboveground storage tanks were not identified during the reconnaissance of the subject property. Historically, a former underground concrete containment tank, installed along the western side of Building #3, was utilized to contain any potential liquid spills from test paper drying unit utilized during manufacturing operations. A catch basin beneath the paper drying unit (Dryer #2) was designed to convey liquid to the tank. According to ETS personnel familiar with manufacturing operations at that time (1999), the catch basin was sealed and the concrete containment tank removed from the ground (tank had no outlet connections and was not used prior to removal).

Electrical transformers, while noted along the eastern and western property boundaries of the subject site, did not indicate any evidence of leakage. Other than periodic mowing of the lawn, no contracted maintenance services are currently performed at the subject site.

The City of Elkhart has provided potable water to the subject site since at least 1992. Prior to that time, potable water was provided by a series of water wells, one of which remains in service as part of the fire protection system for the building (other well closed). The facility is currently connected to the City of Elkhart municipal sanitary sewer system (since 1992). Prior to that time, two on-site septic systems were utilized for treatment of sanitary and process wastewaters. According to the 1999 Blasland, Bouck & Lee Phase I Environmental Site Assessment, liquid from the septic system on the east side of Building #2 was sampled in 1992 and revealed the presence of toluene at 54 parts per billion (ppb), whereas the liquid from the septic system located at the south side of Building #1 revealed the presence of 1,1-dichloroethene (1,940 ppb) and 1,1,1-trichloroethane (2,770 ppb). With connection to the municipal sanitary sewer system in 1992, both of the septic systems were reportedly emptied, crushed and abandoned in place by Environmental Test Systems. A manhole was noted on the east side of Building #1 to allow for

the City of Elkhart to sample effluent wastewater from the facility prior to discharge to the sanitary sewer system.

Based upon a concern of potential environmental impact to soil and groundwater resulting from the historical use of the two septic systems, as evidenced by the presence of volatile organic compounds by the 1992 sampling effort, Blasland, Bouck & Lee's Phase I Environmental Site Assessment recommended additional investigation of the former septic systems. The results of such investigation, involving the 1999 sampling of soils and groundwater from a total of six temporary monitoring wells (Geoprobe) identified the presence of arsenic and lead at concentrations that exceed the **current** RISC Integrated System of Closure Default Values established by the Indiana Department of Environmental Management for groundwater at industrial sites. More specifically, the lead concentration detected in the groundwater sample collected from location TW-3, the southernmost leachfield for the southernmost septic system (located along County Road 106) was 0.202 mg/l, with the RISC Default Closure Value of 0.042 mg/l. Similarly, the concentration of arsenic in groundwater collected from location TW-3 was 0.106 mg/l, with the RISC Default Closure Value of 0.05 mg/l. Concentrations of all other constituents detected in the groundwater and soil samples collected from the area of the two former septic systems did not exceed applicable RISC Default Closure criteria. Given the fact that the septic systems were closed in 1992 (removal of liquids, crushing of system components, backfilling with stone) thereby eliminating any continued source of contamination, the facility and surrounding properties have since been connected to public water and sewer systems (1992) thereby eliminating a potential for uptake via drinking water, and the limited nature of the contamination identified (contamination not widespread across the subject site, groundwater at one location only); WPE does not consider such contamination, as identified by the former Phase II Environmental Site Assessment (Blasland, Bouck & Lee – 1999), as having had a significant impact to the subject property or surrounding properties.

Various natural gas fired furnace systems are present throughout the three building complex (various heating zones). In addition the shipping and warehousing areas are equipped with overhead radiant heating units (natural gas fired). Air conditioning is provided to the various office areas and laboratories, with condenser units present along the exterior walls. Chemicals associated with the operation of heating and cooling systems were not identified during the reconnaissance of the subject site.

Himco, Inc provides solid waste services for ongoing Environmental Test Systems, Inc. operations on an as-needed basis. Solid waste services for initial conversion of Building #3 by Riverside Tool are provided by BFI, Inc. During the site reconnaissance, WPE noted the presence of two 8 cubic yard dumpsters (side by side) at a paved access inlet, located along the eastern property boundary, across from Building #3. A roll-off dumpster (15 cubic yard) was also noted within the ramp access dock to Building #3. The roll-off dumpster was being utilized by Riverside Tool Inc. for collection of materials associated with its conversion of Building #3. Visually, WPE did not identify the presence of hazardous materials in any of the three solid waste containers.

Floor drains were noted within the wet labs and instrumentation lab of Building #2. We note that all floor drains are currently connected to the municipal sanitary sewer system. Visual indications of staining or other evidence of releases, discharges or spills to the floor drains were not identified during the reconnaissance of the laboratory areas. WPE also note the presence of a sump system within the area of the Former Mix Room in Building #3. The sump did not appear to have an outlet and was primarily installed as a collection system for any materials that may have been spilled during mixing operations as part of the former manufacturing processes. WPE did not observe any visual indications of historical releases to the collection sump.

Stormwater ditches are present along County Road 106, as well as the eastern and northern property boundaries of the subject site. Several low-lying areas of the site are present along the western and northern portions of the property that essentially serve as retention areas for stormwater runoff. Groundwater flow in the general area of the subject site is assumed to be to the south/southwest, toward the St. Joseph River, located approximately 1.5-miles to the south/southwest of the subject site.

Wightman Petrie Environmental's reconnaissance of the subject site did not identify any areas of significant staining, stressed vegetation or obnoxious odors on the subject site or within the existing buildings.

Off-Site

The current and historical uses of the area surrounding the subject site comprise a mix of industrial and residential properties. There are several off-site regulatory listed facilities located within the specified ASTM search distances from the subject site. The regulatory search identified one RCRA Large Quantity Generator (Ashland Chemical Inc), located at 23740 Cooper Drive (approximately 1/10-mile northwest of the subject site, upgradient). The facility was identified as having several violations of record, all of which appeared to be administrative in nature (with subsequent compliance). The database also identified a total of four RCRA Small Quantity Generator sites, none of which were noted as having any violations of record. Only one UST site was identified by the database search. The Chupp & Sons Conversions facility, located at 53387 ADA Dr. was noted as having a former UST system as Permanently Out of Service (closure date noted as February 1998). Additional sites were identified through a review of Elkhart County Health Department records. However, based upon topographic considerations relative to the subject site, interpreted groundwater flow direction (south/southwest), no noted violations and/or current compliance, and extent of remedial action completed, none of the aforementioned listed facilities would be expected to present a recognized environmental condition to the subject site.

Conclusions

Based on the information made available to Wightman Petrie Environmental, Inc. or obtained during our assessment of the subject property, there are no indications that current or past uses of the subject site and its surrounding properties have resulted in significant environmental impairment of the subject site. We note that two previously existing septic systems utilized at the subject site were closed in 1992 (removal of liquids, crushing of system components, backfilling with stone). It is WPE's assessment that such actions eliminated any continued source of any ongoing contamination. Based upon this, and the fact that the facility and surrounding properties have since been connected to public water and sewer systems (1992), thereby eliminating a potential for uptake via drinking water, and the limited nature of the contamination identified (contamination not widespread across the subject site, groundwater at one location only); WPE does not consider such contamination, as identified by the former Phase II Environmental Site Assessment (Blasland, Bouck & Lee – 1999) as having resulted in a significant impact to the subject property or surrounding properties. As such, no further assessment of the subject site is deemed warranted at this time.

WPE does recommend that the final disposition of chemicals that are no longer being used at the facility (currently stored in Former Building #1 Mix Room0 be determined, with appropriate forwarding to the Ames, Iowa facility and/or appropriate disposal undertaken. We would also recommend that chemicals stored within the laboratory be evaluated as part of the eventual transfer to Building #1, and that any chemicals determined to be outdated or no longer utilized be disposed of in accordance with applicable disposal requirements via a licensed hazardous waste contractor.

2.0 INTRODUCTION

Wightman Petrie Environmental, Inc. was retained to perform a Phase I Environmental Site Assessment (ESA) for the property located at 23575 County Road 106, within the Northwood Industrial Park of Elkhart, Indiana. Such services were requested as part of the pre-purchase environmental due diligence process regarding a proposed real estate transaction involving the subject property. The purpose of our services was to identify recognized environmental conditions in connection with the property, based on readily available information and site observations.

The subject site, consisting of approximately 4.4 acres has been developed with an approximate 35,545 square-foot complex (three interconnected buildings) and associated parking/paved areas. The facility is currently owned and occupied by Environmental Test Systems, Inc., a wholly-owned subsidiary of Hach Company, Inc., as a research and development laboratory, as well as sales center, of color indication test strips for chemical analysis.

2.1 BACKGROUND

Our request to perform the Phase I Environmental Site Assessment of the subject site was received through Mr. Ross Miller of FM Stone Commercial Realty, real estate agent for the property and Mr. Ron Migedt of RJM Enterprises, LLC, the potential purchaser of the subject site. Our services were performed in accordance with our Proposal for Phase I Environmental Site Assessment, dated September 1, 2004, as verbally authorized by Mr. Ross Miller, for Mr. Ron Migedt and RJM Enterprises, LLC, on September 3, 2004. According to Mr. Miller, Environmental Test Systems, Inc. will be selling the subject property to RJM Enterprises, LLC for conversion to a specialty tool fabrication/grinding operation known as Riverside Tool, Inc. Environmental Test Systems will essentially relocate all existing operations (research and development/sales) to Building #1, with Riverside Tool occupying Buildings #2 and #3. At the time of our site reconnaissance, Riverside Tool was in the process of installing the various milling and grinding machinery within Building #3.

2.2 PROCEDURES

The Phase I Environmental Site Assessment was performed using the American Society for Testing and Materials (ASTM) document ASTM E 1527-00.

The following services were provided for the assessment:

- A qualitative hydrogeologic evaluation of the site and vicinity using both published topographic and geologic maps and area observations to characterize the area drainage.

- A review of available documents, maps, aerial photographs and interviews with knowledgeable persons regarding prior investigations, current and historical property uses.

- A review of available environmental reports published by state and federal agencies to determine if the site or nearby properties are listed as having a present or past environmental problem, are under investigation or are regulated by state or federal environmental regulatory agencies.

- A site and adjacent property reconnaissance for obvious indications of present or past activities that have or could have contaminated the site.

- Preparation of this report presenting our findings and conclusions.

2.3 QUALIFICATIONS

The findings and opinions presented are relative to the dates of our site work and should not be relied on to represent conditions at substantially later dates.

The opinions included herein are based on information obtained during the study and our experience. If additional information becomes available which might impact our environmental conclusions, we request the opportunity to review the information, reassess the potential concerns, and modify our opinions, if warranted. If this assessment included a review of documents prepared by others it must be recognized that Wightman Petrie Environmental has no responsibility for the accuracy of information contained therein.

Although this assessment has attempted to identify the potential for "recognized environmental conditions" to the subject property, potential sources of contamination may have escaped detection due to: (1) the limited scope of this assessment, (2) the inaccuracy of public records, (3) the presence of undetected or unreported environmental incidents, (4) inaccessible areas, and/or (5) deliberate concealment of detrimental information.

The client should realize that this report is not a comprehensive site characterization and should not be construed as such. The findings and conclusions presented in this report are predicated on

the results of the site reconnaissance, a review of specified regulatory records, prior environmental assessment reports, and a review of historical usage of the subject property and surrounding properties. The absence of significant indicators that suggest that hazardous materials and/or wastes have impacted the subject property does not preclude the presence of hazardous materials and/or wastes at the property.

Therefore, the report should only be deemed conclusive with respect to the information obtained. No guarantee or warranty of the results of this assessment is expressed or implied within the context of the report or any subsequent reports, correspondence, or consultation. The client should also recognize that the services performed were conducted in general accordance with ASTM Standard E 1527-00 and local standards of care in the geographic region at the time the services were rendered.

ASTM E 1527-00 defines a "recognized environmental condition" as: "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include de minimis conditions that generally do not present a material risk of harm to public health or the environment and that would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies."

3.0 SITE SETTING

Understanding of a site's physical setting is important to the recognition of environmental impacts to the property.

3.1 GENERAL DESCRIPTION

The subject site, totaling approximately 4.4 acres, has been developed with three interconnected concrete slab, steel frame and metal sided buildings, as well as paved parking lots for employees and visitors located along the eastern and northern property boundaries. Access to the facility is via an entrance drive off of County Road 106, located immediately south of the subject site. Historically, we note that the first phase of building construction was initiated in 1985, with the additions of Building #2 and the larger Building #3 occurring in 1989 and 1994, respectively. Overall, a total of approximately 35,545 square-feet of building are under roof. Prior to construction, the subject site and much of the surrounding area served as agricultural farmland. Currently, surrounding property is characterized as industrial to the north, east and west of the subject property, and residential (subdivision) to the south, across County Road 106.

3.2 HYDROGEOLOGY

A consideration of surface and subsurface drainage and geology are of interest since they provide an indication of the direction that contaminants, if present on-site or off-site, could be transported. The term "upgradient" refers to a location hydraulically upstream.

Wightman Petrie Environmental, Inc. reviewed the following information in regard to the geology and hydrogeology of the site and surrounding area:

- USGS Topographic Map "Elkhart, Indiana", Quadrangle, dated 1961, photorevised in 1981;
- Water Resource Availability in the St. Joseph River Basin, Indiana, dated 1987, published by the State of Indiana, Department of Natural Resources, Division of Water;
- Soil Survey of Elkhart County, Indiana, dated 1974, published by the U.S. Department of Agriculture - Soil Conservation Service.

3.2.1Geologic Setting

The subject site is located within the St. Joseph River Basin that consists mainly of Paleozoic limestone, dolomite, sandstone, siltstone and shale, which represent deposits of ancient inland seas. Beneath these rocks are Precambrian igneous basement rocks composed mainly of granite, basalt and arkose. All of these rocks are deformed regionally to form the Kankakee and Cincinnati Arches, which together are a bedrock structural high that extends from northwestern through southeastern Indiana. Along the northern side of the high, including the St. Joseph Basin, the sedimentary formations dip about 30 feet per mile to the northeast into the major structural feature called the Michigan Basin. The rocks at the bedrock surface become progressively younger toward the northeast. Bedrock in the area is covered by a thick mantle of glacial drift and does not appear at the modern land surface anywhere in the drainage basin.

According to the Soil Survey of Elkhart County, the general area surrounding the site is of the Plainfield-Chelsea-Tyner association, which is characterized by deep, excessively drained and somewhat excessively drained, coarse-textured soils that are developed in sandy outwash. More specifically, the soils of the subject site are classified as Plainfield fine sand, 0 to 2 percent slope. Plainfield series soils are characterized as nearly level soil on broad, sandy outwash plains. Such soils are formed under mixed hardwoods, have very low available moisture capacity and low organic-matter content. Permeability is considered rapid, with slow runoff. Droughtiness is a limitation and erosion is a hazard in the moderately sloping areas.

3.2.2 Surface Drainage

According to the topographic map of the Elkhart, Indiana Quadrangle, the subject site is located at an elevation of approximately 770 feet above the National Geodetic Vertical Datum (NGVD) of 1929. A stormwater ditch is located at the southern property boundary of the subject site, along County Road 106. A drainage swale is also present at the northern property boundary that conveys surface water runoff eastward and then southerly along a portion of the eastern property boundary toward a common drainage ditch shared by adjacent properties. A review of the original Site Plan for Building #1 (1985) highlights the presence of three retention areas on the subject site. These areas are present along the southern and western property boundary (Retention Area #1), at the southeastern corner of the subject site (Retention Area #2) and along the eastern property boundary (Retention Area #3). The total volume of retention was identified

as being 13,650 cubic feet. WPE notes that Retention Area #3 has been eliminated through the subsequent construction of Building #2 and associated parking areas. However, based upon visual observations at the time of the reconnaissance, it would appear as though low-lying areas consistent with the identified Retention Areas #1 and #2 remain. WPE also noted a low-lying area to the north of the existing parking area (north of Building #3) that allows for subsequent runoff to the aforementioned drainage swale present at the northern property boundary of the subject site. Across County Road 106, elevations continue to be relatively flat.

According to the United States Geologic Survey (USGS) Topographic Map of the Elkhart Quadrangle (see Figure 1 in Appendix A), the subject site's upgradient watershed extends to the north/northeast to topographic highs associated with the existing Indiana Toll Road, approximately 3/4-mile north of the subject site.

3.2.3 Groundwater

Groundwater resources in the St. Joseph River basin are probably the most abundant in Indiana. Significant groundwater supplies are confined to unconsolidated glacial sand and gravel deposits. Wells yielding 200 to 500 gallons per minute are common throughout the basin. Yields of 500 to 1500 gallons per minute are common in areas where sand and gravel deposits are thick. Underlying bedrock, which consists primarily of shale, is not considered an important groundwater source. Recharge to the water table occurs primarily through precipitation infiltrating the upper soils and percolating downward, under the influence of gravity, to the groundwater table. Typically, the water table is not a level surface, but a subdued reflection of the land surface. Depth to the water table is variable, being dependent on many factors that include: the amount of rainfall, the permeability of the soil and the amount of groundwater being pumped in the area.

Groundwater generally flows in directions subparallel to the natural ground surface slopes and under the influence of gravity toward points of discharge such as rivers, creeks, swamps, drainage swales or pumped groundwater wells. Based on surface, we interpret the natural groundwater flow across the site to be toward the south/southwest toward the St. Joseph River, located approximately 1.5- miles to the south/southwest of the subject site.

4.0 REGULATORY INFORMATION

Wightman Petrie Environmental researched the records available at the Elkhart County Health Department, Division of Environmental Health regarding any environmental incidents at the subject site or in the immediate surrounding area. A review of Elkhart County Health Department (ECHD) files did not indicate documented releases associated with the subject site. A review of the files relative to inspections performed in accordance with the Elkhart County Groundwater Ordinance indicated no violations of environmental consequence for the subject site.

A total of two release incidents were reported for the immediate area of the subject site. ECHD records indicated a fuel spill involving approximately 50 gallons of diesel fuel at the ASA Corporation facility at 23319 Cooper Drive in February of 1994 (northeast of subject site, upgradient). The spill was eventually remediated through the excavation and disposal of contaminated soils by April of 1994 (approximately 15 cubic yards of contaminated soil removed). ECHD also records indicated a release of an unknown quantity of hydraulic oil near the easternmost loading dock of the American Electric Components facility, located at 53057 Marina Drive, northeast (upgradient) of the subject site. The spill reportedly involved the historical discharge of hydraulic oils to an existing French drain (spill reported on June 17, 1999). Remedial action in response to the release, completed in August of 1999, involved the excavation and disposal of contaminated soils. Confirmatory samples revealed that levels of contaminants were remediated to applicable regulatory limits.

Based upon the limited nature of the aforementioned releases (soil contamination only), their location relative to the subject site and the fact that both of the releases were remediated to applicable regulatory limits, Wightman Petrie Environmental does not consider these sites to pose a recognized environmental condition relative to the subject site.

Wightman Petrie Environmental, Inc. reviewed regulatory search information prepared by Environmental Data Resources, Inc. (EDR) as contained in Appendix C. This regulatory records search is based on information published by State and Federal regulatory agencies and is used to evaluate if the site or nearby properties are listed as having a past or present record of actual or potential environmental impact. Please note that regulatory listings include only those sites that

are known to the regulatory agencies at the time of publication to be: (1) contaminated, (2) in the process of evaluation for potential contamination, or (3) regulated.

EPA NATIONAL PRIORITIES LIST (NPL)

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) established the National Priorities List (NPL) of federal "superfund" sites. NPL sites are targeted for long-term remedial action in accordance with the provisions established by CERCLA. Nationally, over 1,200 hazardous waste sites that require some level of remedial action are listed on the NPL. The following information was found on the EPA National Priority List, dated April 2004:

- The site does not appear on the NPL.
- There are no facilities listed on the NPL within a one-mile radius of the site.

EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS) LIST

The Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) List is a comprehensive listing of sites where following an initial investigation, either no contamination was found, contamination was quickly removed without need for the site to be placed on the NPL, or contamination was not serious enough to require federal Superfund action or NPL consideration. On the EPA's CERCLIS List, dated May 2004, the following information was found:

- The site does not appear on the CERCLIS List.
- There are no facilities listed on the CERCLIS List within a one-half mile radius of the site.

EPA CERCLIS - NO FURTHER REMEDIAL ACTION PLANNED (NFRAP) LIST

NFRAP is the EPA database of former CERCLIS sites where "no further remedial action is planned" under CERCLA. On the EPA's CERCLIS/NFRAP List, dated May 2004, the following information was found:

- The site does not appear on the NFRAP list
- There are no facilities listed on the NFRAP List within a one-half mile radius of the site.

EPA CORRECTIVE ACTION (CORRACTS) LIST

The CORRACTS List identifies facilities that have conducted, or are currently conducting a corrective action pursuant to a Corrective Action Order based upon a release of hazardous wastes into the environment from a RCRA facility. The following information was identified from the CORRACTS List, dated June 2004:

- The subject site does not appear on the CORRACTS List.
- There are no facilities identified on the CORRACTS List within one-mile of the subject property.

EPA RESOURCE CONSERVATION & RECOVERY INFORMATION SYSTEM (RCRIS) LIST

RCRIS is the EPA database of facilities that generate, transport, store, or dispose of hazardous wastes under the Resource Conservation and Recovery Act. The following information was identified from the various RCRIS Lists, dated June 2004:

The RCRIS-TSD List identifies treatment, storage, and disposal facilities that are permitted under RCRA.

- The subject property does not appear on the RCRIS-TSD List.
- There are no facilities identified on the RCRIS-TSD List within one-half mile of the subject property.

RCRA Large Quantity Generators are facilities that generate at least 1,000 kilograms/month of non-acute hazardous waste (or 1 kilogram/month of acute hazardous waste).

- The subject property does not appear on the RCRA Large Quantity Generator List.
- There is one facility listed on the RCRA Large Quantity Generator List within one-quarter mile of the subject property.

The Ashland Chemical facility, located at 23740 Cooper Drive (approx. 1/10-mile northwest of subject site, upgradient) was identified as a generator of approximately 21,250 lbs of D001 listed wastes (ignitable hazardous wastes having a flashpoint of less than 140 degrees Fahrenheit). The facility was also identified as having six reported violations of RCRA on record. All of the identified violations were reported as of November 11, 1995, with subsequent compliance as of January 1996. The nature of the violations were primarily administrative in nature and focused on a lack of recordkeeping, TSD Preparedness/Prevention requirements, labeling, etc. Enforcement actions associated with the violations were considered written and informal. Indications of conditions associated with "observed releases" were not identified by the database.

Based upon the nature of the violations, and in the absence of "observed releases", WPE does not consider the facility to pose a significant environmental condition with respect to the subject site.

Small Quantity Generators are facilities that generate less than 1,000 kilograms/month of non-acute hazardous wastes.

- The subject property was identified by the regulatory database as a "Conditionally Exempt" RCRA Small Quantity Generator, with no reported violations of record.

Conditionally Exempt Small Quantity Generators generate less than 100 kilograms of hazardous waste, or less than 1 kilogram of acutely hazardous waste per month. According to Ms. Jean Davis of Environmental Test Systems, hazardous wastes currently generated by the facility are limited to wastes from the research and development operations (i.e., laboratories). Historically, the facility also produced wastes associated with manufacturing of the chemical test strips, however all manufacturing operations were suspended and transferred to the Ames, Iowa facilities of Hach Company with its purchase of Environmental Test Systems, Inc. in 1998. WPE was provided copies of "Manifests" for shipment and disposal of hazardous wastes recently generated by the laboratories at the facility, as follows:

Date	Firm/ Facility	Waste Characterization	Quantity
1/23/03	Safety-Kleen Systems Dalton, Illinois	Waste Combustible Liquid, NOS (petroleum naphtha)	5 gal.
8/20/03	Heritage Services Von Roll America East Liverpool, Ohio	Waste Corrosive Liquid, Flammable, NOS (acetic anhydride, hydrochloric acid)	200 lbs
		Waste Corrosive Liquid, Flammable, NOS (1,4-diamino butane, sodium hydroxide)	80 lbs
		Waste Flammable Liquid, Corrosive, NOS (butyl acetone, acetonitrile)	200 lbs
		Waste Oxidizing Liquid, Corrosive, NOS (hydrogen peroxide, potassium permanganate)	8 lbs
		Waste Zinc Dust	8 lbs
		Waste Organic Peroxide, Type F, Liquid (cumene hydrogen peroxide)	7 lbs
		Waste Toxic Liquids, Flammable, Organic, NOS (dichloromethane, 3-dimethylamine phenol)	200 lbs
		Waste Flammable Liquids, NOS (ethyl acetate, tetrahydrofuran)	200 lbs
		Waste Toxic Solids, Inorganic, NOS (sodium azide calgamite)	15 lbs
		Waste Aerosol Flammable, NOS (petroleum distillates, isopropanol)	18 lbs
3/22/04	Heritage Services Indianapolis, IN	Waste Alcohols, NOS (ethanol, isopropyl alcohol)	110 gal.

During the reconnaissance of the laboratory facilities at the subject site, WPE noted the presence of three 5-gallon containers of hazardous wastes staged on a secondary containment pedestal. An additional 5-gallon container was noted to be adjacent to a laboratory bench where work was being performed. According to the Laboratory Director, such waste chemicals are transferred in small quantities to the containers, which when full are transferred to the secondary containment pedestal, for subsequent disposal (typically twice per year). WPE did not identify any indications of spillage associated with the transfer or accumulation of the wastes. WPE also noted an accumulation of no longer used reagents/chemicals within the former Mix Room of Building #1. The accumulations consisted of numerous 5-gallon and gallon, quart and pint-sized containers. According to Ms. Davis, Environmental Test Systems is awaiting direction from Hach Company with respect to whether such chemicals are to be disposed or shipped to the Ames, Iowa facility for potential use WPE recommends that the disposition of such chemicals be determined and/or disposed of in accordance with applicable guidelines

- There are four facilities identified on the RCRA Small Quantity Generator List within a one-quarter mile radius of the subject property, as detailed below.

NAME	ADDRESS	APPROX. LOCATION FROM SUBJECT PROPERTY	REGULATORY NOTATION
Voyager Dakat, Inc.	53468 Ada Dr.	Adjacent (west) of subject site	Conditionally exempt status, No Violations
SMM Corp. (Keyline Sales)	53364 Marina	Approximately 1/8 mile northeast of subject site (upgradient)	No Violations
Sherry Designs	53387 Ada Dr.	Approximately 1/8-mile northwest of subject site	No violations
Kellmark Corp.	53465 Ada Dr.	Approximately 1/8-mile west of subject site, (sidegradient)	Conditionally exempt status, No Violations

Based upon the limited quantities of hazardous materials being utilized by the aforementioned RCRA Small Quantity Generators, no violations of record and/or topographic considerations; Wightman Petrie Environmental, Inc. does not consider these facilities to pose a significant environmental condition relative to the subject site.

EPA EMERGENCY RESPONSE NOTIFICATION (ERNS) SYSTEM LIST

The ERNS list is a list of hazardous material spills reported to various State agencies. On the ERNS List, dated December 2003, the following information was found:

- The site does not appear on the ERNS list.
- There are no facilities identified on the ERNS List within one-eighth mile of the subject site.

INDIANA-HAZARDOUS WASTE RESPONSE SITES LIST

Lists of hazardous waste sites that have been assigned a high priority by the Indiana Department of Environmental Management are identified on the Hazardous Waste Response Sites List. A review of the Hazardous Waste Response List, dated March 2004, indicated the following:

- The subject site does not appear on the Hazardous Waste Response Sites List.
- There are no facilities identified on the Hazardous Waste Response Sites List within one mile of the subject site.

INDIANA VOLUNTARY REMEDIATION PROGRAM LIST

The Indiana Department of Environmental Management, Voluntary Remediation Program (VRP) was established in 1993. The VRP provides a mechanism for site owners, operators or potential purchasers to voluntarily enter into an agreement to cleanup contaminated property. When the cleanup is successfully completed, IDEM will issue a Certificate of Completion and the Governor's Office will issue a Covenant Not To Sue for the cleaned up property. A review of the IDEM Voluntary Remediation Program List, dated March 2004, indicated the following:

- The subject site does not appear on the Voluntary Remediation Program List.
- There are no facilities identified on the Voluntary Remediation Program List within one-half mile of the subject site.

INDIANA LANDFILL LISTS

Lists of special waste disposal sites and inactive or permitted solid waste landfills are maintained by the Indiana Department of Environmental Management. A review of the various IDEM lists regarding landfill sites, dated June 2004, indicated the following:

- The subject site does not appear on lists identifying special waste disposal sites, active or inactive solid waste sites.
- There are no facilities identified as a special waste disposal site, active or inactive solid waste site within one-half mile of the subject site.

LEAKING UNDERGROUND STORAGE TANK (LUST) LIST

The Leaking Underground Storage Tank (LUST) List identifies facilities within the State of Indiana that have reported releases of UST contents. The LUST list is maintained by the Indiana

Department of Environmental Management, UST Section. A review of the LUST List, dated June 2004, indicated the following:

- The subject site does not appear on the LUST List.
- There are no facilities listed on the LUST List within one-half mile of the subject site.

REGISTERED UNDERGROUND STORAGE TANK (UST) LIST

The Registered Underground Storage Tank (UST) List is a listing of underground storage tank systems that are registered with the Indiana Department of Environmental Management, UST Section. A review of the UST List, dated June 2004, indicated the following:

- The site does not appear on the Registered Underground Storage Tank list.
- There was one facility listed on the Registered Storage Tank list within one-quarter mile of the subject site. The Chupp & Sons Conversions facility, located at 53387 Ada Drive, northwest of the subject site (sidegradient) was identified as having one underground storage tank system being Permanently Out of Service. According to the database, UST system was "closed" as of February 1998, and there were no reported releases associated with its operation/removal. Based upon the aforementioned, WPE does not consider the former presence and use of the UST system to pose a recognized environmental condition with respect to the subject site.

INDIANA SPILLS LIST

The Indiana Spills List is an accumulation of sites for which spills of petroleum and/or hazardous materials have been reported to the Indiana Department of Environmental Management. A review of the Spills List, dated June 2004, indicated the following:

- The site does not appear on the Spills List.

OTHER LISTED FACILITIES

The subject site was also identified by the regulatory database search as a Facility Index (FINDS) listing. We note that the FINDS List is a cross-referencing database that identifies facilities that are regulated under different and more specific database searches. Information associated with the FINDS listing for the Environmental Test Systems facility indicates regulation under the air quality statutes with respect to reporting under the Toxic Release Information System as well as other air related databases. Such listings are associated with research and development activities (i.e., fume hoods), as well as historical manufacturing operations (exhaust stacks, chemical storage) for test strips. Activities performed by Environmental Test Systems involve the use of certain volatile organic compounds or hazardous

substances that require reporting to various regulatory agencies that are task with providing information on issues related to air quality under provisions of the Clean Air Act. WPE's review of the Elkhart County Health Department files indicated that Environmental Test Systems had received a Notice of Violation from the Indiana Department of Environmental Management on July 15, 1997 regarding an exceedence of the total VOC air emission limit of 14.9 lbs/day. A subsequent IDEM inspection of the facility on August 19, 1997 concluded that there were no violations under the facility's air permit. As such, no corrective action was deemed necessary.

Five orphan sites were identified during the list search. Orphan sites are those sites that are not mapped by EDR due to poor or inadequate geocoding information. A review of the identified orphan listings indicates that none of the sites are located within the subject site's upgradient watershed and/or are greater than one-mile from the subject site.

5.0 SITE INFORMATION AND USE

Wightman Petrie Environmental, Inc. performed a site and vicinity reconnaissance, conducted interviews and reviewed available historical information in order to evaluate the current and historical uses of the site and surrounding properties and to evaluate past or present activities of potential environmental concern. The following sources are referenced:

- USGS Topographic Map, Elkhart, Indiana Quadrangle, dated 1961, photorevised 1981;
- Aerial Photographs, dated 1983, 1986 and 1993 reviewed at the Elkhart County Administrative Offices, Dunlap, Indiana;
- Septic Tank/Building Permit Files, Elkhart County Health Department, Dunlap, Indiana;
- Aerial Photograph, dated April 17, 1958, Chicago Aerial Survey of the City of Elkhart, Indiana reviewed at the Elkhart Municipal Building;
- Polk City Directories, dated 1990, 1991/1992, 1994, 1996, 1998 and 2000, reviewed at the Elkhart Public Library;
- Robinson's Elkhart County Rural Directory, dated 1977, reviewed at the Elkhart Public Library;
- Phase I Environmental Site Assessment, Environmental Test Systems, Inc., Elkhart, Indiana, dated August 1999, as prepared for Danaher Corporation by Blasland, Bouck & Lee, Inc.;
- Phase II Environmental Site Assessment, Environmental Test Systems, Inc., Elkhart, Indiana, dated August 1999, as prepared for Danaher Corporation by Blasland, Bouck & Lee, Inc.;
- Hazardous Waste Manifests documenting the transport and disposal of wastes from the Environmental Test Systems facility, dated January 23, 2003, August 20, 2003 and March 22, 2004, as provided by Ms. Jean Davis of Environmental Test Systems, Inc.

Conley B. Phifer, environmental professional with Wightman Petrie Environmental, Inc. experienced in environmental site assessments, conducted site and area visits on September 7, 2004. Ms. Jean Davis, Business Unit/Marketing Administrator for Environmental Test Systems,

Inc, accompanied WPE on our site visit. The site reconnaissance was performed on foot and the area reconnaissance was a driving tour on public-access routes.

5.1 CURRENT SITE USE

The subject site, totaling approximately 4.4 acres, has been developed with three interconnected concrete slab, steel frame and metal sided buildings, as well as paved parking lots for employees and visitors located along the eastern and northern property boundaries. Access to the facility is via an entrance drive off of County Road 106, located immediately south of the subject site. Historically, we note that the first phase of building construction was initiated in 1985, with the additions of Building #2 and the larger Building #3 occurring in 1989 and 1994, respectively. Overall, a total of approximately 35,545 square-feet of building are under roof.

Environmental Test Systems, Inc. historically performed manufacturing operations associated with the production of paper test strips. The majority of finished products (60 percent) historically manufactured by Environmental Test Systems for storage at the subject site were associated with the chemically coated disposable strips for the testing of waters (i.e., chlorine levels, pH, alkalinity, etc.) for the pool and spa industry under the brand name of AquaCheck. Approximately 25 percent of the finished products sold were utilized to test chloride levels in mortar under the brand name QuanTab. The remainder of finished products sold included test strips for the testing of chemical levels in soil, industrial water and automotive fluids. We note that with the purchase of Environmental Test Systems, Inc. by Hach Chemicals in 1998, manufacturing operations at the facility were phased out and subsequently transferred to Hach Chemical's facilities in Ames, Iowa. Currently the facility serves as a research and development operation for new and/or improved test strip applications. Marketing operations for the sale of test strips are also conducted from the facility. We note that with the transfer of manufacturing operations from the facility, current Environmental Test Systems operations are generally confined to Building #2, with Building #1 currently unoccupied. Building #3 is currently being converted as a machine tool (cutting tools) operation by Riverside Tool, Inc., the potential purchaser of the property. According to Ms. Jean Davis of Environmental Test Systems, future plans call for the transfer of the Instrumental Laboratory, Wet Chemistry Laboratory, and marketing offices from Building #2 to Building #1, with continued conversion of Building #3 and Building #2 to Riverside Tool machining operations.

Much of the test strip manufacturing equipment, as documented by the Blasland, Bouck & Lee Phase I Report of August 1999, has been removed from the facility, with subsequent transfer to Hach Chemical in Ames, Iowa. The following presents a summary of former and current operations, as noted, at the facility:

Building #1

Former Mix Room (First floor) – formerly used to prepare chemical reagents used to produce test strips. Equipment removed, currently empty with exception of storage for chemicals no longer used at facility. Ultimate disposition to be determined.

Former Dryer #1 (First floor) – utilized to dry chemical reagents after they were added to test strip paper. Operation resulted in the emission of VOCs through stack to outside, formerly regulated under IDEM air permits. Dryer equipment removed, currently empty.

Former Foiler Room (First floor) – contained equipment used to package test strips individually in foil. Equipment removed, currently empty.

Former Raw Materials Storage (First floor, open area) – manufacturing materials storage on racks along exterior walls (rolls of paper, polystyrene, etc.). Currently utilized for general storage and outdated materials.

Former QA Sample Storage Area (Second floor) – storage of samples of finished products for future QA testing and potential product liability issues. Currently empty.

Mechanical Room (Second floor) – equipment used to condition outside air prior to use in Dryer #1 (i.e., moisture removal). Air compressors remain within room

Office areas and Conference Rooms - Vacated

Building #2

Former Light Box Room (First floor) – housed light boxes that were utilized to simulate different types of light (sunlight, fluorescent light). Light boxes used to test precision of color-change in test strips under specific light conditions, as well as test strip stability under varied temperature conditions. Light boxes removed.

Former Quantab Room (First floor) – test product involving the lamination of specific test strips. Housed equipment to assemble and laminate Quantab Test Strips. Equipment removed, currently empty.

Former Hazardous Waste Storage Area (First floor open area) – wastes generated at the facility were collected and stored for subsequent disposal. Such wastes historically included scrap paper that had been treated with reagents, leftover chemical reagents from manufacturing, flammable liquids, non-regulated liquids and lab-packs of outdated chemicals from R & D operations. Currently empty.

Former Raw Material/Finished Product Storage (First floor, open area) – storage of large rolls of paper and finished test strips for shipment. Currently empty.

Wet Labs (First floor) – two typical wet chemistry labs utilized for research and development operations. Remains active as research and development area as of current date.

Instrumentation Lab (First floor) – houses chemical testing equipment and computer systems. Remains active as research and development area as of current date.

Miscellaneous Storage (Second Floor) – utilized for storage of empty 55-gallon drums, empty cardboard containers, computer equipment office equipment, record files. Remains active as of current date.

Walk-In Cooler (Second floor) - storage of small quantities of reagents and chemicals used by the facility (research and development and/or additive reagents used in manufacture) that require refrigeration. Remains active as of current date.

Office area/Conference Rooms – Currently housing office and sales staff

Building #3

Former Mix Room – formerly used to prepare chemical reagents that were applied to paper in production of test strips. Housed chemicals that included reagent alcohol, citric acid, and hydrochloric acid. Equipment removed.

Former Dryer #2 – unit formerly utilized to dry paper following application of specific reagents. Emissions of VOCs to outside air. Equipment removed.

Former Slitting and Assembly Room – larger rolls of chemically treated paper were slit into smaller width rolls. Chemically treated paper then adhered to 5-inch by 10-inch cards, with each card including several strips of paper treated with different chemical reagents. Equipment removed.

Former Fill and Cap Room – 5 inch by 10-inch cards were placed into a cutting machine and cut into individual test strips. Grouping of 50 test strips were transferred to plastic bottles and capped. Once filled the bottles were removed from a conveyor, labeled and placed into cardboard boxes for storage. Equipment removed.

Former Finished Product Storage – Boxes of test trips loaded to wooden skids for storage and eventual shipment.

Office Area – currently in transition for use by Riverside Tool.

The following conditions, as noted during WPE's site reconnaissance, were specifically assessed for their potential to create environmental concern.

5.1.1 Storage Tanks

Underground or aboveground storage tanks were not identified during the site reconnaissance. According to Ms. Jean Davis, there have not been underground or aboveground storage tanks associated with the operations of Environmental Test Systems, Inc. at the subject facility. The regulatory database search performed by WPE did not identify the presence of underground storage tanks associated with the 23575 County Road 106 address. According to the Blasland, Bouck & Lee Phase I Report, a former underground concrete containment tank, installed along the western side of Building #3 was utilized to contain any potential liquid spills from Dryer Unit #2 during manufacturing operations. A catch basin beneath Dryer #2 was designed to convey liquid to the tank. According to ETS personnel familiar with manufacturing operations at that time (1999), the catch basin was sealed and the concrete containment tank removed from the ground (tank had no outlet connections and was not used prior to removal).

5.1.2 Hazardous and Petroleum Products Containers/Drums

Historical manufacturing operations conducted by Environmental Test Systems, Inc resulted in the generation of four general waste streams, as follows:

- Hazardous solids consisting primarily of scraps of paper treated with reagents such as chromium, silver and arsenic;
- Hazardous liquids consisting of leftover chemical reagents such as chromium, silver and arsenic;
- Flammable liquids consisting of leftover chemical reagents such as organic solvents (i.e., primarily reagent alcohol, which contains 90% ethyl alcohol, 5% isopropyl alcohol and 5% methanol) and small quantities of acetone, ethyl acetate, isopropyl alcohol, methyl ethyl ketone and toluene;
- Non-regulated wastes

We note that the research and development laboratories, which currently remain in operation at the subject site, also generate quantities of alcohols and other waste reagents which are accumulated within various 5-gallon containers for subsequent off-site disposal by a licensed hazardous waste contractor, typically twice per year. Small quantities, typically less than 1-liter, are generated by the laboratory operations on a daily basis. Other chemicals that may become outdated, are leftover, or are solid wastes generated from research and development operations

are disposed of via lab-pack operations by a licensed hazardous waste contractor on an as needed basis.

In addition to the aforementioned chemical reagents within the two research and development (wet labs) and instrumentation laboratories, and waste chemical accumulations present within the 5-gallon containers in Research and Development Laboratory #1 (stored atop of a secondary containment basin); WPE also noted the presence of an accumulation of waste chemicals within what previously served as the Mix Room within Building #1. According to Ms. Davis the chemicals (pints, quarts, gallons, 5-gallon sized containers) are outdated and or no longer needed by research and development operations. As such, the facility is awaiting instruction from Ames, Iowa to determine if the identified chemicals are to be disposed of (likely as hazardous waste) or shipped to the manufacturing operations at Ames, Iowa. In any event, WPE recommends that the "waste chemicals" be removed from the former Mix Room area. Although some staining of the floor within the Former Mix Room was visually apparent, such staining was associated with former manufacturing operations and not with any release from the storage of the aforementioned chemicals. WPE also noted a walk-in cooler on the mezzanine level of Building #2 that was being utilized for the storage of various standard solutions and/or reagents. Staining or spillage associated with the storage of chemicals within the walk-in cooler was not identified.

Within the former Air Compressor Room, WPE identified the presence of a 5-gallon can of lubricating oil utilized in the maintenance of the two air compressor systems. WPE did not identify significant staining in the general area of the air compressor systems.

5.1.3 Heating and Cooling Fuels and Chemicals

Various natural gas fired furnace systems are present throughout the three building complex (various heating zones). In addition the shipping and warehousing areas are equipped with overhead radiant heating units (natural gas fired). Northern Indiana Public Service Company (NIPSCO) provides natural gas for the subject site. Air conditioning is provided to the various office areas and laboratories, with condenser units present along the exterior walls. Chemicals associated with the operation of heating and cooling systems were not identified during the reconnaissance of the subject site.

5.1.4 Solid Waste

Himco, Inc provides solid waste services for ongoing Environmental Test Systems, Inc. operations on an as-needed basis. Solid waste services for initial conversion of Building #3 by Riverside Tool are provided by BFI, Inc. During the site reconnaissance, WPE noted the presence of two 8 cubic yard dumpsters (side by side) at a paved access inlet, located along the eastern property boundary, across from Building #3. A roll-off dumpster (15 cubic yard) was also noted within the ramp access dock to Building #3. The roll-off dumpster was being utilized by Riverside Tool Inc. for collection of materials associated with its conversion of Building #3. Visually, WPE did not identify the presence of hazardous materials in any of the three solid waste containers.

5.1.5 Sewage Disposal/Septic Tanks

Although the subject site is currently connected to the municipal sanitary sewer system (City of Elkhart), historically, we note the use of two septic systems, reportedly located at the south and east sides of Building #1 and Building #2. Municipal sanitary sewer services were provided to the area of the subject site in 1992. It should be noted that Building #3 was connected to the municipal sanitary sewer system at the time of construction (1994).

WPE was able to obtain documentation regarding the location of the septic system south of Building #1 through a review of records at the Elkhart County Health Department, although no records were readily available regarding the exact location of the second septic system (east of Building #2) through the County Health Department. General locations of both former septic systems were documented within the Phase II Environmental Site Assessment conducted by Blasland, Bouck & Lee (August 1999). We note that the southern septic system was located within the grassy area located between the southernmost wall of Building #1 and County Road 106, whereas the eastern septic system was located within the landscaped area that generally serves as an entrance to Building #2.

According to the Blasland, Bouck & Lee Phase I Environmental Site Assessment, liquid from the septic system on the east side of Building #2 was sampled in 1992 and revealed the presence of toluene at 54 parts per billion (ppb), whereas the liquid from the septic system located at the south side of Building #1 revealed the presence of 1,1-dichloroethene (1,940 ppb) and 1,1,1-trichloroethane (2,770 ppb). With connection to the municipal sanitary sewer system in 1992,

both of the septic systems were reportedly emptied, crushed and abandoned in place by Environmental Test Systems. A manhole was noted on the east side of Building #1 to allow for the City of Elkhart to sample effluent wastewater from the facility prior to discharge to the sanitary sewer system.

Based upon a concern of potential environmental impact to soil and groundwater resulting from the historical use of the two septic systems, as evidenced by the presence of volatile organic compounds by the 1992 sampling effort, Blasland, Bouck & Lee's Phase I Environmental Site Assessment recommended additional investigation of the former septic systems. The results of such investigation, involving the sampling of soils and groundwater from a total of six temporary monitoring wells (Geoprobe) were documented within the Blasland, Bouck & Lee Phase II Environmental Site Assessment, dated August 1999. The following summarizes the findings of the investigation activities:

- Two volatile organic compounds (VOCs), acetone and toluene, were detected in soil samples collected from the ETS property. The acetone detections are believed to be due to laboratory contamination since acetone was also detected in the associated laboratory blank at similar concentrations. Acetone and toluene were detected in one or more soil sample analyzed, at concentrations of 22 micrograms per kilogram (ug/kg) and 9 ug/kg, respectively, which are below the Tier I Soil Closure Levels for acetone and toluene, as provided in the Draft Technical Resource Guidance Document prepared by the Indiana Department of Environmental Management (IDEM).

- Four semi-volatile organic compounds (SVOCs), diethylphthalate, di-n-butylphthalate, bis(2-ethylhexyl)phthalate and di-n-octylphthalate, were detected in soil samples collected from the ETS property. All of these SVOCs were also detected in the associated laboratory blank sample; therefore these particular compounds are believed to be indicative of laboratory contamination.

- Metals were detected in soil at concentrations within the reported background range for the Eastern United States (United States Geological Survey [USGS], 1984, and below their respective Draft Tier 1 Soil Closure Levels (IDEM, 1999).

- The VOCs acetone, methylene chloride and toluene were detected at low part per billion concentrations in groundwater collected from one or more temporary wells. The acetone and methylene chloride detections are indicative of laboratory contamination, since both compounds were also detected in the associated laboratory blank sample at similar concentrations. Toluene was detected in groundwater samples collected from TW-1 and TW-2, at concentrations below the Draft Tier 1 Closure Level of 1,000 ug/l (IDEM 1999) and EPA Maximum Contaminant Level (MCL) of 1,000 ug/l.

- Eleven SVOC compounds were detected in groundwater samples collected from the site. Five of these compounds are believed to be due to laboratory contamination since these five compounds, bis(2-ethylhexyl)phthalate, butylbenzylphthalate, diethylphthalate, di-n-butylphthalate and di-n-octylphthalate, were also detected in the associated laboratory blank at similar concentrations. The remaining six compounds, including 2-methylnaphthalene, benzoic acid, isophorone, naphthalene, phenanthrene and phenol, were reported at concentrations below their respective Draft Tier 1 Groundwater Closure Levels (IDEM 1999).

- The metals aluminum, iron and manganese were detected in groundwater samples collected from all six temporary wells at concentrations above the USEPA Secondary Drinking Water Standards (EPA 1996). The metals arsenic, cadmium, chromium, lead and nickel were also detected in the groundwater sample collected from TW-3 at concentrations slightly above the MCLs and the Draft Tier 1 Groundwater Closure Levels. Arsenic and chromium are utilized in manufacturing operations conducted at the facility by ETS.

In general, Blasland, Bouck & Lee concluded, "while VOCs, SVOCs and metals were detected in soil and groundwater samples collected from the ETS property, the majority of the detections were either below EPA or Draft IDEM criteria, or within the regional range for the Eastern United States background metal concentrations. Given the limited sampling data and the focus towards locations with a higher potential for past releases, constituents that were above these criteria/concentrations appear to be localized. The potential impact, if any, from these areas is

assumed to be minimal for the following reasons: (1) The contaminant levels are relatively low, even near the assumed source areas, and (2) the properties are industrial in nature.

WPE has reviewed the data, as provided within the Blasland, Bouck & Lee Phase II Report, with respect to **current** Risk Integrated System of Closure (RISC) Levels established by the Indiana Department of Environmental Management (DEM) for soil and groundwater at Industrial Sites. Our review indicates that none of the concentrations of constituents detected in the soils in and around the two former septic systems exceeds current RISC Default Closure criteria for industrial sites. With respect to our review of the groundwater data, the concentrations of arsenic (0.106 mg/l) and lead (0.202 mg/l) detected in the groundwater sample collected from location TW-3 (southernmost septic leach field of south septic system, along County Road 106) exceeded the RISC Default Closure criteria for industrial sites of 0.05 mg/l and 0.042 mg/l, respectively. All other detected chemical constituents within the groundwater samples collected from the two former septic system locales were well below applicable RISC Default Closure criteria for industrial sites.

As previously indicated, both of the septic systems were pumped of freestanding liquids prior to their closure (by crushing) by Environmental Test Systems in 1992. Such closure coincided with the availability of municipal water and sewer systems to the area of the subject site in 1992.

Based upon the fact that exceedence of regulatory criteria was limited to groundwater only, and only in the southernmost leachfield of the former southernmost septic system, it would appear as though the contamination is extremely limited. Based upon this factor, the 1992 removal of the source of contaminants (i.e., removal of free-standing liquids), the elimination of potential exposure via ingestion of groundwater as a source of drinking water at the subject site and adjacent facilities (municipal water supply), and the elimination of the potential for continued or future release of contaminants (closure of septic systems and connection to municipal sanitary sewer system); it is WPE's assessment that the former septic systems (and associated leachfields) do not present any significant current risk to public health or the environment .that merit the need for any further investigation or remedial action at the subject site.

5.1.6 Hydraulic Equipment

No hydraulic equipment, other than the presence of a propane powered lift truck associated with the ongoing conversion of Building #3 by Riverside Tool, was noted during the site reconnaissance.

5.1.7 Contracted Maintenance Services

Economy Lawn Care, Inc. provides lawn maintenance services to the subject site on a weekly basis. Lawn maintenance equipment is not stored at the subject site. Pest management services are no longer provided to the subject site, although historically rodent control was provided through the placement of bait traps. Church Plumbing and Heating, Inc. provides maintenance for heating and cooling systems present at the subject site on an as-needed basis.

5.1.8 Electrical Transformers

Electrical transformers are a source of environmental concern due to the potential presence of polychlorinated biphenyls (PCBs) contained in dielectric fluids used in some units.

American Electric Power, Inc provides electrical power to the subject site. Two banks of three pole-mounted electrical transformers were noted along the western property boundary of the subject site. Each of the transformers was labeled as non-PCB. Additional banks of pole-mounted transformers were also present along the eastern property boundary with the adjacent (and former Environmental Test Systems) building, currently occupied by Elkhart Powder and Fab, Inc. Such transformers provided electrical service to that particular building as well as other various warehousing and manufacturing facilities within the Northland Industrial Park. Staining or other evidence of leakage of dielectric fluid was not observed in the area of any of the pole-mounted transformer units. Obvious labeling regarding PCB content of the transformers was not observed on the transformers along the eastern property boundary of the subject site. American Electric Power representatives have indicated in previous conversations that American Electric Power accepts responsibility for releases from its equipment.

5.1.9 Water Supply and Wells

The facility is currently connected to a municipal (City of Elkhart) water supply. However, prior to annexation and associated construction of public utilities to the Northland Industrial Park in 1992, the facility utilized on-site wells as a source of drinking and process related water

(subsequently closed). WPE noted the presence of a 2-inch water well immediately east of Building #1. According to Ms. Jean Davis, the well is utilized for the facility's fire protection sprinkler system. Specific details regarding the well's construction were not available to Wightman Petrie Environmental for review. The day tank and water control valves for the remaining well were noted within the warehouse/storage area of Building #1 (eastern interior wall).

5.1.10 Drains and Sumps

Floor drains were noted within the wet labs and instrumentation lab of Building #2. We note that all floor drains are currently connected to the municipal sanitary sewer system. Visual indications of staining or other evidence of releases, discharges or spills to the floor drains were not identified during the reconnaissance of the laboratory areas. WPE also note the presence of a sump system within the area of the Former Mix Room in Building #3. The sump did not appear to have an outlet and was primarily installed as a collection system for any materials that may have been spilled during mixing operations as part of the former manufacturing processes. WPE did not observe any visual indications of historical releases to the collection sump.

5.1.11 Pits, Ponds Lagoons and Surface Waters

As previously noted, there exists a stormwater ditch located at the southern property boundary of the subject site, along County Road 106. A drainage swale is also present at the northern property boundary that conveys surface water runoff eastward and then southerly along a portion of the eastern property boundary toward a common drainage ditch shared by adjacent properties. A review of the original Site Plan for Building #1 (1985) highlights the presence of three retention areas on the subject site. These areas are present along the southern and western property boundary (Retention Area #1), at the southeastern corner of the subject site (Retention Area #2) and along the eastern property boundary (Retention Area #3). The total volume of retention was identified as being 13,650 cubic feet. WPE notes that Retention Area #3 has been eliminated through the subsequent construction of Building #2 and associated parking areas. However, based upon visual observations at the time of the reconnaissance, it would appear as though low-lying areas consistent with the identified Retention Areas #1 and #2 remain. WPE also noted a low-lying area to the north of the existing parking area (north of Building #3) that allows for subsequent runoff to the aforementioned drainage swale present at the northern property boundary of the subject site. No other pits, ponds, lagoons, or areas for surface water collection were observed on the subject site.

5.1.12 Staining

Wightman Petrie Environmental's reconnaissance of the subject site did not identify any areas of significant staining on the subject site or within the existing building.

5.1.13 Stressed Vegetation

Indications of stressed vegetation were not observed on the subject site.

5.1.14 Odors

No unusual odors were detected during the site reconnaissance.

5.2 PAST SITE USE

Historically, Environmental Test Systems was formerly a division of Miles Laboratories, Inc. In 1985, Mr. Harry Stephenson purchased the division and relocated operations to the County Road 106 locale (Building #1 completed in 1986). Environmental Test Systems, Inc. was eventually purchased by Hach Company (based in Ames, Iowa) in April 1998, and continues to operate as a wholly owned subsidiary of Hach Company through current date.

With respect to historical property use, the 1958 aerial photograph indicates that the subject site was utilized as agricultural farmland. The 1983 aerial photograph indicates some initial clearing of the subject property for development as part of the Northland Industrial Park. The 1986 (Spring) aerial photograph indicates the presence of Building #1, located immediately north of, with access from, County Road 106. The 1993 aerial photograph confirms expansion of operations at the facility to include Building #2 (construction actually completed in 1989). A review of the Michiana Area Council of Governments (MACOG), Geographic Information System (GIS) aerial photography from 1998 and 2002 confirms the presence of Building #3 (construction actually completed in 1994) and associated parking lot, north of Building #3.

A review of the Elkhart County Health Department records for the subject site indicates approval of a Development Permit Application for Environmental Test Systems, with Almac Construction as the General Contractor, dated December 2, 1985. The document also confirms completion of the septic system, located within the grassy area south of the building and north of County Road 106, as of April 18, 1986.

A review of the 1977 Robinson Directory indicates the presence of residential dwellings along County Road 106, with no specific listing of the 23575 County Road 106 address. According to the Polk City Directories, Environmental Test Systems, Inc. has occupied the 23575 County Road 106 facility since at least 1990.

According to historical information obtained from the Elkhart County Assessor's Office, as presented in the Blasland, Bouck & Lee Phase I Environmental Site Assessment, the following table summaries a record of historical ownership of the subject property:

OWNER	DATES OF OWNERSHIP
Environmental Test Systems, Inc.	1991 through current date
G & S Properties	1986 – 1991
Ludwig, Allan J & David J. Miller	1986
Delcorp, Inc.	1985 – 1986
Ludwig, Allan J & David J. Miller	1985
Bennet, Steve R.	1983 – 1985
Ludwig, Allan J & David J. Miller	1983
Dawn Realty	1983
Century Motor Coach	1983
Dygert, David L. & Phyllis B.	1973 – 1983
Baker, Ernest R. & Minola A.	1962 – 1973

5.3 SURROUNDING LAND USE

Nearby property usage could potentially impact the surface and subsurface conditions of a property. Developing a history of past to present uses or occupancies of surrounding property can provide an indication of the likelihood of environmental concern.

5.3.1 North

North of the subject site is a wood line that serves as the northern property boundary of the subject site. Further to the north are the operations of the Norcold Warehouse (storage location for materials associated with the manufacture of refrigerator systems for recreational vehicles, 23666 Cooper Drive), and Cooper Drive. To the northeast of the subject site are the rear

portions of the Dygert Seating facility (manufacture of seating for the recreational vehicle industry, 53381 Marina Drive), the ABI Plastics facility (injection molding, 23620 Cooper Drive), a vacant building (23542 Cooper Drive, formerly Partner Supply, Inc., a distributor of wooden furniture products), Shepherd Distribution Company (53293 Marina Drive), and the intersection of Cooper Drive and Marina Drive. To the northwest of the subject site are the facilities of Ashland Chemical Distributors (a distributor of specialty chemicals, 23740 Cooper Drive) and the intersection of Ada Drive and Cooper Drive.

According to the historical sources reviewed, the area to the north, northeast and northwest of the were utilized for agricultural purposes through at least the mid-1970s, at which time initial stages of the Northland Industrial Park were constructed. A review of city directories and historical aerial photographs indicates property use to the north, northeast and northwest have remained essentially consistent with current land use.

5.3.2 East

To the east of the subject site is a steel-framed building (23537 County Road 106) that until recently (2003) served as a warehouse for finished products and manufacturing waste materials (disposed of prior to recent sale of property) by Environmental Test Systems, Inc. and a Native Hardwoods, Inc. (a manufacturer of wooden partitions and cabinetry for the recreational vehicle industry). The facility is currently operated as Elkhart Powder Coating and Fabrication, Inc. (coating and fabrication of metal frames for the recreational vehicle industry). Further to the east are a large grassy area and the operations of Marine Fasteners Midwest, Inc. (distributor of marine related fastening systems to the boating manufacture industry, 53471 Marina Drive) and the intersection of Marina Drive and County Road 106.

A review of the 1958 historical aerial photograph indicates the area to the east of the subject site to have been utilized for agricultural purposes, with several farmhouses noted as being present along County Road 106, east of the subject site. The 1983 and 1986 (Spring) aerial photographs indicate the property immediately adjacent (east) of the subject site as being cleared, although no structural development had been undertaken. The 1993 aerial photograph indicates the presence of the adjacent building (23537 County Road 106) and the 53471 Marina Drive buildings to be present and consistent with their current configurations.

A review of the 1977 Robinson's Elkhart County Rural Directory indicates the presence of residential properties along County Road 106. Marina Drive to the east, Ada Drive to the west and Cooper Drive to the north of the subject site were not listed in the directory. A review of the Polk City Directories for the City of Elkhart did not indicate any listings for the 23537 County Road 106 property until 1990, as the area had not been annexed by the City of Elkhart. The 1990 city directory indicates the 23537 County Road 106 building was occupied by Conversion Components, Inc., a supplier of recreational vehicle accessories. Conversion Components continued to be located at the subject site through at least 1994. The 1996 city directory indicates the presence of Intek International, also a recreational vehicle supplier. By 1998, through at least 2000, the city directories indicate occupancy by Native Hardwoods, Inc. Native Hardwoods, Inc. apparently occupied the front portion of the subject site building from May 1998 through at least March 2003. The rear portion of the building was occupied by Environmental Test Systems, Inc. from at least May 1998 through at least December 2002.

According to city directories, the 53471 Marina Drive address was occupied by LaSalle RV Products Outlet, a distributor of recreational vehicle accessories, from at least 1990 through 1998, with Marine Fasteners Midwest occupying the facility from at least 2000 through current date. The 53471 Marina Drive facility was listed as being occupied by Foremost Enterprises, a manufacturer of recreational vehicle seating, from at least 1990 through at least 1998.

5.3.3 South

To the south, southeast and southwest of the subject site are County Road 106 and a residential subdivision with two entrances off of County Road 106. We note that the subdivision extends southerly along the two access drives (Lane Street and Kershner Drive).

According to the 1958 aerial photograph, the property to the south of the subject site was utilized as agricultural farmland, although some farmhouses were noted as being located along County Road 106, south of the subject site. The 1983 aerial photograph indicates Phase I of the residential subdivision along Lane Street and Kershner Drive. The 1986 (Spring) aerial photograph indicates continued expansion of the residential subdivision. The 1993 aerial indicates continued expansion of the subdivision, inclusive of the southerly extension of both Lane Street and Kershner Drive. The 1998 and 2002 aerial photography indicates property use that is consistent with current date (continued residential)

A review of the 1977 Robinson's Elkhart County Rural Directory confirms the presence of residential properties along County Road 106. Similarly, a review of the Polk City Directories confirms the residential subdivision from at least 1990 (annexation date) through current date.

5.3.4 West

To the west of the subject site are the manufacturing and shipping facilities (separate buildings) of Voyager, Inc. at 53468 Ada Drive (steel frame manufacture for chairs), the facilities of X-Treme Vinyl Solutions (formerly AQI Products, Inc) at 53386 Ada Drive and Ada Drive and County Road 106. Across Ada Drive are the manufacturing facilities of Kellmark at 53465 Ada Drive (calendar productions).

A review of historical aerial photography indicates the presence of all facilities west of the subject site to be present as of 1990, with actual construction of the facilities occurring between 1985 and 1986. Prior to construction of the facilities property use to the west of the subject site was agricultural in nature.

6.0 CONCLUSIONS

Based on the information made available to Wightman Petrie Environmental, Inc. or obtained during our assessment of the subject property, there are no indications that current or past uses of the subject site and its surrounding properties have resulted in significant environmental impairment of the subject site. We note that two previously existing septic systems utilized at the subject site were closed in 1992 (removal of liquids, crushing of system components, backfilling with stone). It is WPE's assessment that such actions eliminated any continued source of any ongoing contamination. Based upon this, and the fact that the facility and surrounding properties have since been connected to public water and sewer systems (1992), thereby eliminating a potential for uptake via drinking water, and the limited nature of the contamination identified (contamination not widespread across the subject site, groundwater at one location only); WPE does not consider such contamination, as identified by the former Phase II Environmental Site Assessment (Blasland, Bouck & Lee – 1999) as having resulted in a significant impact to the subject property or surrounding properties (no significant current risk to public health or the environment). As such, no further assessment of the subject site is deemed warranted at this time.

WPE does recommend that the final disposition of chemicals that are no longer being used at the facility (currently stored in Former Building #1 Mix Room0 be determined, with appropriate forwarding to the Ames, Iowa facility and/or appropriate disposal undertaken. We would also recommend that chemicals stored within the laboratory be evaluated as part of the eventual transfer to Building #1, and that any chemicals determined to be outdated or no longer utilized be disposed of in accordance with applicable disposal requirements via a licensed hazardous waste contractor.

7.0 CERTIFICATION

1) Wightman Petrie Environmental, Inc. certifies to RJM Enterprises, LLC that this Phase I Environmental Site Assessment for the subject property, located at 23575 County Road 106 in Elkhart, Indiana, along with the activities performed in connection with its preparation was performed in general accordance with the ASTM Document E 1527-00 (the document) for Phase I Environmental Site Assessments.

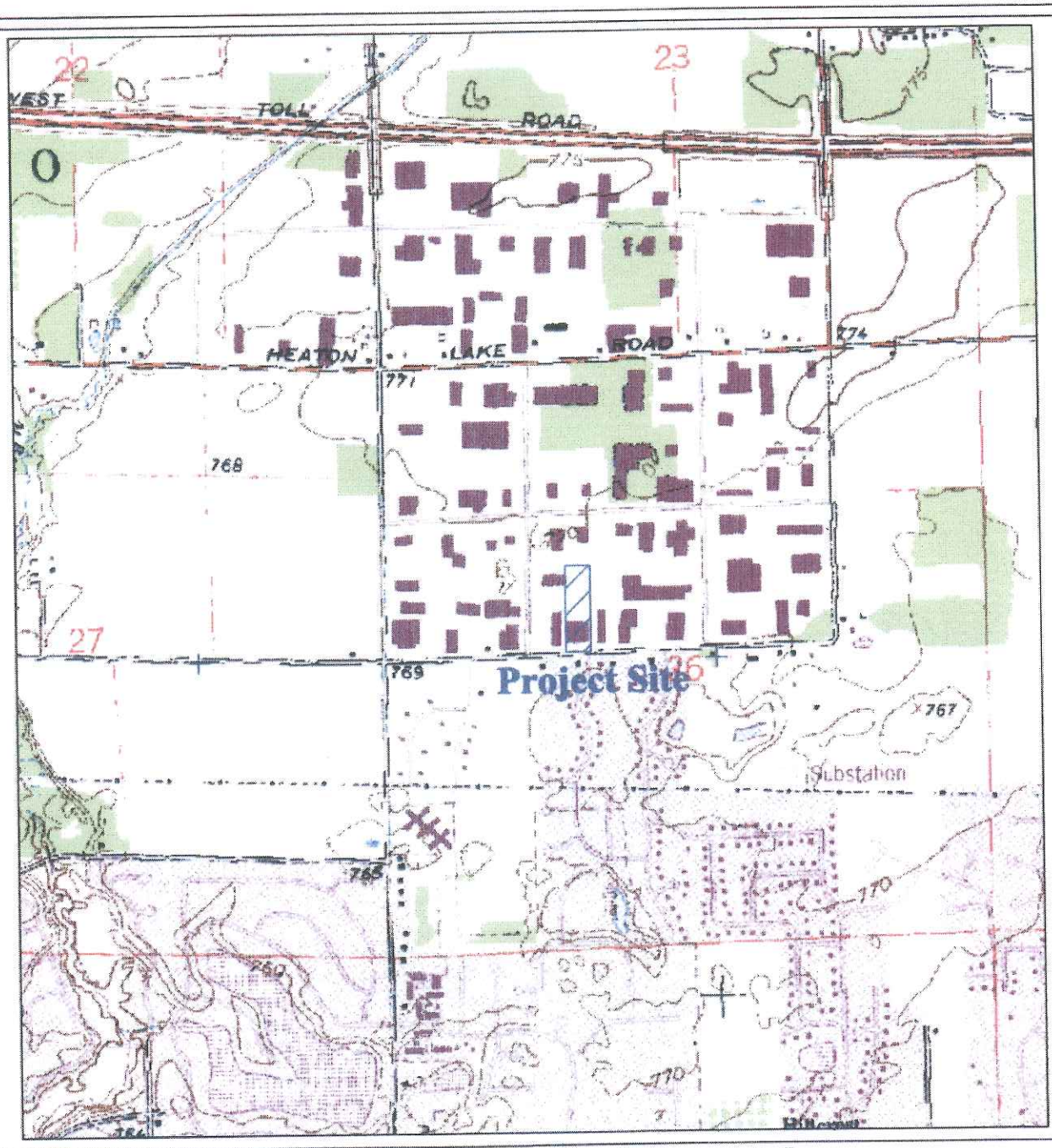
2) Wightman Petrie Environmental, Inc. certifies to RJM Enterprises, LLC that this Phase I Environmental Site Assessment was prepared, and the activities performed in connection with its preparation were conducted by and under the direction, supervision and control of Conley Phifer, who qualifies as an "environmental professional" as defined by the document.

3) Wightman Petrie Environmental, Inc. certifies to RJM Enterprises, LLC that it has in effect at the time of the Phase I Environmental Site Assessment, and has maintained during the entire duration of the activities performed in connection with this Phase I Environmental Site Assessment, environmental consultants professional liability insurance coverage in an amount exceeding five hundred thousand dollars ($500,000), issued by an insurance company licensed to do business in Indiana, which insurance policy provides coverage for the acts of errors and omissions of all persons involved in the performance and preparation of this Phase I Environmental Site Assessment and related activities. Wightman Petrie Environmental, Inc., covenants to RJM Enterprises, LLC that it shall maintain such insurance, without reduction in or narrowing of the described coverage, for at least one year after the date of the Phase I Environmental Site Assessment.

Conley B. Phifer
Sr. Project Manager

9/27/04
Date

APPENDIX A
FIGURES



Wightman Petrie Environmental

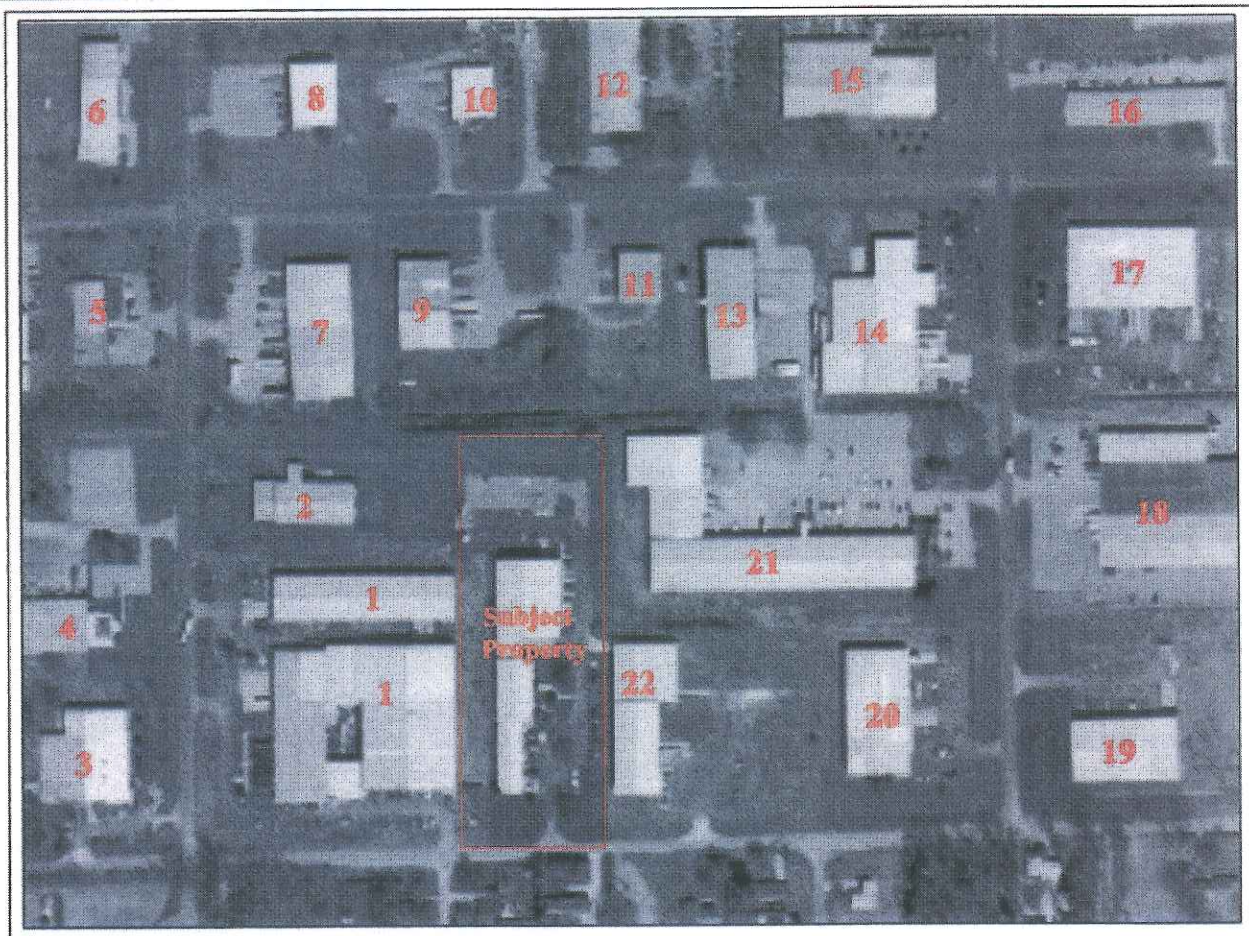
713 S Scott St.
PH. (574) 232-4388

South Bend, Indiana 46601
FAX (574) 232-4333

Date: 9-20-04	Received:	Drawn By:	KLW
Scale: None		Approved By:	CBP

23575 C.R. 106
Elkhart, IN

Title: Vicinity Map	Project No. 24134	Drawing No. Figure 1.0



LEGEND

1 = Voyager
2 = X-Treme Vinyl Solutions
3 = Kellmark
4 = Ameritrans
5 = McDaniel Fire Systems
6 = Wiltfong Moving & Storage
7 = Ashland Chemical
8 = Transfer Precision Corp.
9 = Norcold
10 = Elkhart Hitch
11 = ABI Plastics
12 = Robert Weed Plywood
13 = Vacant
14 = Shepherd Distribution
15 = R.E. Jackson Windows
16 = Chipco
17 = Geocel
18 = Keyline Sales
19 = Geocel
20 = Marine Fasteners Midwest
21 = Dygert Seating
22 = Elkhart Powder Coating

Wightman Petrie Environmental
713 S Scott St. South Bend, Indiana 46601
PH. (574) 232-4388 FAX (574) 232-4333

Date: 9-20-04	Received:	Drawn By:	KLW
Scale: None		Approved By:	CBP

23575 CR 106
Elkhart, IN

Title: Area Property Use	Project No. 24134	Drawing No. Figure 2.0

APPENDIX B
PHOTOGRAPHS

Subject Site - Exterior of Building #1

Subject Site - Exterior of Building #2 and Building #3

Subject Site - Parking area north of Building #3

Adjacent property use (east) - Elkhart Powder & Fab

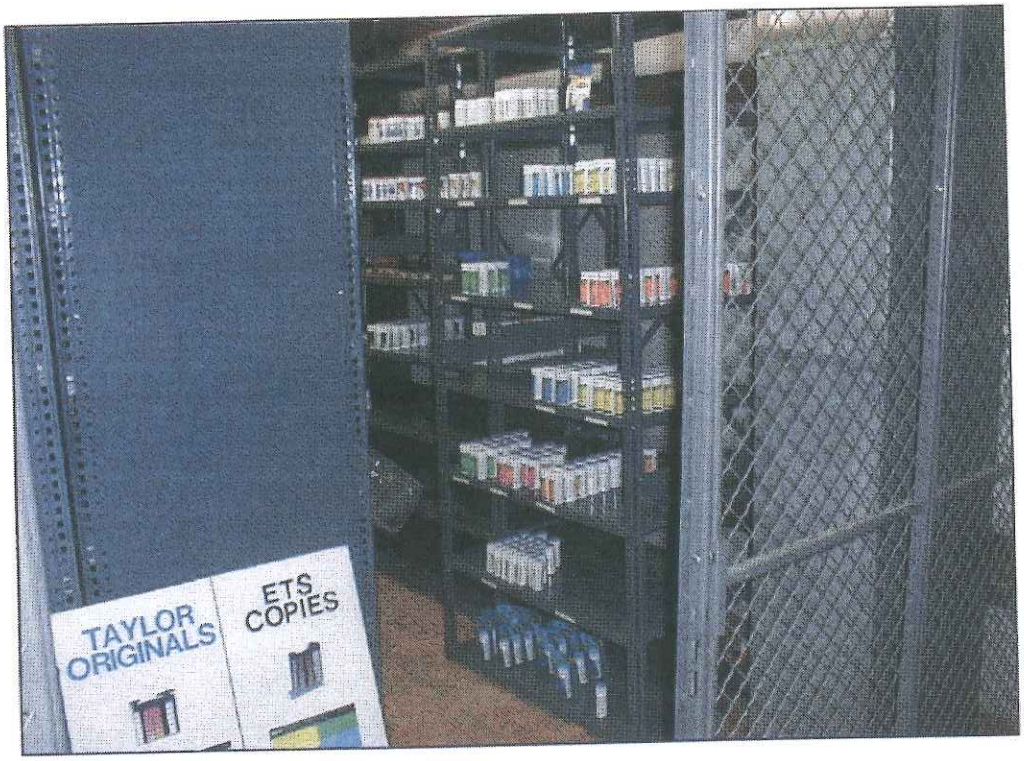
Subject Site - Adjacent (west) of building, note stormwater runoff area

Loading area of Building #3, roll-off for Riverside Tool conversion

Subject Site - Solid waste dumpster(s)

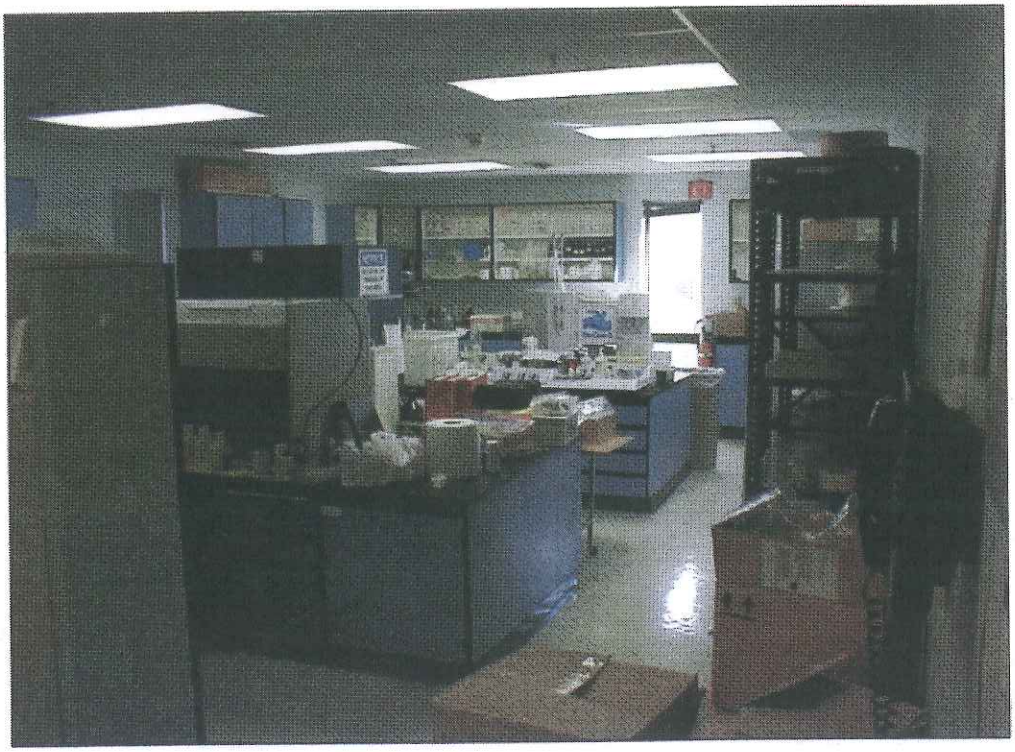
Subject Site - Existing well for fore proetction sprinkler system

Building #2 (mezzanine level)- Sample/reagent refrigeration unit



Building #2 (mezzanine level) - product storage area

Building #2 - warehouse storage area



Building #2 - Instrumentation Laboratory

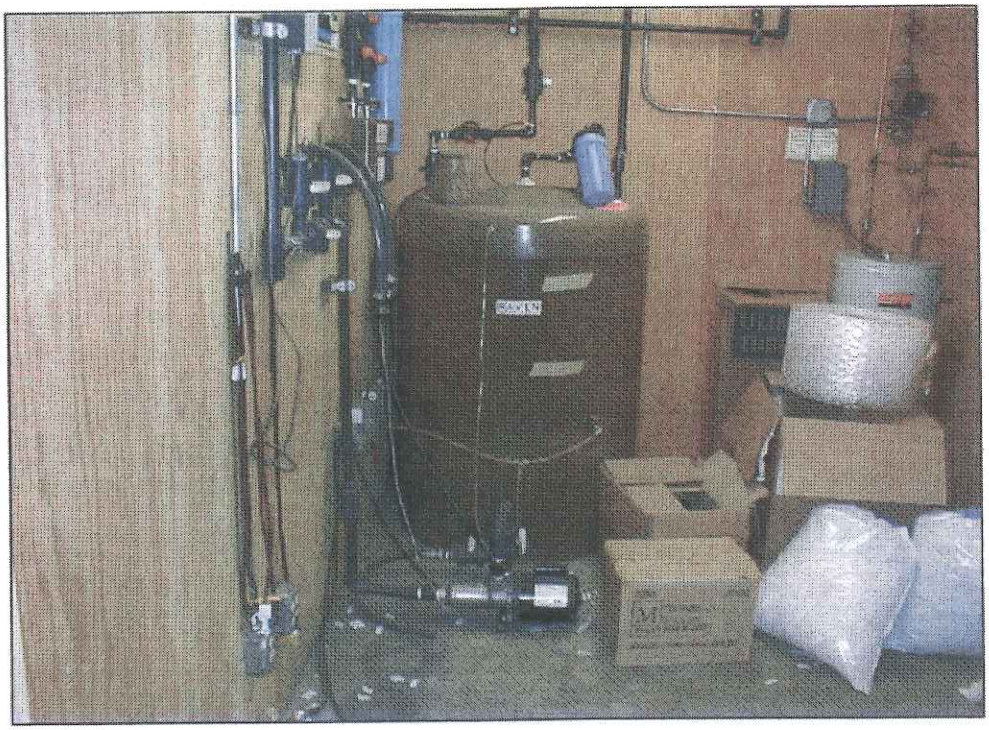
Building #2 - Product Development Lab #1

Building #2 - Laboartory waste accumulation area (secondary containment)

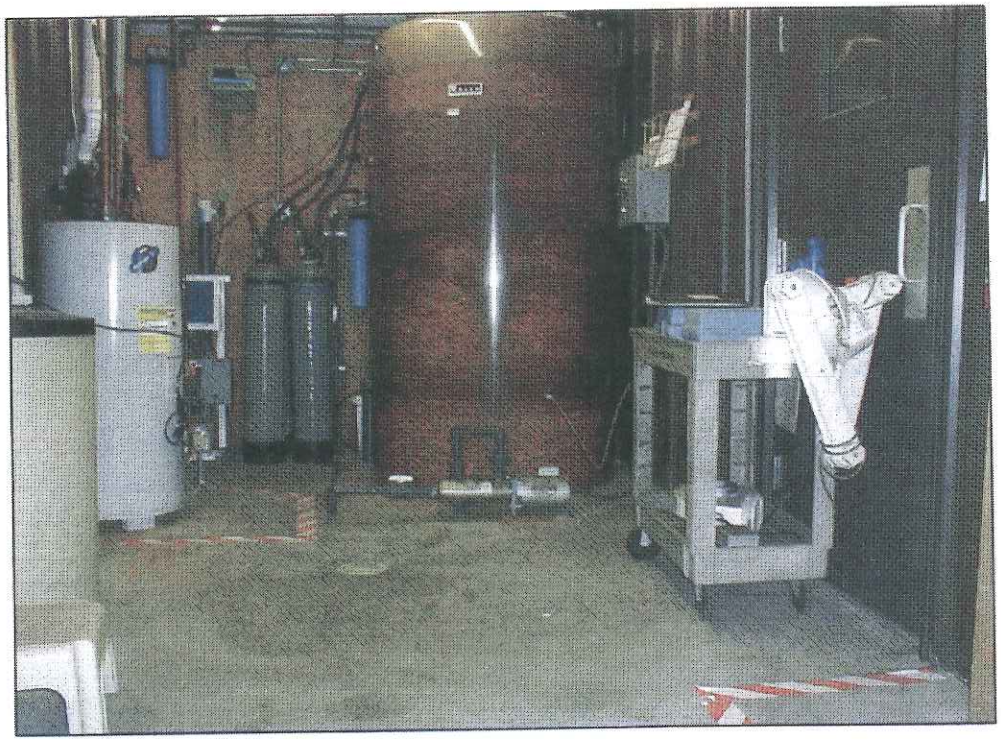
Building #1 - Former Mix Room, chemical accumulation area

Building #1 - Main floor, office area

Building #1 - Air Compressor Room (note: 5-gallon machine oil)



Building #3 - Ultraviolet disinfection system (non-operational)



Building #2 - Reverse osmosis/distilled water unit for Lab

Building #1 - Warehouse storage area

Building #3 - Area of Riverside Tool conversion

Building #3 - Riverside Tool milling machine set-up (typical)

APPENDIX C
REGULATORY SEARCH INFORMATION

EDR™ Environmental
Data Resources Inc

The EDR Radius Map™ Report

Environmental Test Systems Facility
23575 County Road 106
Elkhart, IN 46514

Inquiry Number: 01262825.1r

September 09, 2004

The Standard in Environmental Risk Management Information

440 Wheelers Farms Road
Milford, Connecticut 06460

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

FORM-RDG

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Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	6
Orphan Summary	10
EPA Waste Codes	EPA-1
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

GeoCheck - Not Requested

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc. (EDR). The report meets the government records search requirements of ASTM Standard Practice for Environmental Site Assessments, E 1527-00. Search distances are per ASTM standard or custom distances requested by the user.

TARGET PROPERTY INFORMATION

ADDRESS

23575 COUNTY ROAD 106
ELKHART, IN 46514

COORDINATES

Latitude (North):	41.717200 - 41° 43' 1.9"
Longitude (West):	85.920500 - 85° 55' 13.8"
Universal Tranverse Mercator:	Zone 16
UTM X (Meters):	589799.4
UTM Y (Meters):	4618728.0
Elevation:	768 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	41085-F8 ELKHART, IN
Source:	USGS 7.5 min quad index

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following government records. For more information on this property see page 6 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
ENVIRONMENTAL TEST SYSTEMS INC 23575 CR 106 ELKHART, IN 46514	RCRIS-SQG FINDS	IND152094785

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the ASTM E 1527-00 search radius around the target property for the following databases:

FEDERAL ASTM STANDARD

NPL..... National Priority List
Proposed NPL..... Proposed National Priority List Sites
CERCLIS..... Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP..... CERCLIS No Further Remedial Action Planned

EXECUTIVE SUMMARY

CORRACTS	Corrective Action Report
RCRIS-TSD	Resource Conservation and Recovery Information System
ERNS	Emergency Response Notification System

STATE ASTM STANDARD

SHWS	List of Hazardous Waste Response Sites Scored Using the Indiana Scoring Model
SWF/LF	Permitted Solid Waste Facilities
LUST	Lust Leaking Underground Storage Tank List
VCP	Voluntary Remediation Program Site List

FEDERAL ASTM SUPPLEMENTAL

CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
Delisted NPL	National Priority List Deletions
HMIRS	Hazardous Materials Information Reporting System
MLTS	Material Licensing Tracking System
MINES	Mines Master Index File
NPL Liens	Federal Superfund Liens
PADS	PCB Activity Database System
DOD	Department of Defense Sites
US BROWNFIELDS	A Listing of Brownfields Sites
UMTRA	Uranium Mill Tailings Sites
FUDS	Formerly Used Defense Sites
INDIAN RESERV	Indian Reservations
RAATS	RCRA Administrative Action Tracking System
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
SSTS	Section 7 Tracking Systems
FTTS INSP	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

STATE OR LOCAL ASTM SUPPLEMENTAL

IN Spills	Spills Incidents
BULK	Registered Bulk Fertilizer and Pesticide Storage Facilities

EDR PROPRIETARY HISTORICAL DATABASES

Coal Gas	Former Manufactured Gas (Coal Gas) Sites

BROWNFIELDS DATABASES

US BROWNFIELDS	A Listing of Brownfields Sites
Brownfields	Brownfields Site List
AUL	Sites with Restrictions
VCP	Voluntary Remediation Program Site List

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified.

EXECUTIVE SUMMARY

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

FEDERAL ASTM STANDARD

RCRIS: Resource Conservation and Recovery Information System. RCRIS includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs): generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs): generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs): generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

A review of the RCRIS-LQG list, as provided by EDR, and dated 06/15/2004 has revealed that there is 1 RCRIS-LQG site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
ASHLAND CHEMICAL INC	***23740 COOPER DR.***	***1/8 - 1/4 NNW***	***7***	***8***

RCRIS: Resource Conservation and Recovery Information System. RCRIS includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs): generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs): generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs): generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

A review of the RCRIS-SQG list, as provided by EDR, and dated 06/15/2004 has revealed that there are 4 RCRIS-SQG sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
KEYLINE SALES INC	***53364 MARINA DR***	***1/8 - 1/4 NE***	***6***	***8***

Lower Elevation	Address	Dist / Dir	Map ID	Page
VOYAGER DAKAT INC	***53468 ADA DR***	***0 - 1/8 W***	***A2***	***6***
KELLMARK CORP	53465 ADA DR	0 - 1/8 W	A3	6
SHERRY DESIGNS	***53387 ADA DR***	***1/8 - 1/4 NW***	***B5***	***7***

EXECUTIVE SUMMARY

STATE ASTM STANDARD

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Environmental Management's Indiana Registered Underground Storage Tanks list.

A review of the UST list, as provided by EDR, and dated 06/02/2004 has revealed that there is 1 UST site within approximately 0.25 miles of the target property.

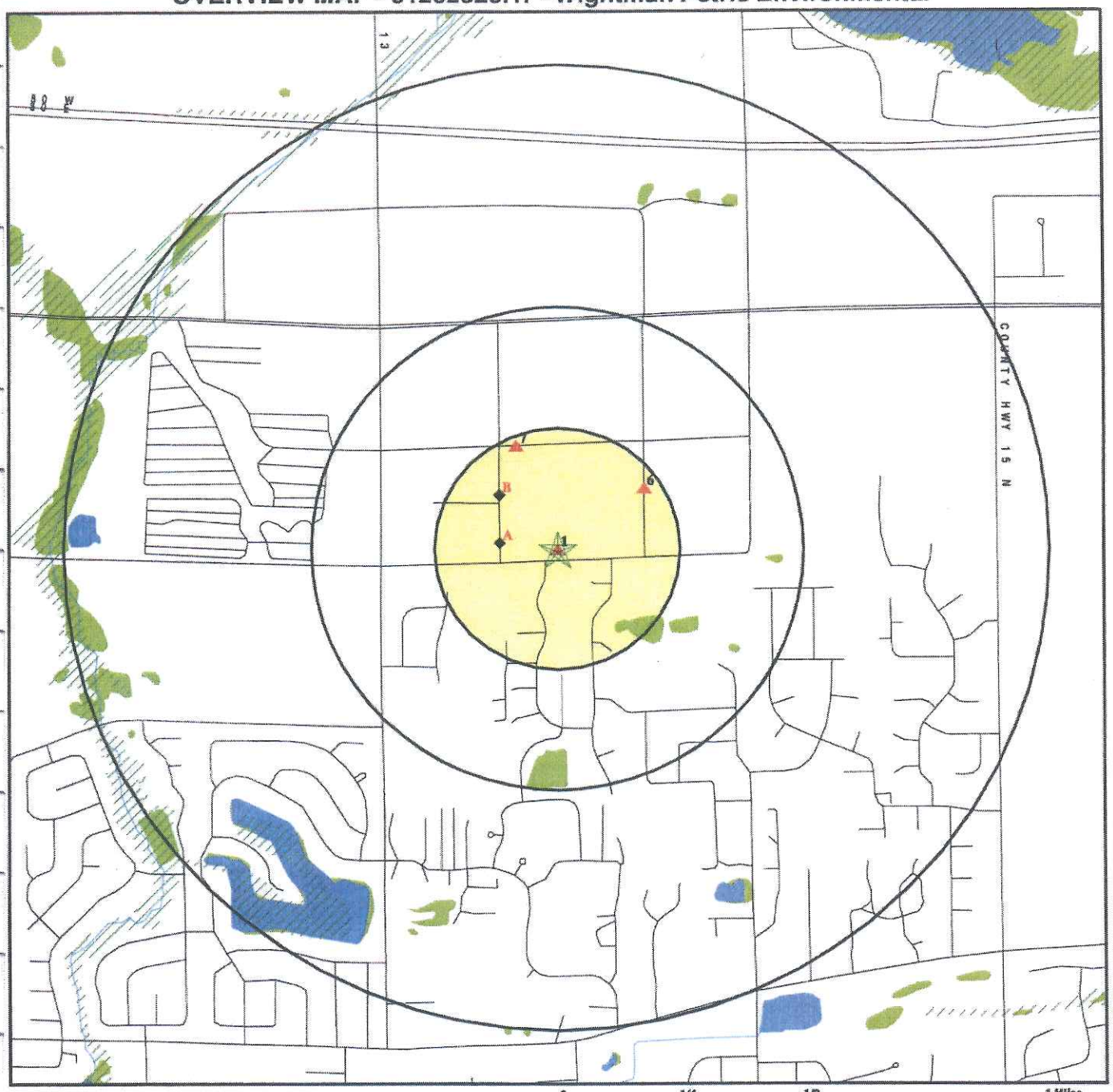
Lower Elevation	Address	Dist / Dir	Map ID	Page
CHUPP & SONS CONVERSIONS	53387 ADA DR	1/8 - 1/4 NW	B4	7

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
LUSHER AVENUE	SHWS
CIRCLE R	CERC-NFRAP
ELKHART SLUDGE FARM	CERC-NFRAP
HUDSON BUILDING SUPPLY	IN Spills, UST
FIRESTONE #10NC	IN Spills, UST

OVERVIEW MAP - 01262825.1r - Wightman Petrie Environmental



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Coal Gasification Sites
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Federal Wetlands

TARGET PROPERTY:	Environmental Test Systems Facility	CUSTOMER:	Wightman Petrie Environmental
ADDRESS:	23575 County Road 106	CONTACT:	Conley Phifer
CITY/STATE/ZIP:	Elkhart IN 46514	INQUIRY #:	01262825.1r
LAT/LONG:	41.7172 / 85.9205	DATE:	September 09, 2004 8:24 am

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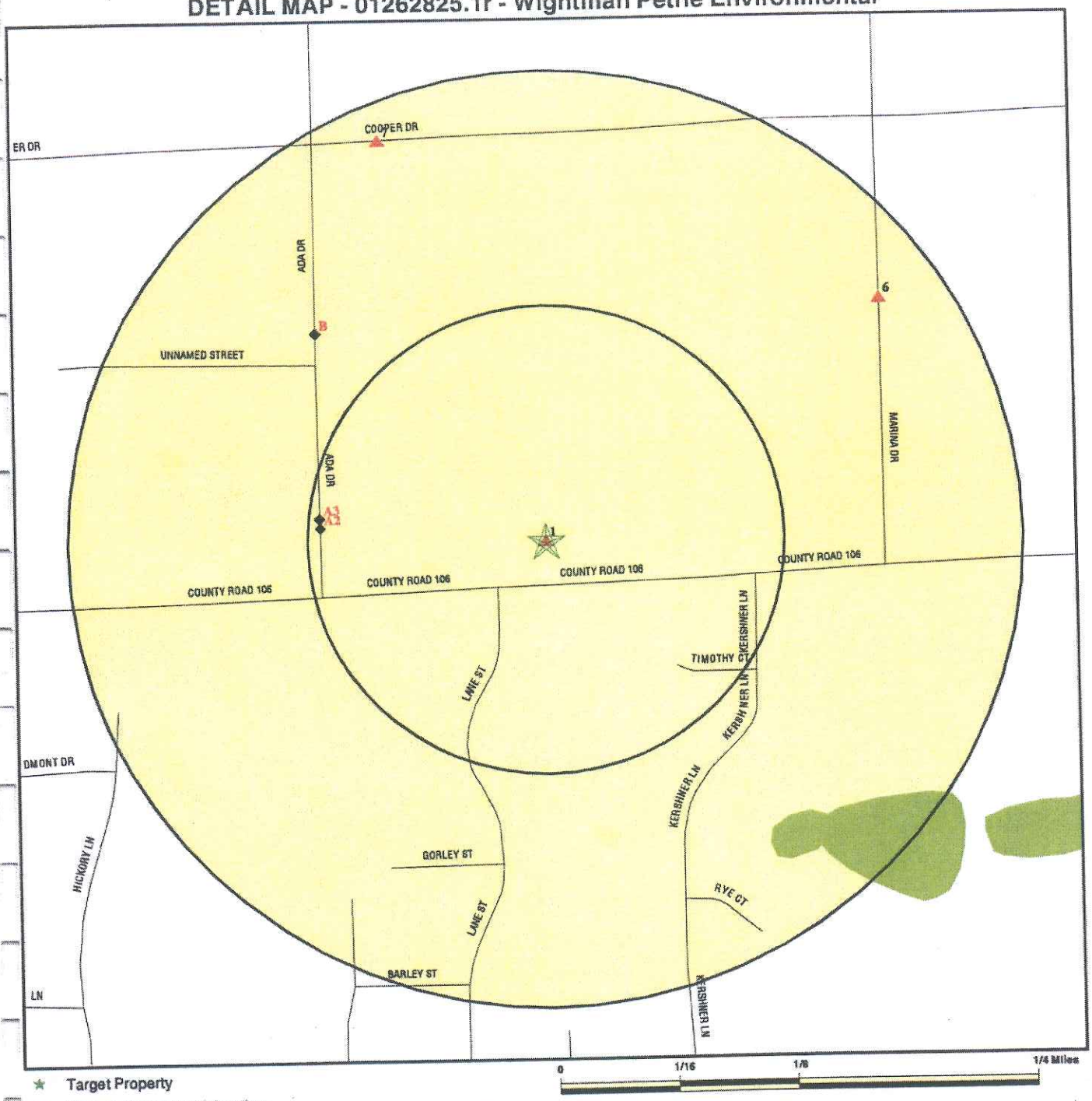
DETAIL MAP - 01262825.1r - Wightman Petrie Environmental



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Coal Gasification Sites
- Sensitive Receptors
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Federal Wetlands

TARGET PROPERTY:	Environmental Test Systems Facility	CUSTOMER:	Wightman Petrie Environmental
ADDRESS:	23575 County Road 106	CONTACT:	Conley Phifer
CITY/STATE/ZIP:	Elkhart IN 46514	INQUIRY #:	01262825.1r
LAT/LONG:	41.7172 / 85.9205	DATE:	September 09, 2004 8:24 am

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FEDERAL ASTM STANDARD								
NPL		1.000	0	0	0	0	NR	0
Proposed NPL		1.000	0	0	0	0	NR	0
CERCLIS		0.500	0	0	0	NR	NR	0
CERC-NFRAP		0.250	0	0	NR	NR	NR	0
CORRACTS		1.000	0	0	0	0	NR	0
RCRIS-TSD		0.500	0	0	0	NR	NR	0
RCRIS Lg. Quan. Gen.		0.250	0	1	NR	NR	NR	1
RCRIS Sm. Quan. Gen.	X	0.250	2	2	NR	NR	NR	4
ERNS		TP	NR	NR	NR	NR	NR	0
STATE ASTM STANDARD								
State Haz. Waste		1.000	0	0	0	0	NR	0
State Landfill		0.500	0	0	0	NR	NR	0
LUST		0.500	0	0	0	NR	NR	0
UST		0.250	0	1	NR	NR	NR	1
VCP		0.500	0	0	0	NR	NR	0
FEDERAL ASTM SUPPLEMENTAL								
CONSENT		1.000	0	0	0	0	NR	0
ROD		1.000	0	0	0	0	NR	0
Delisted NPL		1.000	0	0	0	0	NR	0
FINDS	X	TP	NR	NR	NR	NR	NR	0
HMIRS		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
MINES		0.250	0	0	NR	NR	NR	0
NPL Liens		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
DOD		1.000	0	0	0	0	NR	0
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
UMTRA		0.500	0	0	0	NR	NR	0
FUDS		1.000	0	0	0	0	NR	0
INDIAN RESERV		1.000	0	0	0	0	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
SSTS		TP	NR	NR	NR	NR	NR	0
FTTS		TP	NR	NR	NR	NR	NR	0
STATE OR LOCAL ASTM SUPPLEMENTAL								
IN Spills		TP	NR	NR	NR	NR	NR	0
BULK		TP	NR	NR	NR	NR	NR	0
EDR PROPRIETARY HISTORICAL DATABASES								
Coal Gas		1.000	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
BROWNFIELDS DATABASES								
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
Brownfields		0.500	0	0	0	NR	NR	0
AUL		0.500	0	0	0	NR	NR	0
VCP		0.500	0	0	0	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Coal Gas Site Search: No site was found in a search of Real Property Scan's ENVIROHAZ database.

1
Target Property
ENVIRONMENTAL TEST SYSTEMS INC
23575 CR 106
ELKHART, IN 46514

Actual: 768 ft.

RCRIS-SQG 1000261549
FINDS IND152094785

RCRIS:
Owner: DANAHER CORP
(574) 262-2060
EPA ID: IND152094785
Contact: TRISSA WHITESELL
(574) 262-2060
Classification: Conditionally Exempt Small Quantity Generator
TSDF Activities: Not reported
Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Aerometric Information Retrieval System/AIRS Facility Subsystem
National Emissions Inventory
National Emissions Trends
National Toxics Inventory
Resource Conservation and Recovery Act Information system

A2
West
< 1/8
626 ft.
VOYAGER DAKAT INC
53468 ADA DR
ELKHART, IN 46514

Site 1 of 2 in cluster A

Relative: Lower

Actual: 767 ft.

RCRIS-SQG 1000146126
FINDS IND982615403

RCRIS:
Owner: STEVE BENNETT
(574) 264-9504
EPA ID: IND982615403
Contact: Not reported
Classification: Conditionally Exempt Small Quantity Generator
TSDF Activities: Not reported
Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Indiana Facility Registry System
Resource Conservation and Recovery Act Information system

A3
West
< 1/8
630 ft.
KELLMARK CORP
53465 ADA DR
ELKHART, IN 46514

Site 2 of 2 in cluster A

Relative: Lower

Actual: 767 ft.

RCRIS-SQG 1007092968
IN0000632240

KELLMARK CORP (Continued) **1007092968**

RCRIS:
Owner: KELLMARK CORP
(574) 264-9695
EPA ID: IN0000632240
Contact: JAMES KELLY
(574) 264-9695
Classification: Conditionally Exempt Small Quantity Generator
TSDF Activities: Not reported
Violation Status: No violations found

B4 **CHUPP & SONS CONVERSIONS** **UST** **1000753624**
NW **53387 ADA DR** **N/A**
1/8-1/4 **ELKHART, IN 46514**
862 ft.

Site 1 of 2 in cluster B

Relative:
Lower

Actual:
767 ft.

UST:
Facility ID: 3318
Tank Number: 1
Tank Status: PERMANENTLY OUT OF SERVICE
Install Date: / /
Closure Date: 2/15/1998 0:00
Owner Id: 1388
Company Name: Chupp & Sons Conversions Inc
Mailing Address: 53387 Ada Dr
Elkhart, IN 46514

B5 **SHERRY DESIGNS** **RCRIS-SQG** **1000160679**
NW **53387 ADA DR** **FINDS** **IND982607947**
1/8-1/4 **ELKHART, IN 46514**
862 ft.

Site 2 of 2 in cluster B

Relative:
Lower

Actual:
767 ft.

RCRIS:
Owner: LANDS FRED
(312) 555-1212
EPA ID: IND982607947
Contact: KEN WAGNER
(219) 262-1511
Classification: Small Quantity Generator
TSDF Activities: Not reported
Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Aerometric Information Retrieval System/AIRS Facility Subsystem
Indiana Facility Registry System
National Emissions Inventory
National Toxics Inventory
Resource Conservation and Recovery Act Information system

6
NE
1/8-1/4
1147 ft.

KEYLINE SALES INC
53364 MARINA DR
ELKHART, IN 46515

RCRIS-SQG 1000109029
FINDS IND074301268

Relative: Equal

Actual: 768 ft.

RCRIS:
Owner: LOWENHAR JUDD
(312) 555-1212
EPA ID: IND074301268
Contact: JUDD LOWENHAR
(219) 262-4571
Classification: Small Quantity Generator
TSDF Activities: Not reported

Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Indiana Facility Registry System
Resource Conservation and Recovery Act Information system

7
NNW
1/8-1/4
1215 ft.

ASHLAND CHEMICAL INC
23740 COOPER DR.
ELKHART, IN 46514

FINDS 1000213150
RCRIS-LQG IND984866871

Relative: Higher

Actual: 770 ft.

RCRIS:
Owner: NAME NOT REPORTED
(312) 555-1212
EPA ID: IND984866871
Contact: Not reported
Classification: Large Quantity Generator
TSDF Activities: Not reported

BIENNIAL REPORTS:
Last Biennial Reporting Year: 2001

Waste	Quantity (Lbs)
D001	21250.00

Violation Status: Violations exist

Regulation Violated: Not reported
Area of Violation: GENERATOR-MANIFEST REQUIREMENTS
Date Violation Determined: 11/17/1995
Actual Date Achieved Compliance: 01/26/1996

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 12/08/1995
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: GENERATOR-RECORDKEEPING REQUIREMENTS
Date Violation Determined: 11/17/1995
Actual Date Achieved Compliance: 01/26/1996

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 12/08/1995
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: TSD-LAND BAN REQUIREMENTS
Date Violation Determined: 11/17/1995

ASHLAND CHEMICAL INC (Continued) **1000213150**

Actual Date Achieved Compliance: 01/26/1996

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 12/08/1995
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: TSD-OTHER REQUIREMENTS
Date Violation Determined: 11/17/1995
Actual Date Achieved Compliance: 01/26/1996

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 12/08/1995
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: TSD-PREPAREDNESS/PREVENTION REQUIREMENTS
Date Violation Determined: 11/17/1995
Actual Date Achieved Compliance: 01/26/1996

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 12/08/1995
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: GENERATOR-PRE-TRANSPORT REQUIREMENTS
Date Violation Determined: 11/17/1995
Actual Date Achieved Compliance: 01/26/1996

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 12/08/1995
Penalty Type: Not reported

There are 6 violation record(s) reported at this site:

Evaluation	Area of Violation	Date of Compliance
Compliance Schedule Evaluation	GENERATOR-MANIFEST REQUIREMENTS	19960126
	GENERATOR-RECORDKEEPING REQUIREMENTS	19960126
	TSD-LAND BAN REQUIREMENTS	19960126
	TSD-OTHER REQUIREMENTS	19960126
	TSD-PREPAREDNESS/PREVENTION REQUIREMENTS	19960126
	GENERATOR-PRE-TRANSPORT REQUIREMENTS	19960126
Compliance Evaluation Inspection	GENERATOR-MANIFEST REQUIREMENTS	19960126
	GENERATOR-RECORDKEEPING REQUIREMENTS	19960126
	TSD-LAND BAN REQUIREMENTS	19960126
	TSD-OTHER REQUIREMENTS	19960126
	TSD-PREPAREDNESS/PREVENTION REQUIREMENTS	19960126
	GENERATOR-PRE-TRANSPORT REQUIREMENTS	19960126

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Indiana Facility Registry System
National Emissions Inventory
Resource Conservation and Recovery Act Information system
Toxics Release Inventory

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
ELKHART	U000185035	HUDSON BUILDING SUPPLY	30244 CR 12		IN Spills, UST
ELKHART	S105678277	LUSHER AVENUE	CR18 AND 21ST STREET		SHWS
ELKHART	1003870725	CIRCLE R	CIRCLE R LANE	46514	CERC-NFRAP
ELKHART	1003870653	ELKHART SLUDGE FARM	COUNTY ROAD 3	46514	CERC-NFRAP
INDIANAPOLIS	1000515602	FIRESTONE #10NC	1300 E 86TH ST	46514	IN Spills, UST

EPA Waste Codes Addendum

Code	Description
D001	IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Elapsed ASTM days: Provides confirmation that this EDR report meets or exceeds the 90-day updating requirement of the ASTM standard.

FEDERAL ASTM STANDARD RECORDS

NPL: National Priority List
Source: EPA
Telephone: N/A
National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/27/04
Date Made Active at EDR: 05/21/04
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 05/04/04
Elapsed ASTM days: 17
Date of Last EDR Contact: 08/03/04

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 6
Telephone: 214-655-6659

EPA Region 8
Telephone: 303-312-6774

Proposed NPL: Proposed National Priority List Sites
Source: EPA
Telephone: N/A

Date of Government Version: 04/27/04
Date Made Active at EDR: 05/21/04
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 05/04/04
Elapsed ASTM days: 17
Date of Last EDR Contact: 08/03/04

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System
Source: EPA
Telephone: 703-413-0223
CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 05/17/04
Date Made Active at EDR: 08/10/04
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 06/23/04
Elapsed ASTM days: 48
Date of Last EDR Contact: 06/23/04

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned
Source: EPA
Telephone: 703-413-0223
As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

Date of Government Version: 05/17/04
Date Made Active at EDR: 08/10/04
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 06/23/04
Elapsed ASTM days: 48
Date of Last EDR Contact: 06/23/04

CORRACTS: Corrective Action Report
Source: EPA
Telephone: 800-424-9346
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 06/15/04
Date Made Active at EDR: 08/10/04
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 06/25/04
Elapsed ASTM days: 46
Date of Last EDR Contact: 06/07/04

RCRIS: Resource Conservation and Recovery Information System
Source: EPA
Telephone: 800-424-9346
Resource Conservation and Recovery Information System. RCRIS includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs): generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs): generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs): generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 06/15/04
Date Made Active at EDR: 07/20/04
Database Release Frequency: Varies

Date of Data Arrival at EDR: 06/23/04
Elapsed ASTM days: 27
Date of Last EDR Contact: 08/24/04

ERNS: Emergency Response Notification System
Source: National Response Center, United States Coast Guard
Telephone: 202-260-2342
Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/03
Date Made Active at EDR: 03/12/04
Database Release Frequency: Annually

Date of Data Arrival at EDR: 01/26/04
Elapsed ASTM days: 46
Date of Last EDR Contact: 07/26/04

FEDERAL ASTM SUPPLEMENTAL RECORDS

BRS: Biennial Reporting System
Source: EPA/NTIS
Telephone: 800-424-9346
The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/01/01
Database Release Frequency: Biennially

Date of Last EDR Contact: 06/22/04
Date of Next Scheduled EDR Contact: 09/13/04

CONSENT: Superfund (CERCLA) Consent Decrees
Source: EPA Regional Offices
Telephone: Varies
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: N/A
Database Release Frequency: Varies

Date of Last EDR Contact: N/A
Date of Next Scheduled EDR Contact: N/A

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ROD: Records Of Decision
Source: EPA
Telephone: 703-416-0223
Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 04/08/04
Database Release Frequency: Annually

Date of Last EDR Contact: 07/07/04
Date of Next Scheduled EDR Contact: 10/04/04

DELISTED NPL: National Priority List Deletions
Source: EPA
Telephone: N/A
The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/27/04
Database Release Frequency: Quarterly

Date of Last EDR Contact: 08/03/04
Date of Next Scheduled EDR Contact: 11/01/04

FINDS: Facility Index System/Facility Identification Initiative Program Summary Report
Source: EPA
Telephone: N/A
Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/08/04
Database Release Frequency: Quarterly

Date of Last EDR Contact: 07/06/04
Date of Next Scheduled EDR Contact: 10/04/04

HMIRS: Hazardous Materials Information Reporting System
Source: U.S. Department of Transportation
Telephone: 202-366-4555
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 02/17/04
Database Release Frequency: Annually

Date of Last EDR Contact: 04/20/04
Date of Next Scheduled EDR Contact: 07/19/04

MLTS: Material Licensing Tracking System
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/19/04
Database Release Frequency: Quarterly

Date of Last EDR Contact: 07/06/04
Date of Next Scheduled EDR Contact: 10/04/04

MINES: Mines Master Index File
Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959

Date of Government Version: 03/05/04
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 06/30/04
Date of Next Scheduled EDR Contact: 09/27/04

NPL LIENS: Federal Superfund Liens
Source: EPA
Telephone: 202-564-4267
Federal Superfund Liens. Under the authority granted the USEPA by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/91
Database Release Frequency: No Update Planned

Date of Last EDR Contact: 08/23/04
Date of Next Scheduled EDR Contact: 11/22/04

PADS: PCB Activity Database System
Source: EPA
Telephone: 202-564-3887
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 03/30/04
Database Release Frequency: Annually

Date of Last EDR Contact: 08/10/04
Date of Next Scheduled EDR Contact: 11/08/04

DOD: Department of Defense Sites
Source: USGS
Telephone: 703-692-8801
This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 10/01/03
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 08/12/04
Date of Next Scheduled EDR Contact: 11/08/04

STORMWATER: Storm Water General Permits
Source: Environmental Protection Agency
Telephone: 202 564-0746
A listing of all facilities with Storm Water General Permits.

Date of Government Version: N/A
Database Release Frequency: Quarterly

Date of Last EDR Contact: N/A
Date of Next Scheduled EDR Contact: N/A

INDIAN RESERV: Indian Reservations
Source: USGS
Telephone: 202-208-3710
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 10/01/03
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 08/12/04
Date of Next Scheduled EDR Contact: 11/08/04

US BROWNFIELDS: A Listing of Brownfields Sites
Source: Environmental Protection Agency
Telephone: 202-566-2777
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become BCRLF cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 04/14/04
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 06/14/04
Date of Next Scheduled EDR Contact: 09/13/04

RMP: Risk Management Plans
Source: Environmental Protection Agency
Telephone: 202-564-8600
When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: N/A
Database Release Frequency: N/A

Date of Last EDR Contact: N/A
Date of Next Scheduled EDR Contact: N/A

FUDS: Formerly Used Defense Sites
Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 10/01/03
Database Release Frequency: Varies

Date of Last EDR Contact: 07/06/04
Date of Next Scheduled EDR Contact: 10/04/04

UMTRA: Uranium Mill Tailings Sites
Source: Department of Energy
Telephone: 505-845-0011
Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized. In 1978, 24 inactive uranium mill tailings sites in Oregon, Idaho, Wyoming, Utah, Colorado, New Mexico, Texas, North Dakota, South Dakota, Pennsylvania, and on Navajo and Hopi tribal lands, were targeted for cleanup by the Department of Energy.

Date of Government Version: 04/22/04
Database Release Frequency: Varies

Date of Last EDR Contact: 06/21/04
Date of Next Scheduled EDR Contact: 09/20/04

RAATS: RCRA Administrative Action Tracking System
Source: EPA
Telephone: 202-564-4104
RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/95
Database Release Frequency: No Update Planned

Date of Last EDR Contact: 06/07/04
Date of Next Scheduled EDR Contact: 09/06/04

TRIS: Toxic Chemical Release Inventory System
Source: EPA
Telephone: 202-566-0250
Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/01
Database Release Frequency: Annually

Date of Last EDR Contact: 06/22/04
Date of Next Scheduled EDR Contact: 09/20/04

TSCA: Toxic Substances Control Act
Source: EPA
Telephone: 202-260-5521
Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/02
Database Release Frequency: Every 4 Years

Date of Last EDR Contact: 06/07/04
Date of Next Scheduled EDR Contact: 09/06/04

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
Source: EPA
Telephone: 202-564-2501

Date of Government Version: 04/13/04
Database Release Frequency: Quarterly

Date of Last EDR Contact: 06/21/04
Date of Next Scheduled EDR Contact: 09/20/04

SSTS: Section 7 Tracking Systems
Source: EPA
Telephone: 202-564-5008
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/01
Database Release Frequency: Annually

Date of Last EDR Contact: 07/20/04
Date of Next Scheduled EDR Contact: 10/18/04

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-564-2501
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/13/04
Database Release Frequency: Quarterly

Date of Last EDR Contact: 06/21/04
Date of Next Scheduled EDR Contact: 09/20/04

STATE OF INDIANA ASTM STANDARD RECORDS

SHWS: List of Hazardous Waste Response Sites Scored Using the Indiana Scoring Model
Source: Department of Environmental Management
Telephone: 317-308-3052
State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: 03/01/04
Date Made Active at EDR: 04/21/04
Database Release Frequency: Annually

Date of Data Arrival at EDR: 03/31/04
Elapsed ASTM days: 21
Date of Last EDR Contact: 07/02/04

SWF/LF: Permitted Solid Waste Facilities
Source: Department of Environmental Management
Telephone: 317-232-0066
Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 06/01/04
Date Made Active at EDR: 09/08/04
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 07/13/04
Elapsed ASTM days: 57
Date of Last EDR Contact: 07/13/04

LUST: Lust Leaking Underground Storage Tank List
Source: Department of Environmental Management
Telephone: 317-308-3008
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 06/02/04
Date Made Active at EDR: 08/06/04
Database Release Frequency: Annually

Date of Data Arrival at EDR: 06/30/04
Elapsed ASTM days: 37
Date of Last EDR Contact: 06/30/04

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Indiana Registered Underground Storage Tanks
Source: Department of Environmental Management
Telephone: 317-308-3008
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 06/02/04
Date Made Active at EDR: 07/29/04
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 06/30/04
Elapsed ASTM days: 29
Date of Last EDR Contact: 06/30/04

VCP: Voluntary Remediation Program Site List
Source: Department of Environmental Management
Telephone: 317-234-0966
A current list of Voluntary Remediation Program sites that are no longer confidential.

Date of Government Version: 03/31/04
Date Made Active at EDR: 06/02/04
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 05/11/04
Elapsed ASTM days: 22
Date of Last EDR Contact: 08/09/04

STATE OF INDIANA ASTM SUPPLEMENTAL RECORDS

SPILLS: Spills Incidents
Source: Department of Environmental Management
Telephone: 317-308-3008

Date of Government Version: 06/02/04
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 06/30/04
Date of Next Scheduled EDR Contact: 09/27/04

BULK: Registered Bulk Fertilizer and Pesticide Storage Facilities
Source: Office of Indiana State Chemist
Telephone: 765-494-0579
A listing of registered dry or liquid bulk fertilizer and pesticide storage facilities.

Date of Government Version: 06/14/04
Database Release Frequency: Varies

Date of Last EDR Contact: 05/12/04
Date of Next Scheduled EDR Contact: 09/13/04

EDR PROPRIETARY HISTORICAL DATABASES

Former Manufactured Gas (Coal Gas) Sites: The existence and location of Coal Gas sites is provided exclusively to EDR by Real Property Scan, Inc. ©Copyright 1993 Real Property Scan, Inc. For a technical description of the types of hazards which may be found at such sites, contact your EDR customer service representative.

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BROWNFIELDS DATABASES

Brownfields: Brownfields Site List
Source: Department of Environmental Management
Telephone: 317-233-2570
A brownfield site is an industrial or commercial property that is abandoned, inactive, or underutilized, on which expansion or redeveloopment is complicated due to the actual or perceived environmental contamination.

Date of Government Version: 06/28/04
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 06/28/04
Date of Next Scheduled EDR Contact: 09/27/04

VCP: Voluntary Remediation Program Site List
Source: Department of Environmental Management
Telephone: 317-234-0966
A current list of Voluntary Remediation Program sites that are no longer confidential.

Date of Government Version: 03/31/04
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 08/09/04
Date of Next Scheduled EDR Contact: 11/08/04

AUL: Sites with Restrictions
Source: Department of Environmental Management
Telephone: 317-232-8603
Activity and use limitations include both engineering controls and institutional controls. A listing of Comfort/Site Status Letter sites that have been issued with controls.

Date of Government Version: 06/28/04
Database Release Frequency: Varies

Date of Last EDR Contact: 06/28/04
Date of Next Scheduled EDR Contact: 09/27/04

US BROWNFIELDS: A Listing of Brownfields Sites
Source: Environmental Protection Agency
Telephone: 202-566-2777
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become BCRLF cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: N/A
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: N/A
Date of Next Scheduled EDR Contact: N/A

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: PennWell Corporation
Telephone: (800) 823-6277
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: child Care Listing
Source: Family & Social Services Administration
Telephone: 317-232-4740

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

STREET AND ADDRESS INFORMATION

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APPENDIX D
PHASE I ENVIRONMENTAL SITE ASSESSMENT
(Blasland, Bouck & Lee for Danaher Corporation – August 1999)

TECHNICAL REPORT

Phase I Environmental Site Assessment

Environmental Test Systems, Inc.
Elkhart, Indiana

Danaher Corporation
Washington, D.C.

August 1999

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

6723 Towpath Road, P.O. Box 66
Syracuse, New York, 13214-0066
(315) 446-9120

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Executive Summary

The Environmental Test Systems, Inc. (ETS) facility is located at 23575 County Road 106 within Northland Industrial Park, which is northeast of the City of Elkhart, in Osolo Township, Elkhart County, Indiana. The ETS facility manufactures paper test strips for various purposes, and also houses laboratories for product research and development and offices for administration and marketing. ETS was purchased by Hach Company in April 1998, however, operations at the facility have generally remained unchanged under the new ownership and ETS continues to operate as a wholly-owned subsidiary of Hach Company.

Located along the western side of the property and immediately north of County Road 106 are three attached buildings (Buildings #1, #2, and #3). Building #1 is the original building constructed in 1985, and Buildings #2 and #3 were added in 1989 and 1994, respectively. Together the metal buildings with a concrete slab on grade foundations total approximately 40,000 square feet on an approximately 4.4-acre property. Paved parking areas are located north and east of the three buildings and comprise most of the remaining property. The northernmost portion of the property is an open lawn area. A drainage swale conveys surface-water runoff eastward along the northern property boundary and then southward along a portion of the eastern property boundary. The ETS property is bounded to the north, east, and west by other manufacturing facilities, and to the south by County Road 106. Residential properties are located directly south of County Road 106.

The ETS property and surrounding area is relatively flat, sloping gently southwest toward the St. Joseph River, which is approximately 1.3 miles south of the site. Surface elevations on the property range from approximately 770 to 775 feet above mean sea level based on published sources. Overburden in this area consists primarily of sand and gravel, and is underlain by bedrock at a depth of 50 to 150 feet below grade. The water table is located approximately 5 to 10 feet below grade, and based on the topography, shallow groundwater flow is expected to be southwest toward the St. Joseph River. A two-inch well was observed on the ETS property immediately east of Building #1, and is used for the building's fire sprinkler system.

The paper test strips manufactured at the facility are chemically treated for testing chemical presence and/or quantities for several applications, with the majority of products used by the pool and spa industry (approximately 60 percent). Various chemicals including arsenic, chromium, silver, and organic solvents (i.e., primarily reagent alcohol, which contains 90 percent ethyl alcohol, five percent isopropyl alcohol, and five percent methanol; and small quantities of acetone, ethyl acetate, isopropyl alcohol, methyl ethyl ketone, and toluene) are associated with manufacturing these chemically treated paper strips. Manufacturing wastes generated at the facility are collected and stored on the first floor of Building #2 in an open warehouse area. At the time of the site visit, BBL observed the following sealed 55-gallon steel drums in this warehouse area: three drums labeled as "hazardous waste," two drums labeled as "non-regulated waste," four drums labeled as "flammable," and various cardboard boxes containing various small containers of chemicals (lab packs). Since this area appears to be a high traffic area and no secondary containment for the drums labeled as "hazardous waste" was observed, a separate storage area or building should be considered. Based on the results of the VISTA database search, the ETS facility was listed in only one of the databases searched, as a small quantity hazardous waste generator.

The facility is currently connected to a municipal water supply and sewer system. Prior to 1992, sanitary and process wastewaters discharged to two septic systems, which were located south and east of Buildings #1 and

#2. Liquid from each of the septic tanks was sampled in 1992 and the results indicate that the tank on the east side of Building #2 contained toluene at a concentration of 54 parts per billion (ppb), and the tank located on the south side of Building #1 contained 1,1- dichloroethene and 1,1,1-trichloroethane at concentrations of 1,940 ppb and 2,770 ppb, respectively. ETS has indicated that these tanks were emptied, crushed, and abandoned in place in 1992.

There are two dryer units at the facility where chemical reagents are applied to paper that is then run through the dryer unit. The dryer units generate volatile organic compound (VOC) emissions that are released through an air stack directly to the outside of the building. These emissions are currently regulated by the Indiana Department of Environmental Management (IDEM). According to ETS personnel, the emissions generated by each of the dryer units at the facility are well below the IDEM permitted limits.

No aboveground storage tanks (ASTs) or underground storage tanks (USTs) were observed by BBL during the site visit. According to ETS personnel, an underground concrete containment tank was removed from the facility in 1997. The tank, which was located along the west side of Building #3, was to contain any potential liquid spills generated by Dryer #2. A catch basin located beneath Dryer #2 was designed to convey the liquid to the tank. According to ETS personnel, the catch basin has been sealed and the tank had no outlet and was not used prior to removal.

Recommendations

Based on the results of the Phase I Environmental Site Assessment (ESA), BBL recommends the following Phase II ESA sample collection and analysis program for the ETS property.

Areas of Interest	Estimated Number of Sample Locations	Media of Interest/ Type of Sample	Recommended Analyses	Rationale
Former Septic System Tanks (crushed and left in place)	Install up to two temporary wells to five feet below the water table (approximately 10' below ground surface [bgs]) in the immediate vicinity of the two septic system tanks.	Up to two soil samples (one soil sample from a depth near the bottom of each tank); up to two groundwater samples (one groundwater sample from each temporary well location), if encountered.	Target Compound List (TCL) VOCs, TCL semi-volatile organic compounds (SVOCs), Target Analyte List (TAL) inorganics.	Assess possible subsurface effect of the former septic tanks.
Former Septic System Leach Fields (left in place)	Install up to four temporary wells to five feet below the water table (approximately 10' bgs within the two leach fields).	Up to four soil samples (one unsaturated soil sample from a depth at or below the depth of the leach field pipes); up to four groundwater samples (if encountered) from the leach fields.	TCL VOCs, TCL SVOCs, TAL inorganics.	Assess possible subsurface effect of the former leach fields.

Figures

1 Property Location Map
2 Property Map
3 Buildings #1 and #2 Floor Plan - First Floor
4 Buildings #1 and #2 Floor Plan - Second Floor

Appendices

A VISTA Information Solutions, Inc. - National Radius Survey
B Selected Site Photographs
C Quarterly Air Monitoring Reports for Dryer Emissions
D Hazardous Waste Manifests
E November 10, 1997 Letter from the City of Elkhart Sewer Department to ETS
F ETS Guidance List for Disposal of Chemicals
G Chemicals Used in Reagent Test Strips
H IDEM Correspondence Regarding Removal of Underground Concrete Containment Tank
I EDR Database Search Report
J Results of Environmental Study Performed Following Fabwel Plastics Chemical Fire
K Analytical Results of Septic Tank Samples
L Correspondence Regarding Air Emissions Violations

1. Introduction

1.1 Purpose

The purpose of this Phase I Environmental Site Assessment (Phase I ESA) is to identify readily apparent existing or potential conditions at the Environmental Test Systems, Inc. (ETS) facility located in Elkhart, Indiana, that may pose a potential environmental liability or restriction to land use. Properties within an approximate one-mile radius of the site were also assessed through a database review to identify potential off-site environmental concerns.

1.2 Tasks

The following tasks were performed as part of the Phase I ESA:

- A records review, consisting primarily of a review of the facility files, as provided by ETS personnel; collection and review of readily available aerial photographs of the facility; and acquisition and review of an ASTM-type radius search profile from VISTA Environmental, Inc. (VISTA). The VISTA report is provided as Appendix A. Blasland, Bouck & Lee, Inc. (BBL) also requested information under the Freedom of Information Act (FOIA) from the United States Environmental Protection Agency (USEPA) and the Indiana Department of Environmental Management (IDEM) pertaining to environmental concerns for the ETS facility.

- A site reconnaissance, conducted by two BBL staff members on April 14, 1999. The reconnaissance primarily focused on current and past operations at the facility with an emphasis on the raw chemical and waste handling practices. A reconnaissance of adjacent properties was also completed to provide a preliminary evaluation of the potential impact the site may have on adjacent properties, or the potential impact the adjacent properties may have on the site. Information pertaining to the site's geology and hydrogeology was also reviewed.

- Interviews with persons possessing knowledge of current and past operations at the facility were conducted by BBL personnel. Mr. James Demarest, ETS Group Vice President, was the key ETS employee interviewed. Additional employees were also interviewed to clarify specific information such as material and waste handling practices. The objective of the interviews was to confirm the information gathered during the site reconnaissance and to further clarify current and past operating procedures, and material and waste handling practices.

- Report preparation including a summary of recommendations based on the Phase I ESA findings.

In addition, at the request of Danaher Corporation (Danaher) and with permission of the property owner (Ludwig Investments, Inc.), BBL personnel also conducted a preliminary site walkover of the adjacent properties to the east (53471 Marina Drive and 23537 County Road 106). According to Mr. James Demarest, ETS is in the process of acquiring these properties to facilitate expansion of their operations.

1.3 Report Organization

This Phase I ESA Report is presented in eight sections. Section 1 presents the scope of the Phase I ESA activities, organization of the report, and the limitations of the ESA. Section 2 presents an overview of the ETS property and buildings. Section 3 presents a site background and operating history of the ETS facility. Section 4 presents a description of the environmental setting for the ETS property, including a brief description of the regional geology. Section 5 presents the findings of the site walkover performed at the facility, which consists of a detailed description of the facility and current operations. Section 6 presents a summary of the environmental/regulatory agency inquiries performed for the facility. Section 7 presents the conclusions of the Phase I ESA, and recommendations for further assessment activities. Section 8 presents a list of references that were used during the Phase I ESA.

1.4 Limitations of the ESA

The conclusions reached are based on the limits of the assessment described in this report. BBL can offer no assurances and assumes no responsibility for site conditions or activities that were outside the scope of the inquiry as documented in this report.

It is understood by Danaher that BBL has relied on the accuracy of documents, oral information, and other material and information provided by sources documented in this report, including ETS. There can be no assurance, and BBL offers no assurance, that site conditions do not exist, or will not exist in the future, that were undetected and that could lead to liability in connection with the site. Similarly, past and present activities on the site indicating the potential for the existence of environmental concerns may not have been discovered by BBL's inquiries. Such activities may include those that would indicate the potential for regulated hazardous substances at the site. BBL has reviewed the information obtained in its limited assessment, in keeping with existing applicable environmental consulting standards and enforcement practices, but cannot predict what actions any given agency may take presently or what standards and practices may apply to the site in the future.

In performing its assessment, BBL has used reasonable care and has performed its services in keeping with applicable environmental consulting standards and appropriate standard agency procedures.

This report and other instruments of service are prepared for, and made available for the sole use of Danaher, and the contents thereof may not be used or relied upon by any other person without the express written consent and authorization of BBL.

2. Site Overview

The ETS facility is located at 23575 County Road 106 in the township of Osolo in Elkhart County, Indiana (see Figure 1). The general layout and activities of the ETS facility are discussed below. Additionally, selected photographs of the facility are provided in Appendix B and include:

Photo 1 - ETS property;
Photo 2 - West side of ETS building;
Photo 3 - Storage area, building #3;
Photo 4 - Finished product storage, building #2;
Photo 5 - Labeling and packaging area, building #3;
Photo 6 - Hazardous waste storage, building #2;
Photo 7 - City of Elkhart storage, building #3;
Photo 8 - Northern portion of ETS property;
Photo 9 - Adjoining property to west, voyager; and
Photo 10 - Adjoining property to east, native hardwoods.

2.1 Site Layout

The ETS facility is located on approximately 4.4 acres northeast of the City of Elkhart, Indiana. The property is comprised of three attached buildings (Buildings #1, #2, and #3), Figure 2. Building #1 is the original building constructed in 1985. Buildings #2 and #3 were added in 1989 and 1994, respectively. The combined buildings total approximately 40,000 square feet. The metal buildings with a concrete slab on grade foundation are located along the western side of the property and adjacent to County Road 106.

The facility is connected to a municipal water supply and uses an on-site 2-inch well located east of Building #1 for the water source for the fire protection sprinkler system. Prior to 1992, the facility was connected to a septic leaching system and process wastewaters discharged to two septic systems. These septic systems were located south and east of Buildings #1 and #2. Since 1992, sanitary and process wastewaters have been discharging to the City of Elkhart publicly-owned treatment works (POTW).

Two dumpsters were observed at the eastern side of the facility: one for general trash disposal and one recyclable paper materials. Manufacturing wastes generated at the facility are collected and stored on the first floor of Building #2 in an open warehouse area. Waste streams generated at the facility are described in Section 5.1.2.

Paved parking areas are located to the north and east of the three buildings and comprise most of the remaining property. The northernmost portion of the property is an open lawn area. A drainage swale conveys surface-water runoff eastward along the northern property boundary and then southward along a portion of the eastern property boundary.

The ETS facility is located within an area known as Northland Industrial Park. The ETS property is bounded to the north, east, and west by other manufacturing facilities. The property is bounded to the south by County Road 106. Residential properties are located directly south of County Road 106.

2.2 Site Activities

The primary activity conducted at the ETS facility is manufacturing of paper test strips. These test strips are chemically treated paper strips used for testing chemical presence and/or quantities for several applications. The test strips produced by the ETS facility are primarily used in the pool and spa industry, however, ETS produces a

variety of different test strips for several applications. In addition to manufacturing, the ETS facility houses laboratories for product research and development, and offices for administration and marketing.

3. Site Background/Operating History

3.1 General

The Elkhart County Assessor provided BBL with the following historical record of ownership for the current ETS property:

Owner	Date of Ownership
Environmental Test Systems, Inc.	1991 - 1999
G & S Properties	1986 - 1991
Ludwig Allan J. & David J. Miller	1986 - 1986
Delcorp, Inc.	1985 - 1986
Ludwig Allan J. & David J. Miller	1985 - 1985
Bennet, Steve R.	1983 - 1985
Ludwig, Allan J. & David J. Miller	1983
Dawn Realty	1983
Century Motor Coach	1983
Dygert, David L. & Phyllis B.	1973 - 1983
Baker, Ernest R. & Minola A.	1962 - 1973

ETS was formerly a division of Miles Laboratories, Inc. In 1985, Mr. Harry Stephenson purchased the division from Miles and relocated operations to the current County Road 106 property. According to ETS, Mr. Stephenson is currently retained as a consultant by ETS. The original ETS facility was constructed in 1985 on this property and consisted of one building (currently known as Building #1). Since originally constructed in 1985, Building #2 and Building #3 have been added to the original structure. ETS was purchased by Hach Company in April 1998, however, operations at the facility have generally remained unchanged under the new ownership (ETS, 1999). ETS continues to operate as a wholly-owned subsidiary of Hach Company.

Currently site operations include raw materials storage, research and development, manufacturing, packaging, finished product storage, quality assurance testing, administration, and marketing.

ETS manufactures over 200 products that are distributed worldwide. The majority of their products (approximately 60 percent) are sold to the pool and spa industry under the brand name AquaCheck™. These products consist of test strips used for testing chemical levels in pool and spa water. Approximately 25 percent of their products are used to test chloride levels in mortar. This product is sold under the name QuanTab™ and is sold mostly in Japan. The remainder of their products include test strips for testing chemical levels in soil, industrial water, and automotive fluids (ETS, 1999).

3.2 Aerial Photograph Interpretation

Aerial photographs of the ETS facility and surrounding area were obtained by BBL from the United States Department of Agriculture (USDA) Soil Conservation Service (SCS) and the Elkhart County Planning Department for the years 1938, 1957, 1965, 1987, and 1993. Aerial photographs were obtained by BBL from Environmental Risk Information and Imaging Services (ERIIS) for the years 1952, 1979, 1981, and 1992 (ERIIS, 1999). Presented below are descriptions of the ETS property and surrounding properties based on interpretations of the aerial photographs reviewed by BBL.

1938 (1" = 660')

- The ETS property appears to be undeveloped and used as agricultural land.
- Properties surrounding the ETS property to the north, south, east, and west are sparsely developed and appear to be used for agricultural and residential purposes. County Road 106 is present south of the ETS property.

March 29, 1952 (1" = 573')

- The ETS property remains undeveloped and used for agricultural land.
- The surrounding areas to the north, south, east, and west of the property continue to be sparsely developed with apparent residential/agricultural buildings. Also, approximately 400 feet south of the property and south of County Road 106 is a surface-water body. This surface-water body is approximately 600 feet wide in an east-west direction and 300 feet wide in a north-south direction.

1957 (1"= 660')

- The ETS property and surrounding properties to the north, east, and west continue to be sparsely developed and used for agricultural and residential purposes.
- Areas south of the ETS property and County Road 106 are newly developed as residential properties.

1965 (1" = 660')

- The ETS property and surrounding properties to the north, east, and west continue to be sparsely developed and used for agricultural and residential purposes.
- Residential properties are located south of the ETS property and County Road 106.

November 18, 1979 (1" = 660')

- The ETS property appears to be undeveloped; however, the surrounding areas to the north, east, and west have been developed as apparent commercial/industrial facilities, some with large structures.
- A large area of residential housing is shown south of the ETS property. It appears that the 600- by 300-foot surface-water body has been filled or drained to accommodate the residential housing complex.

May 2, 1981 (1" = 660')

- No obvious changes from the 1979 aerial photograph.

1987 (1" = 660')

- The ETS property has been developed with the construction of the original ETS facility (Building #1).
- Surrounding properties to the east, north, and west of the subject site are developed as industrial facilities. These properties were apparently developed as part of the Northland Industrial Park.
- A large area of residential housing is located south of the ETS facility and County Road 106.

April 5, 1992 (1" = 660')

- The aerial photograph shows the original ETS facility (Building #1).
- The surrounding areas to the north, east, and west remain developed as industrial facilities.
- A large area of residential housing remains south of the ETS property and County Road 106.

1993

- The ETS facility has been expanded to include the original structure (Building #1), and an adjoining addition (Building #2).
- Surrounding properties to the east, north, and west of the ETS property remain industrial facilities.
- A large area of residential housing remains south of the ETS facility and County Road 106.

4. Environmental Setting

Information presented in the USDA SCS document entitled "Soil Survey of Elkhart County, Indiana" (SCS, 1974) indicates that the ETS property is located in the Kamakee Outwash and Lacustrine Plain physiographic province. The SCS reports that Elkhart County has an average annual daily maximum temperature of 60°F, an average daily minimum temperature of 39°F, and receives an average annual rainfall of 34.4 inches. Overburden in this area is classified as the Atherton Formation. This formation consists of an undifferentiated glacially-derived outwash, composed primarily of sand and gravel (Indiana Department of Natural Resources [IDNR], 1989). Soils in this area consist of the Plainfield Series and the Brems Series. Both of these soil types are deep, coarse-textured soils that are formed in outwash plains and knolls. These soils are moderately to excessively well drained and are nearly level to moderately sloping. Groundwater is located approximately 5 to 10 feet below grade according to the SCS soil survey report.

Bedrock underlying the ETS property is composed of the Mississippian Ellsworth Shale Formation. This bedrock is located at depths ranging from 50 to 150 feet below grade and is approximately 300 feet thick (IDNR; 1970, 1987).

Based on a review of the United States Geological Survey (USGS) topographic map for the area (USGS, 1961), the ETS property and surrounding area is relatively flat, sloping gently southwest toward the St. Joseph River, which is approximately 1.3 miles south of the site. Surface elevations on the property range from approximately 770 to 775 feet above mean sea level. Based on the topography, shallow groundwater is expected to flow southwest toward the St. Joseph River.

A two-inch well was observed on the ETS property immediately east of Building #1, and is apparently used for the building's fire sprinkler system. An adjacent property east of the ETS site (currently used by Native Hardwoods) has a 2-inch well on site that is used for drinking water. Two wells were also observed on the property at 53471 Marina Drive, that is located east of the Native Hardwoods site. These wells consist of one 2-inch well used for drinking water and one 4-inch well used for the lawn irrigation system. No details about the construction or analytical test data were available for these wells.

BBL contacted the Elkhart County Water Department about the drinking water source for the municipal water supply. The agency indicated that the municipal water was drawn from the St. Joseph River and was conditioned before delivery to residents and certain industries (including the ETS facility) in the county (Elkhart County Water Department, 1999b).

5. Site Walkover

5.1 Site Observations

A site walkover was conducted by two BBL staff members on April 14, 1999, to observe current activities and conditions at the site. The site walkover included a tour of the facility with Mr. James Demarest, Group Vice President of ETS, and a walkover of the surrounding exterior of the ETS property.

Exterior areas consisted of two concrete loading docks, parking areas, and open lawn areas. Key areas observed inside the facility during the tour are shown on Figures 3 and 4, and include:

- Office areas;
- Storage areas;
- Laboratories;
- Chemical mixing and process rooms; and
- Product assembly and packaging areas.

In general, the facility consists of three attached metal buildings constructed on concrete slab foundations. Portions of Buildings #1 and #2 consist of a first and second floor. Building #3 has a first floor only. The buildings are heated with natural gas-fueled furnaces and are cooled with roof-mounted heating, ventilation, air conditioning (HVAC) units.

The southern portion of the site is composed of a lawn area and an access driveway to County Road 106. County Road 106 borders the site to the south, and further south is an area developed with residential housing. The eastern portion of the site consists of parking areas and a lawn area. Two dumpsters were observed on the east side of the parking lot. One dumpster is used for general trash and one is used for recyclable paper materials. Both of the containers are serviced by Himco, Inc. A two-inch well was also observed immediately east of Building #1, which is used for the building's fire sprinkler system, and a manhole was also observed on the east side of the building. The manhole was installed to allow the City of Elkhart to sample effluent wastewater from ETS prior to entering the publicly-owned sanitary sewer system. Further east is the property currently used by Native Hardwoods and additional industrial properties.

The northern portion of the site consists of a parking area and a lawn area. A drainage swale is located near the northern boundary of the site and more industrial properties are further to the north. At the time of the site visit, no water was observed in the portion of the swale that is located along the northern property boundary. Shallow water was noted near the northeast corner of the site, where this drainage swale joins a north-south swale. No sheens were observed. The western portion of the site consists of a lawn area. Along the western property boundary, BBL also observed two power transmission poles with three transformers on each pole that were marked "non-PCB." An adjoining property to the west is occupied by Voyager, Inc., and additional industrial properties are located further to the west.

The interior conditions of key areas observed in each building are described below.

5.1.1 Building #1

The following key areas comprise Building #1:

- First Floor

- Office area and conference room;

- Former mix room;
- Dryer #1;
- Foiler room (used for packaging test strips); and
- Raw material storage area.

- Second Floor

- Office area;
- Quality assurance (QA) sample storage area; and
- Mechanical room.

Presented below is a description of each of the key areas observed in Building #1.

Office Areas and Conference Room

The office areas and conference room in Building #1 are located in the westernmost portion of the building on both the first and second floors. The office areas consist of typical cubicle office space with some permanent offices along the exterior walls of the building. Both the office areas and conference room were carpeted, neat, and clean at the time of the site visit.

Former Mix Room

The former mix room is located in Building #1 on the first floor adjacent to the conference room. This room was formerly used to prepare chemical reagents used to produce test strips according to Mr. Demarest. Currently this room is used for miscellaneous storage. The former mix room was neat and clean at the time of the site visit. The mix room that is currently used at the facility is located in Building #3. No sumps or drains were observed in this room at the time of the site visit.

Dryer #1

Dryer #1 is located on the first floor of Building #1 adjacent to the former mix room. Dryer #1 is the smaller of two dryer units at the facility used to dry chemical reagents after they have been applied to paper. Paper is dipped into a pan of chemical reagent and then run through the dryer unit. A small closet is located adjacent to Dryer #1. Chemical reagent, which varies based on production needs, is stored in a plastic container in the closet and is manually pumped to the pan of the dryer when necessary. Rolls of paper are run through the dryer in batches. Any chemical reagent remaining in the pan following completion of a batch is either pumped back into the container in the closet or containerized and stored for off-site disposal according to Mr. Demarest. Dryer #1 is manned by an ETS employee when in operation. During the site visit, the room containing Dryer #1 appeared neat and well kept, and no noticeable odors were noted in the vicinity of Dryer #1. BBL personnel did not observe any drains or sumps in the area.

The dryer unit generates emissions containing volatile organic compounds (VOCs) that are released through an air stack directly to the outside of the building. These emissions are currently regulated by IDEM. ETS has provided BBL with a copy of the last four air monitoring quarterly reports that have been submitted to IDEM by ETS for the dryer emissions (a copy is provided as Appendix C). According to ETS personnel, the emissions generated by each of the dryer units at the facility are well below the IDEM permitted limits (ETS, 1999).

Foiler Room

The foiler room is located on the first floor of Building #1 adjacent to Dryer #1. The foiler room contains equipment used to package test strips individually in foil. Scrap foil generated during the process is collected and disposed of as a non-hazardous material. This area was neat, clean, and well kept during the site visit.

Raw Material Storage Area

A portion of Building #1 is an open, one-story warehouse area used to store raw materials used in the production process (e.g., rolls of paper, polystyrene, empty plastic bottles). These materials are stored on racks along the exterior walls of the warehouse area (Appendix B, Photo 3). Forklifts are used to retrieve and transport the raw materials, making this a high traffic area. At the time of the site visit, this area was clean and well organized.

QA Sample Storage Area

This area is located on the second floor of Building #1 and is used to store samples of finished product for future QA tests and potential product liability issues. The samples are stored in cardboard boxes and tracked by lot number. This area was clean and well organized during the site visit.

Mechanical Room

This area is located on the second floor of Building #1, adjacent to the QA sample storage area. The mechanical room contains equipment used to condition air that is used in Dryer #1. Outside air is allowed into the mechanical room through an open vent in the exterior wall of the building. The air is then sent through equipment to remove moisture, and then to Dryer #1 located in the room directly beneath the mechanical room. During the site visit, the mechanical room was clean, and no noticeable odors were noted.

5.1.2 Building #2

The following key areas comprise Building #2:

- First Floor

- Light box room;
- Quantab room;
- Hazardous waste storage area;
- Raw material and finished product storage area;
- Two wet labs; and
- Instrumentation lab.

- Second Floor

- Miscellaneous storage areas;
- Walk-in cooler used for chemical storage; and
- Office area.

Presented below is a description of each of the key areas observed in Building #2.

Light Box Room

The light box room is located on the first floor of Building #2 and houses light boxes that simulate different types of light (e.g., sunlight, white fluorescent light). The light boxes are used to test the precision of the color-change test strips under certain light conditions. Samples of finished product test strips are stored in heated containers also located in the light box room. The heated containers are used to test the stability of the test strips under increased temperatures. The light box room was neat and clean at the time of the site visit.

Quantab™ Room

The Quantab™ room is located on the first floor of Building #2, adjacent to the light room. Quantab™ is a specific type of test product produced at ETS that involves the lamination of chemically treated paper test strips. The Quantab™ room houses the equipment used to assemble and laminate the Quantab™ test strips. Wastes generated in the Quantab™ room include scrap laminate and chemically treated paper. The scrap paper is stored in a lined waste basket labeled "hazardous waste" due to the use of cyanide and arsenic in the Quantab™ treating process (ETS, 1999). The Quantab™ room was neat and clean at the time of the site visit.

Hazardous Waste Storage Area

According to ETS personnel, waste that is generated at the facility is collected and stored on the first floor of Building #2, in an open warehouse area. During the site visit, BBL observed the presence of closed 55-gallon steel drums in this warehouse area (Appendix B, Photo 6). Three drums in this area were labeled as "hazardous waste" and two drums were labeled as "non-regulated waste." Each of these drums was placed on wooden skids above the concrete floor. Four additional drums were labeled as "flammable" and were placed in spill containment vessels (plastic tubs). Also observed in this area were open drums and cardboard boxes containing various small containers of chemicals. ETS indicated that these chemicals were identified during general housekeeping practices as out-of-date (expired) chemicals and were being accumulated to complete a lab pack that would be shipped off-site for disposal (ETS, 1999). At the time of the site visit, the hazardous waste storage area was observed to be a very high traffic area. This area appeared to be neat and clean during the site visit. No sumps, floor drains, or signs of staining or leaks were observed.

According to ETS personnel, there are four general waste streams generated by the manufacturing process at the ETS facility. These waste streams include:

- Hazardous solids consisting primarily of scraps of paper treated with reagents such as chromium, silver, and arsenic;
- Hazardous liquids consisting of leftover chemical reagents such as chromium, silver, and arsenic;
- Flammable liquids consisting of leftover chemical reagents such as organic solvents (i.e., primarily reagent alcohol, which contains 90 percent ethyl alcohol, five percent isopropyl alcohol, and five percent methanol; and small quantities of acetone, ethyl acetate, isopropyl alcohol, methyl ethyl ketone, and toluene); and
- Non-regulated waste consisting of liquid wastes that contain concentrations of chemicals that are above the City of Elkhart's sewer discharge limits but are not regulated by IDEM or the USEPA.

In addition to the above waste streams, lab packs consisting of various out-of-date chemicals in small quantities are occasionally shipped off-site for disposal (ETS, 1999). ETS has provided BBL with copies of the signed hazardous waste manifests documenting the most recent (February 2, 1999) off-site shipments of hazardous waste from the ETS facility. Copies of these manifests are provided as Appendix D.

ETS personnel indicated that some liquid wastes generated at the facility are disposed of through the sink drains that are connected to the City of Elkhart sewers. According to ETS, these wastes are within the City of Elkhart sewage disposal limits. ETS has provided BBL with a copy of a letter from the City of Elkhart Sewer Use Pretreatment/Enforcement Director (Appendix E), which states that the ETS facility was not required to obtain an industrial wastewater discharge permit. ETS has also provided BBL with a guidance list that is used by ETS employees to determine the appropriate disposal of chemical wastes. A copy of this guidance list is also provided in Appendix F.

Raw Material and Finished Product Storage Area

A small portion of the open warehouse area in Building #2 is used to store raw materials (e.g., large rolls of paper and empty plastic bottles) and finished products (Appendix B, Photo 4). These materials were stored on racks and transported via forklifts, making this a high traffic area. At the time of the site visit, this area appeared very clean and well organized.

Wet Labs #1 and #2

Two wet laboratories are located on the first floor of Building #2. These laboratories are used by ETS for research and development. The laboratories consist of lab tables, various lab equipment, and small quantities of chemicals stored on shelves and in cabinets. The wet labs appeared to be clean, neat, and well organized at the time of the site visit.

Instrumentation Lab

An instrumentation laboratory is located on the first floor of Building #2, adjacent to wet lab #2. The instrumentation lab houses various small chemical testing equipment and computer systems used in the research and development of new products. The lab was clean and neat at the time of the site visit.

Miscellaneous Storage Areas

Two miscellaneous storage areas are located on the second floor of Building #2. These areas are used to store materials, such as new empty 55-gallon drums, empty cardboard containers, miscellaneous computer and office equipment, and record files. These areas appeared clean and neat during the site visit.

Walk-In Cooler

A metal walk-in cooler (approximately 5 feet wide by 10 feet long) is located on the second floor of Building #2, adjacent to one of the miscellaneous storage areas. The cooler is used to store small quantities (i.e., less than 5 gallons) of chemicals used at the facility that require refrigeration. The interior of the cooler was neat, clean, and well organized at the time of the site visit.

Office Area

The southeastern corner of the second floor of Building #2 is comprised of an office area. The office area consists of typical cubicle office space with some permanent offices along the exterior walls of the building. The office area was carpeted, neat, and clean at the time of the site visit.

5.1.3 Building #3

The following key areas comprise Building #3:

- Mix room;
- Dryer #2;
- Slitting and assembly room;
- Fill and cap room;
- Labeling and packaging area;
- Finished product storage area; and
- Office area.

Presented below is a description of each of the key areas observed in Building #3.

Mix Room

The mix room is located along the northern exterior wall of Building #3. The mix room is used to prepare chemical reagents that are applied to paper in the production of test strips. The mix room contains various chemicals (e.g., reagent alcohol, citric acid, hydrochloric acid) in small quantities (i.e., less than 5 gallons) stored on shelves and in cabinets. A partial list of these chemicals provided by ETS is included in Appendix G.

The floor of the mix room is concrete and there is one collection sump in the concrete floor. The collection sump is approximately 4 feet long by one foot wide by 6 inches deep and is covered with a steel grid. According to ETS personnel, the sump is for the collection of potentially-spilled chemicals and has no outlet (ETS, 1999). The sump appeared clean and dry at the time of the site visit. No spills were reported by ETS (ETS, 1999).

Dryer #2

Dryer # 2 is the largest of the two dryer units at the facility and is located adjacent to the mix room in Building #3. Similar to Dryer #1, chemical reagents are applied to paper that is then run through the dryer unit. According to ETS personnel, Dryer #2 is the newer, more efficient dryer unit at the facility capable of treating larger quantities of paper in a much shorter time period than Dryer #1 (ETS, 1999). The room housing Dryer #2 was neat and clean at the time of the site visit.

Similar to Dryer #1, emissions from Dryer #2 containing VOCs are released to the atmosphere via an air stack located on the outside of the building. As previously mentioned, dryer emissions from the ETS facility are currently regulated by IDEM. Appendix C provides a copy of the last four quarterly air monitoring reports submitted to IDEM by ETS.

Slitting and Assembly Room

The slitting and assembly room is located adjacent to Dryer #2 in Building #3. In the slitting and assembly room, large rolls (approximately 24 inches wide) of chemically treated paper are slit into smaller-width rolls of paper (approximately 0.20 inches wide). The smaller-width chemically treated paper is then adhered to 5-inch by 10-inch cards. Each card includes several strips of paper treated with different chemical reagents. Each of the machines used for slitting and card assembly is operated by an ETS employee. Wastes generated in the slitting and assembly room included scraps of chemically treated paper that were stored in lined waste baskets labeled "waste." The slitting and assembly room was neat and clean at the time of the site visit.

Fill and Cap Room

The fill and cap room is located adjacent to the slitting and assembly room in Building #3. In the fill and cap room, the 5-inch by 10-inch cards assembled in the slitting and assembly room are placed into a machine and cut into 50 individual test strips. The test strips are then automatically placed into plastic bottles and capped. ETS employees in the fill and cap room remove filled bottles from a conveyor and place them into cardboard boxes for labeling and packaging. The fill and cap room was neat and clean at the time of the site visit.

Labeling and Packaging Area

Labeling and packaging is performed in a central open area of Building #3 (Appendix B, Photo 5). The labeling and packaging area contains machines that apply labels to the filled bottles and then package the bottles using clear plastic that is blistered onto a cardboard backing. Several ETS employees operate the labeling and packaging machines located in this area and transfer the finished product into cardboard boxes for storage. The labeling and packaging area was neat and clean at the time of the site visit.

Finished Product Storage Area

A portion of the open area in Building #3 is used to store finished product (Appendix B, Photo 3). Packaged test strips are stored in cardboard boxes on wooden skids in this area. This area appeared clean and well organized at the time of the site visit.

Office Area

An office area is located in Building #3 along the eastern exterior wall of the building. These offices consist of painted concrete floors and dividing walls that are half wood and half glass. These offices were neat, clean, and well organized at the time of the site visit.

5.1.4 AST and UST Systems

No aboveground storage tanks (ASTs) or underground storage tanks (USTs) were observed by BBL during the site visit. According to ETS personnel, an underground concrete containment tank was removed from the facility in 1997. The tank was located along the west side of Building #3, and was to contain any potential liquid spills generated by Dryer #2. A catch basin located beneath Dryer #2 was designed to convey the liquid to the tank. According to ETS personnel, the catch basin has been sealed and the tank had no outlet and was not used prior to removal (ETS, 1999). A copy of correspondence between ETS's engineering firm (Dynamic Engineering, Inc.) and the IDEM regarding the removal of the concrete containment tank was provided by ETS to BBL. A copy of this correspondence is provided as Appendix H.

5.2 Transformers

ETS personnel were not aware of any polychlorinated biphenyl- (PCB-) containing transformers currently or formerly present at the facility. During the site visit, BBL did not observe any labeled PCB-containing transformers at the facility. BBL did observe two electrical poles located on the ETS property, along the western property boundary (Appendix B, Photo 2). Each pole supported three transformers that were each labeled "non-PCB."

5.3 Area Reconnaissance

An area reconnaissance was performed by BBL personnel on April 14, 1999. The reconnaissance included observing surrounding businesses and properties to assess the potential for environmental impacts. The results of the reconnaissance are discussed below.

- The properties located north, east, and west of the ETS facility are manufacturing facilities. ASV Plastics and Norcold, Inc., are located to the north (Appendix B, Photo 8). Native Hardwoods is leasing a portion of the building located east of the ETS facility to produce countertops and other components for recreational vehicles (Appendix B, Photo 10). Voyager, a company that converts cargo vans into recreational conversion vans, is located to the west of the ETS facility (Appendix B, Photo 9).

- County Road 106 is located south of the ETS facility. Residential properties are located directly south of County Road 106.

At the request of Danaher and with the permission of the property owner (Ludwig Investments, Inc.), BBL conducted a preliminary site walkover of the two facilities located directly east of the ETS facility. According to James Demarest, ETS is in the process of purchasing these properties to facilitate expansion of their operations. The results of this additional site walkover are discussed below.

- The property located directly east of the ETS facility consists of one large building that is divided into two sections. As stated above, the southern portion of this building is currently being leased by Native Hardwoods and is used to produce tabletops for recreational vehicles. The interior of the building is primarily open, with the exception of a few smaller rooms in the most southern portion of the building. Current operations in this portion of the building generate a large quantity of particulates dust that have coated the interior surfaces. The northern portion of the building is currently vacant. This area is also primarily open with the exception of some smaller rooms located along the eastern exterior wall.

- The second property to be purchased by ETS is located adjacent to the facility described above, two properties east of the current ETS facility. The second property also consists of one building, which is primarily open, with the exception of some smaller rooms in the southernmost portion of the building. The building is currently being leased by the Day's Corporation and is being used to store empty glass bottles in cardboard boxes.

- Each of the above buildings appear to be metal buildings with concrete slab on grade foundations. A drainage swale conveys surface-water runoff in an eastward direction along the northern property boundary of each of these facilities. BBL observed the presence of a vent pipe/access point located directly south of the building currently being leased by Day's Corporation. This was subsequently found to be an access point for a well used for the property's lawn irrigation system.

6. Environmental/Regulatory Agency Inquiries

6.1 VISTA Database Search

A VISTA database search of federal and state listings was performed at BBL's request in April 1999 (VISTA, 1999). The search was conducted for listings of hazardous waste compliance for the following agency databases: Superfund National Priority List (NPL); Resource Conservation and Recovery Act (RCRA) Corrective Actions (CORRACTS); state equivalent priority list (SPL); state equivalent Comprehensive Environmental Response, Compensation, and Liability Information Service (CERCLIS) list (SCL); sites currently or formerly under review by the USEPA (CERCLIS/NFRAP); RCRA permitted treatment, storage, and disposal facilities (TSD); leaking underground storage tanks (LUST); permitted solid waste landfills, incinerators, or transfer stations (SWLF); registered underground storage tanks (UST); Emergency Response Notification System of spills (ERNS); RCRA registered large quantity generators of hazardous waste (LG GEN); RCRA registered small quantity generators of hazardous waste (SM GEN), and the state spills lists (SPILLS). Each of the databases was searched within a one-mile radius of the ETS property.

Based on the results of the database search, the ETS facility was listed on only one of the above lists, the SM GEN. The USEPA identifies the site as a small quantity hazardous waste generator, meaning the facility generates between 100 and 1,000 kilograms (kg) per month of non-acutely hazardous waste. This appears to be consistent with the information provided by ETS during the site visit and with BBL's observations during the site visit.

Several sites located within one mile of the ETS facility were listed in the various VISTA databases, including the CLP Trucking Site, the HB Fuller Site, the General Fiberglass Site, the Fabwel Plastics Site, and the Kimberly, Inc. Site. The listings for each of these sites are briefly discussed below.

- The CLP Trucking Site, which is located approximately 0.24 miles northeast of the ETS property, is included on the SPILLS list. According to the information provided by VISTA, a spill of approximately 5,000 gallons of diesel fuel was reported at the site in 1994. The IDEM reported that no water bodies were affected by the spill and lists the remedial status as "partial clean-up." The CLP Trucking Site is located in an inferred hydraulically upgradient direction from the ETS facility, and the ETS property could potentially have been impacted by the spill.

- The HB Fuller Site, which is located on County Road 6 approximately 0.62 miles northwest of the site, is listed as a state equivalent CERCLIS site. This site was entered into the IDEM Voluntary Remediation Program in 1994 as a result of VOCs, semi-volatile organic compounds (SVOCs), and metals that were detected in soil and groundwater during a Phase I ESA performed in 1994. Phase II sampling at the site also detected VOCs and SVOCs in soil and groundwater samples, but these levels did not exceed the non-residential cleanup criteria for the State of Indiana. As a result of these findings, the IDEM issued a Certificate of Completion for the project on February 11, 1998. The facility also qualifies for a Covenant-Not-To-Sue, which will be issued by the Governor of the State of Indiana.

- The General Fiberglass Site, which is located approximately 0.25 miles northwest of the subject site, is listed on the SPILLS list. VISTA reports that 11,000 gallons of fiberglass resin was spilled at the facility in 1991. The IDEM reports that no water bodies were affected by the spill and the spill file has been closed following remedial action.

- The Fabwel Plastics Site, which is located approximately 0.32 miles northwest of the subject site, is listed on the SPILLS list. A chemical fire occurred at the facility on March 14, 1998, and retention ponds at the site were impacted. The IDEM lists the remediation status for the site as "partial clean-up." Possible impact on the ETS Site is considered to be unlikely because the Fabwel Site appears to be hydraulically crossgradient.

- The Kimberly Inc. Site, which is located approximately 0.69 miles north of the subject site, is listed on the SPILLS list. VISTA reports that 2,500 gallons of diesel fuel was spilled at the site on July 21, 1996. The spill was contained in an on-site ditch and the IDEM reports the remedial status as "cleaned-up." This site is also listed as a small quantity hazardous waste generator.

6.2 EDR Database Search

BBL also reviewed a database search for the ETS facility performed by Environmental Data Resources, Inc. (EDR) on February 13, 1998 (copy provided as Appendix I). This report lists the ETS facility as a small quantity generator of hazardous waste under RCRA and indicated that the facility is monitored or permitted for air emissions under the Clean Air Act.

- Two LUST sites were identified by EDR on the LUST list within a one-half mile radius of the ETS facility: the Elkhart Steel Service Inc. Site and the Century Motor Coach Site. The Elkhart Steel Service, Inc. Site is located approximately 0.22 miles east of the ETS facility. The IDEM reported that a UST was leaking petroleum products and that the registered gasoline USTs at this location have been removed. Potential impacts from this leak on the ETS property are considered to be unlikely, because the Elkhart Steel Service Site is considered hydraulically crossgradient to the ETS property. The Century Motor Coach Site is located between 0.25 and 0.50 miles northwest of the ETS facility. The IDEM reported that a UST was leaking petroleum products and that the UST was still listed as active. Impact from this leak is also considered to be unlikely because of its inferred hydraulically crossgradient direction to the ETS facility.

6.3 Other Inquiries

BBL contacted the Township of Osolo Fire Department to obtain information regarding responses by the department to the area in the vicinity of the ETS facility, and to request files pertaining to the ETS facility. Mr. Randy Stone, Hazardous Materials Coordinator of the Osolo Fire Department, stated that the fire department had not responded to any spills at the ETS facility, and that the amount of chemicals stored at the site were not subject to reporting under SARA Title III. Mr. Stone also said that a chemical fire occurred on March 14, 1998, at the Fabwel Plastics plant and that this fire was investigated by IDEM and the Elkhart County Department of Health.

BBL conducted a file review at the Elkhart County Department of Health in Goshen, Indiana, to obtain information regarding the above-mentioned chemical fire. According to this information, water that was used to put out the fire collected into an on-site retention pond. VOCs and SVOCs were detected in this water, which completely dissipated within a few days of the fire through infiltration and evaporation. Soil samples collected in the retention pond area revealed that VOCs and SVOCs were not present above IDEM Cleanup Goals for non-residential properties. Groundwater was also sampled at the site and on adjoining properties. Groundwater samples collected at the site revealed benzene concentrations ranging from 3.7 to 21 parts per billion (ppb), compared to the USEPA Maximum Contaminant Level (MCL) of 5 ppb. A portion of the report presenting the results of the environmental study is provided as Appendix J. Remediation of the groundwater was not recommended, because it was determined that natural attenuation would reduce the benzene to below 5 ppb before it migrated off-site. Groundwater samples collected at adjoining properties indicated that VOCs and SVOCs were not detected.

The Elkhart County Health Department also provided information regarding two septic systems that were previously used at the ETS facility until 1992. These systems were located on the south and east sides of Buildings #1 and #2. Liquid from each of the septic tanks was sampled in 1992 and the results indicate that the tank on the east side of Building #2 contained toluene at a concentration of 54 ppb, and the tank located on the south side of Building

#1 contained 1,1- dichloroethene and 1,1,1-trichloroethane at concentrations of 1,940 ppb and 2,770 ppb, respectively. A copy of these analytical results are provided as Appendix K. ETS has indicated that these tanks were emptied, crushed, and abandoned in place in 1992. At that time the ETS facility was connected to the City of Elkhart sanitary sewer system.

The health department files also indicate that ETS received a notice of violation letter from IDEM on July 15, 1997, which indicated that they had exceeded their total VOC air emission limit of 14.9 pounds per day. The IDEM then performed an on-site visit of the ETS facility on August 19, 1997, and concluded that there were no violations under their emission permits. A copy of the correspondence regarding the supposed violation and subsequent site visit is provided as Appendix L.

As part of this Phase I ESA, BBL submitted FOIA requests to the USEPA, the IDEM Office of Emergency Response, the IDEM Office of Water Management, and the IDEM Office of Solid and Hazardous Waste. To date, BBL has received the following responses from the IDEM:

- Mr. Steven Vaughn of the IDEM Office of Water Management did not have any files related to the subject site and did not have any records of groundwater contamination from wells within one-half mile of the site.
- Ms. Glenda Oaks of the IDEM Office of Solid and Hazardous Waste did not have any records of violations associated with ETS.
- Mr. Gary Yakimiki of the IDEM Office of Emergency Response did not have any records pertaining to the ETS property.
- Mr. Damon Ridley of the IDEM Voluntary Remediation Program Office provided information related to the H.B. Fuller Site.

7. Summary and Recommendations

7.1 Introduction

The purpose of this Phase I ESA is to identify readily apparent existing or potential conditions at the ETS facility located in Elkhart, Indiana, that may pose a potential environmental liability or restriction to land use.

The following tasks were performed to complete the Phase I ESA:

- A records review of ETS facility files and IDEM files;
- A VISTA database search;
- A property walk over and area reconnaissance; and
- Interviews with key ETS personel.

7.2 Summary

The following summarizes the key findings of the ETS (Elkhart, Indiana) Phase I ESA:

- Groundwater is located approximately 5 to 10 feet below grade (SCS, 1974). Based on topography, shallow groundwater flow in the vicinity of the site is likely southwest toward the St. Joseph River.
- Overburden in the vicinity of the site consists of glacial outwash, composed primarily of sand and gravel. Bedrock underlying the ETS property is the Ellsworth Shale Formation, which is located at depths ranging from 50 to 150 feet below grade and is approximately 300 feet thick.
- There are two dryer units at the facility, where chemical reagents are applied to paper that is then run through the dryer unit. The dryer units generate VOC emissions that are released through an air stack directly to the outside of the building. These emissions are currently regulated by IDEM. According to ETS personnel, the emissions generated by each of the dryer units at the facility are well below the IDEM permitted limits.
- No ASTs or USTs were observed by BBL during the site visit. According to ETS personnel, an underground concrete containment tank associated with Dryer #2 was removed from the facility in 1997. According to ETS personnel, the tank had no outlet and was not used prior to removal.
- Two septic systems were used at the ETS facility until 1992. Liquid from each of the septic tanks was sampled in 1992 and the results indicate that the tank on the east side of Building #2 contained toluene at a concentration of 54 ppb, and the tank located on the south side of Building #1 contained 1,1- dichloroethene and 1,1,1-trichloroethane at concentrations of 1,940 ppb and 2,770 ppb, respectively. ETS has indicated that these tanks were emptied, crushed, and abandoned in place in 1992. At that time the ETS facility was connected to the City of Elkhart sanitary sewer system.
- Based on the results of the VISTA database search, the ETS facility was listed in only one of the databases searched, SM GEN, which identifies the site as a small quantity hazardous waste generator. The ETS facility manufactures environmental test strips for several applications. Various chemicals including arsenic, chromium, silver, and organic solvents are associated with manufacturing these chemically treated paper strips.

- Waste that is generated at the facility is collected and stored on the first floor of Building #2, in an open warehouse area. At the time of the site visit, BBL observed the following sealed 55-gallon steel drums in this warehouse area: three drums labeled as "hazardous waste," two drums labeled as "non-regulated waste," four drums labeled as "flammable," and various cardboard boxes containing various small containers of chemicals (lab packs). This area appeared to be neat and clean during the site visit. No signs of staining or leaks were observed. Since this area appears to be a high traffic area and no secondary containment for the drums labeled as "hazardous waste" was observed, a separate storage area or building should be considered.

7.3 Recommendations

Based on the results of the Phase I ESA, BBL recommends the following Phase II ESA sample collection and analysis program for the ETS property.

Areas of Interest	Estimated Number of Sample Locations	Media of Interest/ Type of Sample	Recommended Analyses	Rationale
Former Septic System Tanks (crushed and left in place)	Install up to two temporary wells to five feet below the water table (approximately 10' below ground surface [bgs]) in the immediate vicinity of the two septic system tanks.	Up to two soil samples (one soil sample from a depth near the bottom of each tank); up to two groundwater samples (one groundwater sample from each temporary well location), if encountered.	Target Compound List (TCL) VOCs, TCL SVOCs, Target Analyte List (TAL) inorganics.	Assess possible subsurface effect of the former septic tanks.
Former Septic System Leach Fields (left in place)	Install up to four temporary wells to five feet below the water table (approx. 10' bgs within the two leach fields).	Up to four soil samples (one unsaturated soil sample from a depth at or below the depth of the leach field pipes); up to four groundwater samples (if encountered) from the leach fields.	TCL VOCs, TCL SVOCs, TAL inorganics	Assess possible subsurface effect of the former leach fields.

As indicated above, soil and groundwater samples will be collected and analyzed for TCL VOCs, TCL SVOCs, and TAL inorganics from predetermined locations. The above table will be used as a guide to the potential number and distribution of samples to be collected during the assessment. Based on BBL staff's observations during the investigation, the number and/or distribution of samples to be collected may be modified to optimize the effectiveness of the program.

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APPENDIX E
PHASE II ENVIRONMENTAL SITE ASSESSMENT
(Blasland, Bouck & Lee for Danaher Corporation – August 1999)

TECHNICAL REPORT

Phase II Environmental Site Assessment

Environmental Test Systems, Inc. Elkhart, Indiana

Danaher Corporation
Washington, D.C.

August 1999

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

6723 Towpath Road, P.O. Box 66
Syracuse, New York, 13214-0066
(315) 446-9120

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Executive Summary

The purpose of this Phase II Environmental Site Assessment (ESA) is to provide an evaluation of the soil and groundwater quality at the areas of interest identified in the Phase I ESA (BBL, 1999b) for the Environmental Test Systems, Inc. (ETS) property located at 23575 County Road 106 in Elkhart, Indiana.

Based on the results of the Phase I ESA, which reviewed in part, pertinent historical and current operations, an assessment of the soil and groundwater characteristics at select locations was recommended. The following locations at ETS were selected:

- The former septic system tank and leach field located on the east side of the facility; and
- The former septic system tank and leach field located south of the facility.

The following tasks were performed as part of the Phase II ESA:

- Advanced soil borings;
- Installed temporary monitoring wells; and
- Collected soil and groundwater samples.

Field activities were completed between April 26 and 28, 1999, in accordance with the scope of work for the Phase II ESA outlined in a letter dated April 26, 1999 to Mr. James Ditkoff, Vice President of Danaher Corporation (BBL, 1999a).

To collect site-specific physical and chemical characterization information, six borings (TW-1 through TW-6) were installed at the ETS Property. Three soil borings (TW-1 through TW-3) were installed in the location of the southern former septic system, and three soil borings (TW-4 through TW-6) were installed in the location of the eastern former septic system. The six soil borings were advanced to a depth of 10 feet below ground surface (bgs). One sample per boring (total of six) were submitted to the laboratory for analysis. Temporary monitoring well points were subsequently installed at each boring location to collect groundwater quality data in these locations.

Results of the Phase II ESA activities indicate the following geologic and hydrogeologic conditions at the property:

- The property is generally underlain by 10 feet of moderately loose sand deposits with varying amounts of silt and gravel. Based on regional information, the thickness of the overburden typically varies from 50 to 150 feet.

- Groundwater was observed at approximately 5 to 6 feet bgs at both former septic system locations.

- Based on topography and surface-water drainage patterns, shallow groundwater at the ETS Property likely flows south-southwest towards the St. Joseph River.

Based on the information collected in the Phase II ESA for the ETS Property the following conclusions can be drawn:

- Two volatile organic compounds (VOCs), acetone and toluene, were detected in soil samples collected from the ETS Property. The acetone detections are believed to be due to laboratory contamination since acetone was also detected in the associated laboratory blank sample at similar concentrations. Acetone and toluene were detected in one or more soil sample analyzed, at concentrations of 22 micrograms per kilograms (μg/kg) and 9 μg/kg, respectively, which are below the Tier 1 Soil Closure Levels for acetone and toluene, as provided in the Draft Technical Resource Guidance Document prepared by the Indiana Department of Environmental Management (IDEM) (IDEM, 1999).

- Four semi-volatile organic compounds (SVOCs), diethylphthalate, di-n-butylphthalate, bis(2-ethylhexyl) phthalate, and di-n-octylphthalate, were detected in soil samples collected from the ETS Property. All of these SVOCs were also detected in the associated laboratory blank sample, therefore the compounds are believed to be indicative of laboratory contamination.

- Metals were detected in soil at concentrations within the reported background range for the Eastern United States (United States Geological Survey [USGS], 1984), and below their respective Draft Tier 1 Soil Closure Levels (IDEM, 1999).

- The VOCs acetone, methylene chloride, and toluene were detected at low part per billion concentrations in groundwater samples collected from one or more temporary well. The acetone and methylene chloride detections are indicative of laboratory contamination since both compounds were also detected in the associated laboratory blank sample at similar concentrations. Toluene was detected in groundwater samples collected from TW-1 and TW-2, at concentrations below the Draft Tier 1 Groundwater Closure Level of 1,000 micrograms per liter (μg/L) (IDEM, 1999), and the United States Environmental Protection Agency (USEPA) Maximum Contaminant Level (MCL) of 1,000 μg/L (USEPA, 1996).

- Eleven SVOC compounds were detected in groundwater samples collected from the site. Five of these compounds are believed to be due to laboratory contamination since these five compounds, bis(2-ethylhexyl)phthalate, butylbenzylphthalate, diethylphthalate, di-n-butylphthalate, and di-n-octylphthalate, were also detected in the associated laboratory blank at similar concentrations. The remaining six compounds, including 2-methylnaphthalene, benzoic acid, isophorone, naphthalene, phenanthrene, and phenol, were reported at concentrations below their respective Draft Tier 1 Groundwater Closure Levels (IDEM, 1999), (these compounds are not listed in the USEPA MCLs).

- The metals aluminum, iron, and manganese were detected in groundwater samples collected from all six temporary wells at concentrations above the USEPA Secondary Drinking Water Standards (USEPA, 1996). The metals arsenic, cadmium, chromium, lead, and nickel were also detected in the groundwater sample collected from TW-3 at concentrations slightly above the MCLs and the Draft Tier 1 Groundwater Closure Levels (IDEM, 1999). Based on our current understanding of chemical use at the ETS Facility, none of these metals are believed to have been used by the facility, with the exception of arsenic and chromium.

While VOCs, SVOCs, and metals were detected in soil and groundwater samples collected from the ETS Property, the majority of the detections were either below the USEPA or Draft IDEM criteria, or within the regional range for the Eastern United States background metal concentrations. Given the limited sampling data and the focus towards locations with a higher potential for past releases, constituents that were above these criteria/concentrations appear to be localized.

The potential impact, if any, from these areas is assumed to be minimal for the following reasons:

- The contaminant levels are relatively low, even near the assumed source(s); and
- The properties are industrial in nature.

1. Objectives

1.1 Purpose

The purpose of this Phase II Environmental Site Assessment (ESA) is to evaluate the soil and groundwater quality at the areas of interest identified in the Phase I ESA (Blasland, Bouck & Lee, Inc. [BBL], 1999b) for the Environmental Test Systems (ETS) Facility located at 23575 County Road 106 in Elkhart, Indiana (Figure 1). The field activities discussed in this report were completed at the ETS Property by BBL as part of the Phase II ESA at the request of Danaher Corporation (Danaher).

1.2 Tasks

Based on the results of the Phase I ESA, which reviewed pertinent historical and current operations, an assessment of the soil and groundwater characteristics at select locations was recommended. The following locations were selected:

- The former septic system tank and leach field located on the east side of the facility; and
- The former septic system tank and leach field located south of the facility.

The following tasks were performed as part of the Phase II ESA:

- Advanced soil borings;
- Installed temporary monitoring wells; and
- Collected soil and groundwater samples.

1.3 Report Organization

This Phase II Report is presented in seven sections. Section 1 presents the objectives of the Phase II ESA activities, and the organization of the report. Section 2 presents an overview of the ETS Property and the buildings on the property. Section 3 presents a description of the environmental setting for the ETS Property, which consists of a brief description of the regional and site-specific geology. Section 4 presents a summary of the Phase I ESA results. Section 5 presents a discussion of the activities that were performed as part of the Phase II ESA. Section 6 presents a discussion of the analytical results. Section 7 presents a list of references that were used during the Phase II ESA.

1.4 Limitations to ESA

The conclusions reached are based on the limits of the assessment described in this report. BBL can offer no assurances and assumes no responsibility for site conditions or activities that were outside the scope of the inquiry as documented in the scope of work letter to Mr. James Ditkoff, Vice President of Danaher (BBL, 1999a).

Danaher understands that BBL has relied on the accuracy of documents, oral information, and other material and information provided by sources documented in this report, including ETS. There can be no assurance, and BBL offers no assurance, that site conditions do not exist, or will not exist in the future, that were undetected and that could lead to liability in connection with the site. Similarly, past and present activities on the site indicating the potential for the existence of environmental concerns may not have been discovered by BBL's assessment activities. Such activities may include those that would indicate the potential for regulated hazardous substances at the site. BBL has reviewed the information obtained in its limited assessment, in keeping with existing

applicable environmental consulting standards and enforcement practices, but cannot predict what actions any given agency may take presently or what standards and practices may apply to the site in the future.

In performing its assessments, BBL has used reasonable care and has performed its services in keeping with applicable environmental consulting standards and appropriate standard agency procedures.

This report and other instruments of service are prepared for and made available for the sole use of Danaher, and the contents thereof may not be used or relied upon by any other person without the express written consent and authorization of BBL.

2. Site Overview

The ETS Facility is located at 23575 County Road 106 in the township of Osolo in Elkhart County, Indiana (Figure 1). The general layout and operations of the ETS Facility are discussed below.

2.1 Site Layout

The ETS Facility is located on approximately 4.4 acres northeast of the City of Elkhart, Indiana. The property is comprised of three attached buildings (Buildings #1, #2, and #3). Building #1 is the original building constructed in 1985. Buildings #2 and #3 were added in 1989 and 1994, respectively. The combined buildings total approximately 40,000 square feet. The metal buildings with a concrete slab on grade foundation are located along the western side of the property and adjacent to County Road 106.

The facility is connected to a municipal water supply and use an on-site 2-inch well located east of Building #1 for the water source for the fire protection sprinkler system. Prior to 1992, the facility was connected to a septic leaching system and process wastewaters discharged to two septic systems. These septic systems were located south and east of Buildings #1 and #2. Since 1992, sanitary and process wastewaters have been discharged to the City of Elkhart publicly-owned treatment works (POTW).

Two dumpsters were observed at the eastern side of the facility: one for general trash disposal and one for recyclable paper materials. Manufacturing wastes generated at the facility are collected and stored on the first floor of Building #2 in an open warehouse area. Waste streams generated at the facility are described in Section 5.1.2.

Paved parking areas are located north and east of the three buildings and comprise most of the remaining property. The northernmost portion of the property is an open lawn area. A drainage swale conveys surface-water runoff eastward along the northern property boundary and then southward along a portion of the eastern property boundary.

The ETS Facility is located within an area known as Northland Industrial Park. The ETS Property is bounded to the north, east, and west by other manufacturing facilities. The property is bounded to the south by County Road 106. Residential properties are located directly south of County Road 106.

2.2 Site Activities

The primary activity conducted at the ETS Facility is manufacturing of paper test strips. These test strips are chemically treated paper strips used for testing chemical presence and/or quantities for several applications. The test strips produced by the ETS Facility are primarily used in the pool and spa industry, however, ETS produces a variety of different test strips for several applications. In addition to manufacturing, the ETS Facility houses laboratories for product research and development, and offices for administration and marketing.

3. Environmental Setting

3.1 Regional Setting

Information presented in the United States Department of Agriculture (USDA) Soil Conservation Service (SCS) document entitled "Soil Survey of Elkhart County, Indiana" (SCS, 1974) indicates that the ETS Property is located in the Kamakee Outwash and Lacustrine Plain physiographic province. Overburden in this area is classified as the Atherton Formation. This formation consists of an undifferentiated glacially-derived outwash, composed primarily of sand and gravel (Indiana Department of Natural Resources [IDNR], 1989). Soils in this area consist of the Plainfield Series and the Brems Series. Both of these soil types are deep, coarse-textured soils that are formed in outwash plains and knolls. These soils are moderately to excessively well drained and are nearly level to moderately sloping. Groundwater is located approximately 5 to 10 feet below grade according to the SCS soil survey report.

Bedrock underlying the ETS Property is composed of the Mississippian Ellsworth Shale Formation. This bedrock unit is located at depths ranging from 50 to 150 feet below grade and is approximately 300 feet thick (IDNR; 1970, 1987).

Based on a review of the United States Geological Survey (USGS) topographic map for the area (USGS, 1961), the ETS Property and surrounding area is relatively flat, sloping gently southwest toward the St. Joseph River, which is approximately 1.3 miles south of the property. Surface elevations on the property range from approximately 770 to 775 feet above mean sea level. Based on the topography, shallow groundwater is expected to flow south-southwest toward the St. Joseph River.

3.2 Property Observations

Based on the results of the Phase II ESA, the property is generally underlain by at least 10 feet of moderately loose sand deposits with varying amounts of silt and gravel. Based on regional information, the thickness of the overburden typically varies from 50 to 150 feet. Groundwater was observed at approximately 5 to 6 feet bgs at both former septic system locations.

4. Summary of Phase I Results

In general, the ETS Facility appeared to be neat and well kept. However, due to the nature of the chemicals that have been used at the facility, additional assessment activities were recommended.

The original ETS Facility was constructed in 1985 on this property and consisted of one building (currently known as Building #1). Buildings #2 and #3 have since been added to the original structure (in 1989 and 1994, respectively). ETS was purchased by Hach Company in April 1998, however, operations at the facility have generally remained unchanged under the new ownership (ETS, 1999). ETS continues to operate as a wholly-owned subsidiary of Hach Company.

Current site operations include raw materials storage, research and development, manufacturing, packaging, finished product storage, quality assurance testing, administration, and marketing.

In general, the facility consists of three attached metal buildings constructed on concrete slab foundations. Portions of Buildings #1 and #2 consist of a first and second floor. Building #3 has a first floor only. The buildings are heated with natural gas-fueled furnaces and are cooled with roof-mounted heating, ventilation, air conditioning (HVAC) units.

The southern portion of the site is composed of a lawn area and an access driveway to County Road 106. County Road 106 borders the site to the south, and further south is an area developed with residential housing. The eastern portion of the site consists of parking areas and a lawn area. The northern portion of the site consists of a parking area and a lawn area. A drainage swale is located near the northern boundary of the site and more industrial properties are further to the north. At the time of the site visit, no water was observed in the portion of the swale that is located along the northern property boundary. Shallow water was noted near the northeast corner of the site, where this drainage swale joins a north-south swale. No sheens were observed.

Two septic systems were used at the ETS Facility until 1992. The original septic system was within a grassy area located south of the facility. The second septic system was located in a grassy area east of Building #2. Liquid from each of the septic tanks was sampled in 1992 by the Elkhart County Health Department and the results indicated that the tank on the east side of Building #2 contained toluene at a concentration of 54 parts per billion (ppb), and the tank located on the south side of Building #1 contained 1,1- dichloroethene and 1,1,1-trichloroethane at concentrations of 1,940 ppb and 2,770 ppb, respectively. ETS has indicated that these tanks were emptied, crushed, and abandoned in place in 1992. At that time the ETS Facility was connected to the City of Elkhart POTW.

According to ETS personnel, there are four general waste streams generated by the manufacturing process at the ETS Facility. These waste streams include:

- Hazardous solids consisting primarily of scraps of paper treated with reagents, such as chromium, silver, and arsenic;
- Hazardous liquids consisting of leftover chemical reagents, such as chromium, silver, and arsenic;
- Flammable liquids consisting of leftover chemical reagents, such as organic solvents (i.e., primarily reagent alcohol, which contains 90 percent ethyl alcohol, 5 percent isopropyl alcohol, and 5 percent methanol; and small quantities of acetone, ethyl acetate, isopropyl alcohol, methyl ethyl ketone, and toluene); and

- Non-regulated waste consisting of liquid wastes that contain concentrations of chemicals that are above the City of Elkhart's sewer discharge limits, but are not regulated by the Indiana Department of Environmental Management (IDEM) or the United States Environmental Protection Agency (USEPA).

5. Phase II Field Activities

5.1 General

Field activities were completed between April 26 and April 28, 1999, in accordance with the Scope of Work for the Phase II ESA outlined in a letter to Danaher dated April 26, 1999. The following field activities were completed as part of the Phase II ESA:

- Soil boring installations and soil sampling;
- Installation and development of temporary monitoring wells; and
- Groundwater sampling.

A description of these activities is provided below.

5.2 Soil Boring Installation and Soil Sampling

To collect site-specific physical and chemical characterization information six borings were installed at the ETS Property from April 27 to April 28, 1999. Three soil borings (TW-1 through TW-3) were installed in the location of the southern former septic system and three soil borings (TW-4 through TW-6) were installed in the location of the eastern former septic system. The six soil borings were advanced to a depth of 10 feet bgs. Temporary monitoring well points were subsequently installed at each boring location to collect preliminary groundwater quality data in these locations. Details of the temporary monitoring well installation are discussed in Section 5.4.

Borings were advanced with a trailer-mounted CME 45 drilling rig using direct-push drilling techniques. In general, all borings were sampled at 2-foot intervals, and soil samples were collected with a split-barrel sampler. Recovered soil samples were visually classified and screened for volatile organic compounds (VOCs) using a portable photoionization detector (PID). One soil sample per boring was selected for analysis based on the highest PID measurement and observations of soil staining by BBL's field staff. Soil samples were submitted to Severn Trent Laboratories (STL) of Monroe, Connecticut, to be analyzed for USEPA SW-846 Target Compound List (TCL) VOCs using USEPA Method 8260, TCL semi-volatile organic compounds (SVOCs) using USEPA Method 8270, and Target Analyte List (TAL) inorganic constituents (including cyanide) using USEPA Methods 6000/7010 series and cyanide by Method 9010. Detected constituents in soil samples collected from the ETS Property are presented on Table 1. A detailed description of the site geology is described in Section 4 and on subsurface logs, presented in Appendix A.

Drilling equipment and associated tools that may have come in contact with soils and groundwater were cleaned with a high-pressure, hot water "steam cleaner" prior to beginning the investigation, between each soil boring, and upon completion of the field investigation. Split-barrel samplers were cleaned using a distilled water/Alconox solution with a subsequent distilled water rinse between each sampling interval.

All soils, rinse water, and purged groundwater from development and sampling were containerized in 55-gallon drums and stored within the fenced parking area north of the facility.

5.3 Installation and Development of Temporary Monitoring Wells

Temporary monitoring well points were installed at the six soil boring locations to collect further site-specific environmental information. Temporary monitoring well points TW-1 through TW-6 were installed between April 27 and 28, 1999. All well points were installed with a CME 45 trailer-mounted drilling rig using direct-push drilling techniques. TW-1 was installed as a Hydropunch™-type driven well point, but this method proved to be inefficient due to the short screened section (less than 0.5 feet of screen) quickly being blocked by silt. Therefore,

temporary wells TW-2 through TW-6 consisted of 1.5-inch-diameter Schedule 40 PVC with a 5-foot, hand-cut (cut with a hack saw) screened interval. All well material was cleaned with a high-pressure, hot water "steam cleaner" prior to installation. Each well point was installed to a depth of approximately 10 feet bgs or approximately 4 feet below the water table. Locations of temporary well points are shown on Figure 2. Subsurface soil descriptions and detailed temporary well point construction are presented in the boring logs (Appendix A).

Following installation, each temporary monitoring well received development (at least three well volumes purged) using a peristaltic pump and disposable dedicated polyethylene tubing to remove fine-grained materials that may have settled in and around the well point during installation and to promote a hydraulic connection with the surrounding formation.

All six temporary well points were abandoned upon completing groundwater sampling activities by pulling the PVC well materials, backfilling the soil boring with bentonite pellets to 6 inches bgs, and placing topsoil from 6 inches bgs to ground surface.

5.4 Groundwater Sampling

Groundwater sampling of well points TW-1 through TW-6 was conducted between April 27 and 28, 1999. Each well point was purged by removing a minimum of three well volumes of groundwater using a peristaltic pump with dedicated, disposable, polyethylene tubing prior to groundwater sampling. Field parameters of pH, temperature, salinity, turbidity, dissolved oxygen, and conductivity were recorded in the field notebook and are listed in Table 2.

Groundwater samples from the six temporary well points were submitted to STL to be analyzed for TCL VOCs using USEPA Method 8260, TCL SVOCs using USEPA Method 8270, and unfiltered TAL inorganic compounds (including cyanide) using USEPA Methods 6000/7010 series and cyanide by Method 9010. Figure 2 presents the locations of the temporary well points. Detected compounds in groundwater samples collected from the ETS Property are presented in Table 3.

All purged groundwater from development and sampling was containerized in 55-gallon drums and stored within the fenced parking area north of the facility.

6. Results and Discussion

6.1 Hydrogeologic Conditions

Results of the Phase II activities indicate the following geologic and hydrogeologic conditions at the ETS Property:

- The property is generally underlain by over 10 feet of moderately loose sand deposits with varying amounts of silt and gravel. Based on regional information, the thickness of the overburden typically varies from 50 to 150 feet.

- Groundwater was observed at approximately 5 to 6 feet bgs at both former septic system locations. Based on a review of the USGS topographic map for the area (USGS, 1961), the ETS Property and surrounding area is relatively flat, sloping gently southwest toward the St. Joseph River, which is approximately 1.3 miles south of the site. Based on the topography, shallow groundwater is expected to flow south-southwest toward the St. Joseph River.

6.2 Analytical Results

Tables 1 through 3 summarize the results of the sampling performed as part of the Phase II ESA. The soil analytical results, compared to the IDEM Draft Tier 1 Soil Closure Levels (IDEM, 1999) and the reported range of inorganic concentrations in the Eastern United States as established by the USGS (USGS, 1984), are presented in Table 1. Table 2 summarizes the field parameter measurements obtained from the groundwater removed during monitoring well development. The groundwater analytical results, compared to USEPA Federal Maximum Contaminant Levels/Goals (MCLs/MCLGs) and Draft IDEM Method A and B Cleanup Levels, are presented in Table 3. Copies of the laboratory analytical data sheets and the chain-of-custody forms are provided in Appendix B. The following summarizes the findings of the Phase II ESA:

- The VOCs acetone and toluene were detected in soil samples collected from the ETS Property. The acetone detections are believed to be due to laboratory contamination since acetone was also detected in the associated laboratory blank sample at similar concentrations. Acetone and toluene were detected in one or more soil samples analyzed, at concentrations below the Draft Tier 1 Soil Closure Levels of 768 micrograms per kilograms (μg/kg) for acetone and 3,090 μg/kg for toluene, as provided in the Draft Technical Resource Guidance Document prepared by the IDEM (IDEM, 1999).

- Four SVOCs, diethylphthalate, di-n-butylphthalate, bis(2-ethylhexyl)phthalate, and di-n-octylphthalate, were detected in soil samples collected from the ETS Property. All of these SVOCs were also detected in the associated laboratory blank sample at similar concentrations, therefore the compounds are believed to be indicative of laboratory contamination.

- Metals were detected in soil at concentrations within the reported range for the Eastern United States (USGS, 1984), and below their respective Draft Tier 1 Soil Closure Levels (IDEM, 1999).

- The VOCs acetone, methylene chloride, and toluene were detected at low part per billion concentrations in groundwater samples collected from one or more temporary wells. The acetone and methylene chloride detections are indicative of laboratory contamination since both compounds were also detected in the associated laboratory blank sample at similar concentrations. Toluene was detected in groundwater samples collected from TW-01 and TW-02, at concentrations below the Draft Tier 1 Groundwater Closure Level of 1,000 μg/L (IDEM, 1999), and USEPA MCL of 1,000 μg/L (USEPA 1996).

- Eleven SVOC compounds were detected in groundwater samples collected from the site. Five of these compounds are believed to be due to laboratory contamination since these five compounds, bis(2-ethylhexyl)phthalate, butylbenzylphthalate, diethylphthalate, di-n-butylphthalate, and di-n-octylphthalate, were also detected in the associated laboratory blank at similar concentrations. The remaining six compounds, including 2-methylnaphthalene, benzoic acid, isophorone, naphthalene, phenanthrene, and phenol, were reported at concentrations below their respective Draft Tier 1 Groundwater Closure Levels (IDEM, 1999) (these compounds are not listed in the USEPA MCLs).

- The metals aluminum, iron, and manganese were detected in groundwater samples collected from all six temporary wells at concentrations above the USEPA Secondary Drinking Water Standards (USEPA, 1996). The metals arsenic, cadmium, chromium, lead, and nickel were also detected in the groundwater sample collected from TW-3 at concentrations slightly above the MCLs and the Draft Tier 1 Groundwater Closure Levels (IDEM, 1999). Based on our current understanding of chemical use at the ETS Facility, none of these metals are believed to have been used by the facility, with the exception of arsenic and chromium.

6.3 Summary

Based on the Phase I results, BBL recommended that the two former septic systems be further evaluated in this Phase II ESA at the ETS Property. These recommendations focused on sampling activities and analytical methods that were matched with the potential areas of interest. For example, VOCs were recommended for analysis in the soil and groundwater near the location of the former septic tank south of the facility, where VOCs were detected in liquid sampled from the tank prior to abandonment in 1992. Also, various chemicals, including arsenic, chromium, silver, and organic solvents are associated with manufacturing the chemically-treated paper strips. As a result of these recommendations the Phase II activities were completed.

While VOCs, SVOCs, and metals were detected in soil and groundwater samples collected from the ETS Property, the majority of the detections were either below the USEPA or IDEM criteria, or within the regional range for the Eastern United States background metal concentrations for soil. Given the limited sampling data and the focused sampling bias toward locations with a higher potential for past discharges, constituents that were above these criteria/concentrations appear to be localized.

The potential impact, if any, from these areas is assumed to be minimal for the following reasons:

- The contaminant levels are relatively low, even near the assumed source(s); and
- The properties are industrial in nature.

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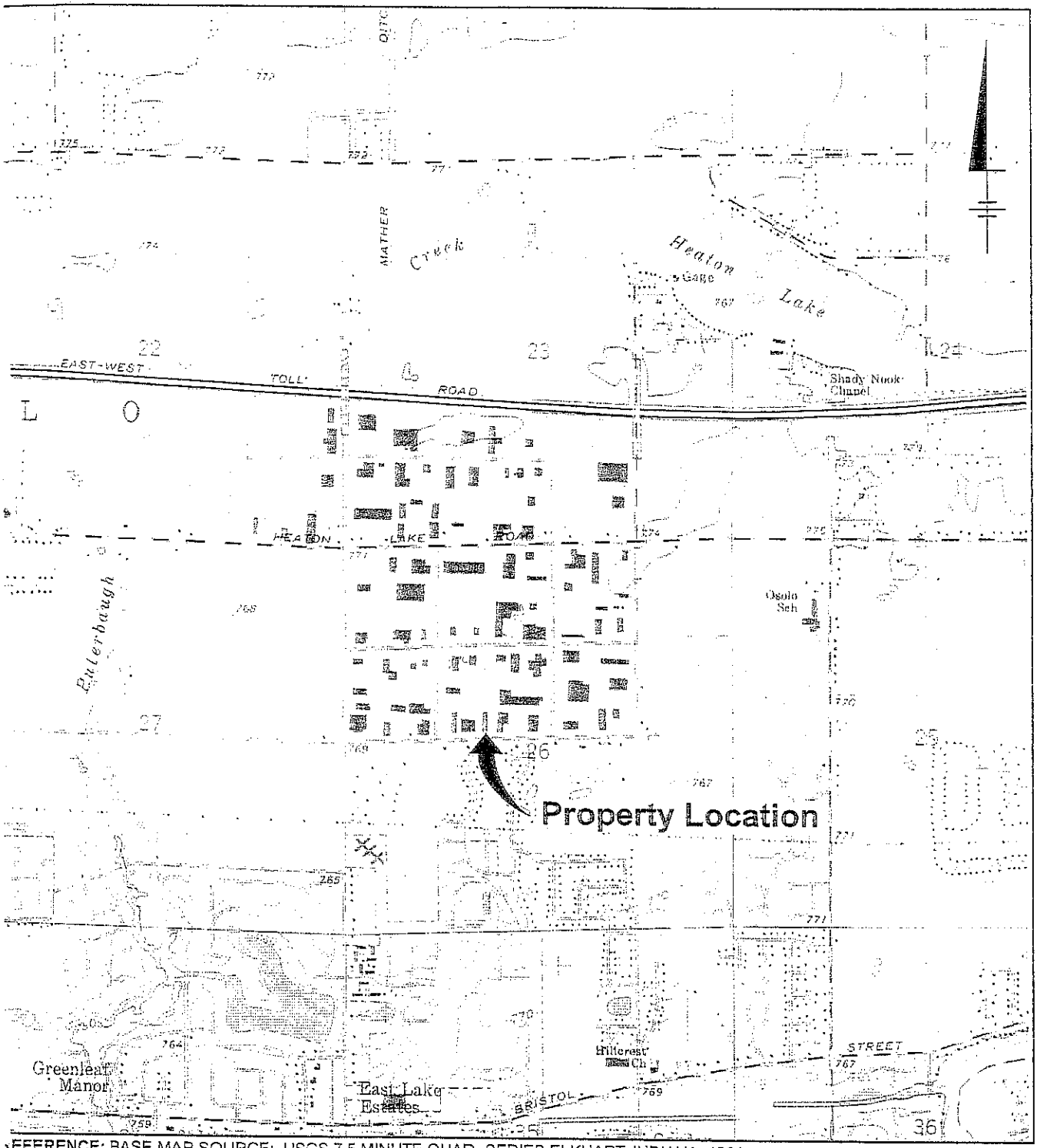
USGS, 1984. *Elemental Concentrations in Soils and Other Surficial Materials of the Conterminous United States*, USGS Professional Paper 1270, 1984.

Figures



REFERENCE: BASE MAP SOURCE: USGS 7.5 MINUTE QUAD. SERIES ELKHART, INDIANA, 1961.

000' 0 2000'

Approximate Scale: 1" = 2000'

AREA LOCATION

DANAHER CORPORATION
ETS FACILITY - ELKHART, INDIANA

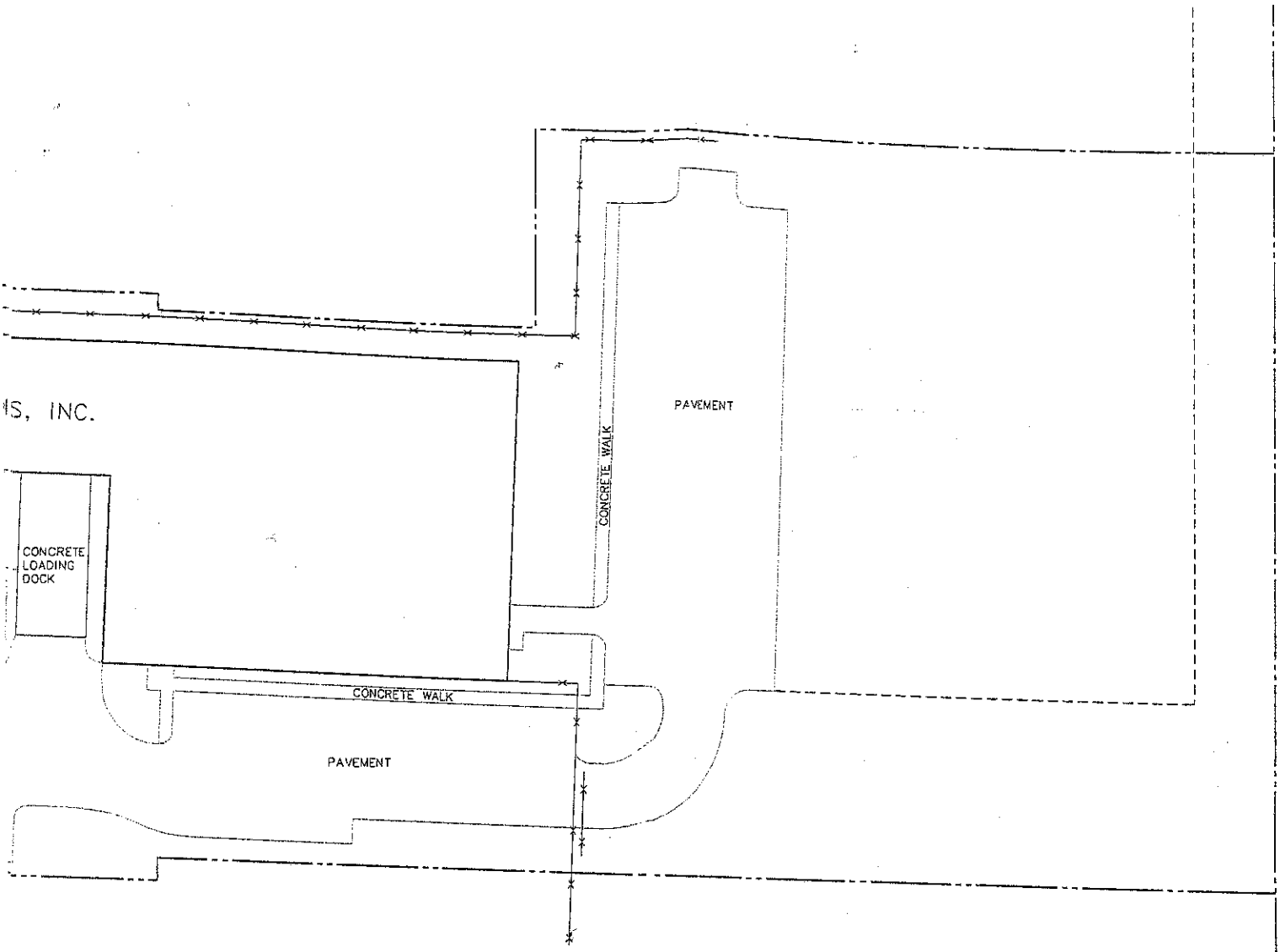
PHASE II ENVIRONMENTAL SITE ASSESSMENT

PROPERTY LOCATION MAP

BBL BLASLAND, BOUCK & LEE, INC.
engineers & scientists

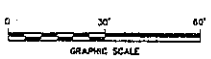
FIGURE 1

SYR-D54-DJH LBR
020/30738n01.cdr



NOTES:

1. ALL SITE FEATURES ARE APPROXIMATE
2. BASE MAP SITE FEATURES LOCATED USING DISTANCES SHOWN ON A MAP PROVIDED BY ETS, INC. CORPORATION ENTITLED LAY-OUT STACK LOCATIONS, DATED 9/19/97.
3. SEPTIC SYSTEMS ADDED BY SCALING FROM A MAP ENTITLED: ADDITION TO ENVIRONMENTAL TEST SYSTEMS INC., DATED 6/13/88, (JOB: 88-215).
4. PROPERTY LINES AND EASEMENT LINES ADDED FROM A MAP PROVIDED BY ETS, INC., (NO TITLE OR DATE); THEY SHOULD NOT BE CONSIDERED ACCURATE.
5. LOCATION OF SEPTIC FIELD EAST OF THE FACILITY WAS ADJUSTED FROM THE PROPOSED ADDITION MAP (6/13/88) BASED ON DISCUSSIONS WITH THE ETS PLANT ENGINEER ON 4/28/99.
6. SAMPLE LOCATIONS ARE APPROXIMATE.



DANAHER CORPORATION
ETS FACILITY - ELKHART, INDIANA

PHASE II ENVIRONMENTAL SITE ASSESSMENT

SAMPLING LOCATIONS

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 2

Tables

TABLE 1

DETECTED CONSTITUENTS IN SOIL

DANAHER CORPORATION
PHASE II ENVIRONMENTAL SITE ASSESSMENT
ELKHART, INDIANA

Constituent	Reported Range for Eastern U.S.[1]	Estimated Range/ Concentration for Northern Indiana[1]	Indiana Tier 1 Soil Closure Subsurface[2]	TW-01 (5.5-7.5') 4/27/1999	TW-02 (4.0-6.0') 4/27/1999	TW-03 (4.0-6.0') 4/27/1999	TW-04 (4.0-6.0') 4/28/1999	TW-05 (4.0-6.0') 4/28/1999	TW-05 DUPLICATE 4/28/1999	TW-06 (2.0-4.0') 4/28/1999
VOCs (ug/kg)										
Acetone	NA	NA	3,090	6.0 JB	12 B	14 B	16 B	17 B	11 JB	22 B
2-Butanone (MEK)	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
Toluene	NA	NA	11,800	5.0 J	6.0	7.0	9.0	9.0	ND	9.0
SVOCs (ug/kg)										
Diethylphthalate	NA	NA	453,000	8.0 JB	6.0 JB	11 JB	6.0 JB	12 JB	6.0 JB	4.0 JB
Di-n-butylphthalate	NA	NA	NA	33 JB	29 JB	31 JB	27 JB	36 JB	23 JB	32 JB
Bis(2-Ethylhexyl)phthalate	NA	NA	1,000,000	24 JB	17 JB	19 JB	16 JB	47 JB	15 JB	13 JB
Di-n-octylphthalate	NA	NA	1,000,000	20 JB	42 JB	52 JB	41 JB	76 JB	140 JB	83 JB
Inorganics (mg/kg)										
Aluminum	7,000 - >100,000	700 - 20,000	NA	3010	3080	2250	3230	1920	2080	7470
Arsenic	<0.1 - 73	4.1	29,200	1.4	2.0	ND	2.6	ND	ND	3.0
Barium	10 - 1,500	300	1,000,000	ND	ND	ND	ND	ND	ND	45.7
Calcium	100 - 280,000	3,500 - 5,200	NA	ND	ND	ND	ND	ND	ND	ND
Chromium	1 - 1,000	1 - 20	38,400(TOTAL)	5.1	5.8	4.2	5.4	4.0	4.2	8.8
Copper	<1 - 700	15	582,000	4.0	ND	ND	ND	ND	ND	ND
Iron	100 - >100,000	15,000	NA	5080	4820	3800	5050	2530	3720	8050
Lead	<10 - 300	<10	81,000	2.9	2.6	3.0	3.4	2.0	2.1	5.2
Magnesium	50 - 50,000	50 - 1,500	NA	784	ND	ND	ND	ND	ND	1120
Manganese	<2 - 7,000	700	NA	81	51.8	25.7	129	31.4	48.8	240
Nickel	<5 - 700	15	130,000	ND	ND	ND	ND	ND	ND	ND
Selenium	<0.1 - 3.9	<0.1 - 0.1	5,200	ND	ND	ND	1.4	ND	ND	1.2
Vanadium	<7 - 300	<7 - 20	ND	6.7	ND	ND	ND	ND	ND	13.8
Zinc	<5 - 2,900	28	1,000,000	21.8	15.7	20.9	16.8	8.4	11.7	25.2

NOTES:

Concentrations for organic compounds in micrograms per kilogram (ug/kg), equivalent to parts per billion (ppb).
Concentrations for inorganic constituents in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm).
B = Indicates that the compound was also detected in an associated blank.
J = Indicates that the concentration is estimated.
ND = Not detected.
Inorganics = Target Analyte List (TAL) inorganic constituents (including cyanide), analyzed by USEPA Methods 6000/7000 series for metals and cyanide by 9010.
SVOCs = Target Compound List (TCL) semi-volatile organic compounds, analyzed by USEPA Method 8270.
VOCs = TCL volatile organic compounds, analyzed by USEPA Method 8260.
Table presents constituents that were detected in at least one sample.
Samples collected by BBL and analyzed by Severn Trent Laboratories, Monroe, Connecticut.
Shading indicates inorganic concentrations above Northern Indiana background concentrations.

Criteria Qualifiers:
NA - Not available.

Criteria Reference:
[1] - United States Geological Survey (USGS). Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States, 1984. Concentration in parts per million.
[2] - Indiana Department of Environmental Management (IDEM), Draft Technical Resource Guidance Document, February 18, 1999.

TABLE 2

FIELD MEASUREMENTS FOR TEMPORARY WELL SAMPLING

DANAHER CORPORATION
PHASE II ENVIRONMENTAL SITE ASSESSMENT
ELKHART, INDIANA

Parameter	TW-01 4/27/1999	TW-02 4/28/1999	TW-03 4/28/1999	TW-04 4/28/1999	TW-05 4/28/1999	TW-06 4/28/1999
Temperature (Degrees Centigrade)	14.9	9.0	9.0	12.3	13.1	11.3
Salinity (Percent)	0.02	0.01	0.01	0.02	0.01	0.01
pH (Standard units)	6.84	8.15	8.32	7.58	6.80	6.31
Specific Conductivity (Milliseimens per centimeter)	624	446	454	492	449	426
Turbidity (Nephelometric turbidity units [NTUs])	4	135	>999	86	213	55
Dissolved Oxygen (Milligrams per liter; mg/L)[1]	11.46	11.28	11.37	12.91	13.05	13.17

Notes:

All of the measurements summarized above were taken in the field with a Horiba Instruments Model U-10 meter.

[1] Dissolved oxygen saturation for groundwater ranges from approximately 11 mg/L for a water temperature of 9°C to approximately 9.5 mg/L for a water temperature of 15°C, therefore these readings appear to be high.

TABLE 3

DETECTED CONSTITUENTS IN GROUNDWATER

DANAHER CORPORATION
PHASE II ENVIRONMENTAL SITE ASSESSMENT
ELKHART, INDIANA

Constituent	USEPA MCLs/MCLGs	Indiana Tier 1 Ground Water Closure[2]	TW-01 4/27/1999	TW-02 4/28/1999	TW-02 DUPLICATE 4/28/1999	TW-03 4/28/1999	TW-04 4/28/1999	TW-05 4/28/1999	TW-06 4/28/1999
VOCs (ug/L)									
Acetone	NA	768	5.0 JB	ND	ND	14	ND	3.0 JB	ND
Methylene Chloride	5 / 0	NA	2.0 JB	ND	ND	ND	ND	ND	ND
Toluene	1,000	1,000	0.3 J	0.4 J	ND	ND	ND	ND	ND
SVOCs (ug/L)									
2-Methylnaphthalene	NL	NA	0.2 J	ND	ND	ND	ND	ND	ND
Benzoic Acid	NL	146,000	0.3 J	ND	2.0 J	0.2 J	ND	0.2 J	0.3 J
Bis(2-Ethylhexyl)phthalate	6	6	0.1 JB	0.3 JB	0.5 JB	2.0 JB	0.1 JB	0.1 JB	0.3 JB
Butylbenzylphthalate	NA	2,590	ND	ND	0.2 JB	ND	ND	ND	ND
Diethylphthalate	NA	29,200	0.2 JB	0.3 JB	0.4 JB	0.4 JB	0.1 JB	0.2 JB	0.2 JB
Di-n-butylphthalate	NL	3,650	0.6 JB	0.3 JB	3.0 JB	0.9 JB	0.5 JB	0.5 JB	0.7 JB
Di-n-octylphthalate	NL	20	0.1 JB	0.2 JB	0.6 JB	3.0 JB	0.4 JB	0.5 JB	0.7 JB
Isophorone	NA	896	ND	0.1 J	ND	0.6 J	0.2 J	0.1 J	0.1 J
Naphthalene	NA	307	0.1 J	ND	ND	0.04 J	ND	ND	ND
Phenanthrene	NA	ND	0.09 J	ND	ND	ND	ND	ND	ND
Phenol	NA	21,900	0.1 J	ND	ND	ND	ND	ND	ND
Inorganics (mg/L)									
Aluminum	0.05 S	NA	1.06	5.40	2.70	96.6	3.23	7.42	2.69
Arsenic	0.05	0.05	ND	ND	ND	0.106	ND	ND	ND
Barium	2	2	ND	ND	ND	0.532	ND	ND	ND
Cadmium	0.005	0.005	ND	ND	ND	0.0122	ND	ND	ND
Calcium	NL	NA	92.7	95.7	82.8	803	90.9	52.2	43.6
Chromium	0.1	0.1	0.0238	ND	ND	0.317	ND	0.0115	ND
Cobalt	NL	NA	ND	ND	ND	0.113	ND	ND	ND
Copper	1.3, AL, tap	1.3	ND	ND	ND	0.322	ND	ND	ND
Iron	0.3 S	NA	6.82	9.60	5.33	180	0.89	6.35	5.69
Lead	0.015, AL, tap	0.015	0.0082	0.0078	0.0052	0.202	0.0082	0.0098	0.0053
Magnesium	NL	NA	26.2	32.8	28.2	406	27	13.4	16.2
Manganese	0.05 S	NA	0.222	0.229	0.179	7.6	0.913	0.542	0.55
Mercury	0.002	0.002	ND	ND	ND	0.00056	ND	ND	ND
Nickel	0.1	0.1	ND	ND	ND	0.235	ND	ND	ND
Potassium	NL	NA	ND	ND	ND	19.8	ND	6.87	ND
Sodium	NA	NA	33.2	19.6	19.2	29.1	23.4	38.5	20.3
Vanadium	NA	NA	ND	ND	ND	0.184	ND	ND	ND
Zinc	5 S	11	0.0505	0.0262	ND	0.653	0.0273	0.0342	0.0249

NOTES:

Concentrations for organic compounds in micrograms per liter (ug/L), equivalent to parts per billion (ppb).
Concentrations for inorganic constituents in milligrams per liter (mg/L), equivalent to parts per million (ppm).
B = Indicates that the compound was also detected in an associated blank.
J = Indicates that the concentration is estimated.
ND = Not detected.
Inorganics = Target Analyte List (TAL) inorganic constituents (including cyanide), analyzed by USEPA Methods 6000/7000 series for metals and cyanide by 9010.
SVOCs = Target Compound List (TCL) semi-volatile organic compounds, analyzed by USEPA Method 8270.
VOCs = TCL volatile organic compounds, analyzed by USEPA Method 8260.
Table presents constituents that were detected in at least one sample.
Samples collected by BBL and analyzed by Severn Trent Laboratories, Monroe, Connecticut.
Shading indicates concentration at or above the USEPA criteria.
Bold indicates concentration at or above IDEM criteria.

Criteria Qualifiers:
NA - Not available.
NL - Not listed.
AL - Action level
MCL/MCLG - Maximum Contaminant Level/ Maximum Contaminant Level Goal
S - Secondary Drinking Water Standards

Criteria Reference:
[1] - United States Environmental Protection Agency (USEPA), Drinking Water Regulations and Health Advisories, EPA 822-B-96-002, October 1996.
[2] - Indiana Department of Environmental Management (IDEM), Draft Technical Resource Guidance Document, February 16, 1999.

Appendix A
Soil Boring Logs

Date Start/Finish: 4/27/99 / 4/27/99
Drilling Company: Mateco Drilling Co.
Driller's Name: Jim Priest
Drilling Method: Direct-Push

Rig Type: CME-45 Trailer Mount

Borehole Depth: 10 feet

Geologist: David Lay

Well No: TW-1

Client:
Danaher Corporation

Location:
Environmental Testing Systems, Inc.
Elkhart, Indiana

DEPTH / ELEVATION	Sample Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
									GROUND SURFACE	
	(0-2')		NA	NA	1.8	0.0/0.0			TOPSOIL with grass, rootlets (Top 2"). Brown fine to medium SAND, trace Silt, coarse Sand and Gravel, loose, moist.	Driven point casing
	(2-4')		NA	NA	0	NA			No recovery (2-4' bgs).	
5										
	(5.5-7.5')*		NA	NA	2.0	0.0/0.0			Same as above. Wet at 7.2' bgs.	
	(7.5-9.5')		NA	NA	1.3	0.0/0.0			Brown medium SAND, trace coarse Sand, loose, wet.	
10									End of sampling at 9.5' bgs. Screen driven to 10' bgs.	Driven point screen (9.5-10' bgs).
									Installed as a temporary well. Abandoned after sampling, 4/27/99. Borehole backfilled with bentonite pellets.	
15										

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
* Soil sample collected from 5.5-7.5' interval for laboratory analysis. ags/bgs - above/below ground surface. NA - Not available.

Saturated Zones

Date / Time	Elevation	Depth
4/27/99		5.5

Project: 307.38.020
File: TW-1.LOG

Script: 99nbbl
Date: 07/12/99

Date Start/Finish: 4/27/99 / 4/27/99
Drilling Company: Mateco Drilling Co.
Driller's Name: Jim Priest
Drilling Method: Direct-Push

Rig Type: CME-45 Trailer Mount

Borehole Depth: 10 feet

Geologist: David Lay

Well No: TW-2

Client:
Danaher Corporation

Location:
Environmental Testing Systems, Inc.
Elkhart, Indiana

DEPTH / ELEVATION	Sample Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
									GROUND SURFACE	
	(0-2')		NA	NA	1.4	0.0/0.0			TOPSOIL with grass, rootlets (Top 2"). Brown fine to medium SAND, trace Silt, coarse Sand and Gravel, loose, moist.	1.5" diameter PVC casing (0-4.5' bgs).
	(2-4')		NA	NA	1.0	0.0/0.0			Grades to trace coarse Sand.	
5	(4-6')*		NA	NA	1.4	0.0/0.0			Wet at 6' bgs.	
	(6-8')		NA	NA	0.9	0.0			Brown coarse SAND and fine GRAVEL, little Silt and fine to medium Sand, loose, wet, slight septic odor.	1.5" diameter hand-cut PVC screen (3.3-8.3').
	(8-10')		NA	NA	1.4	0.0			Brown medium SAND, little coarse Sand, trace Gravel, loose, wet.	
10									End of sampling at 10' bgs.	
									Installed as a temporary well. Abandoned after sampling, 4/28/99. Borehole backfilled with bentonite pellets.	
15										

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
* Soil sample collected from 4-6' interval for laboratory analysis. ags/bgs - above/below ground surface. NA - Not available.

Saturated Zones

Date / Time	Elevation	Depth
4/28/99		5.88 ▼

Project: 307.38.020
File: TW-2.LOG

Script: 99nbbl
Date: 07/12/99

Date Start/Finish: 4/27/99 / 4/27/99
Drilling Company: Mateco Drilling Co.
Driller's Name: Jim Priest
Drilling Method: Direct-Push

Rig Type: CME-45 Trailer Mount

Borehole Depth: 10 feet

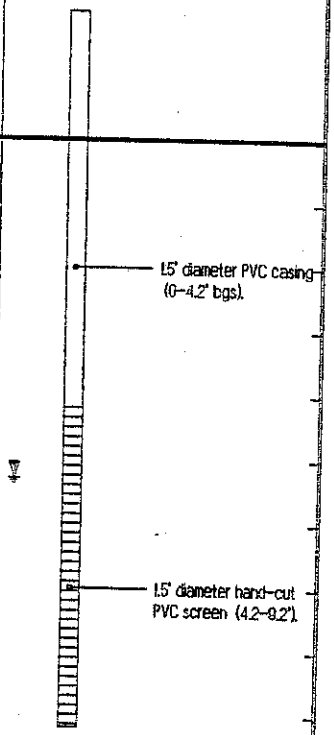
Geologist: David Lay

Well No: TW-3

Client:
Danaher Corporation

Location:
Environmental Testing Systems, Inc.
Elkhart, Indiana

DEPTH	ELEVATION	Sample Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
										GROUND SURFACE	
		(0-2')		NA	NA	1.5	0.0/0.0			TOPSOIL with grass, rootlets (Top 2"). Brown fine to medium SAND, little Silt, trace coarse Sand, loose, moist.	
		(2-4')		NA	NA	0.9	0.0/0.0				
5		(4-6')*		NA	NA	1.6	0.0/0.0				
		(6-8')		NA	NA	0.8	0.0/0.0			Wet at 5.8' bgs, iron oxide staining just above water table.	
		(8-10')		NA	NA	2.0	0.0/0.0			Brown medium SAND, little coarse Sand and Gravel, loose, wet.	
10										End of sampling at 10' bgs.	
										Installed as a temporary well. Abandoned after sampling, 4/28/99. Borehole backfilled with bentonite pellets.	
15											



BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
* Soil sample collected from 4-6' interval for laboratory analysis. ags/bgs - above/below ground surface. NA - Not available.

Saturated Zones

Date / Time	Elevation	Depth
4/28/99		5.31 ▼

Project: 307.38.020
File: TW-3.LOG
Script: 99nbbl
Date: 07/12/99

Date Start/Finish: 4/28/99 / 4/28/99
Drilling Company: Mateco Drilling Co.
Driller's Name: Jim Priest
Drilling Method: Direct-Push

Rig Type: CME-45 Trailer Mount

Borehole Depth: 10 feet

Geologist: David Lay

Well No: TW-4

Client:
Danaher Corporation

Location:
Environmental Testing Systems, Inc.
Elkhart, Indiana

DEPTH	ELEVATION	Sample Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
										GROUND SURFACE	
		(0-2')		NA	NA	2.0	0.0/0.0			TOPSOIL with grass, rootlets (Top 2"). Brown fine to medium SAND, little Silt, trace coarse Sand and Gravel loose, moist.	1.5" diameter PVC casing (0-4.1' bgs).
		(2-4')		NA	NA	1.3	0.0/0.0				
5		(4-6')*		NA	NA	2.0	0.0/0.0			Grades between wet at 5.5-6.0' bgs.	
		(6-8')		NA	NA	1.3	0.0/0.0			Brown coarse SAND and fine GRAVEL, little fine to medium Sand, loose, wet.	1.5" diameter hand-cut PVC screen (4.1-9.1').
		(8-10')		NA	NA	1.4	0.0/0.0			Brown medium SAND, little coarse Sand and Gravel, loose, wet.	
10										End of sampling at 10' bgs.	
										Installed as a temporary well. Abandoned after sampling, 4/28/99. Borehole backfilled with bentonite pellets.	

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
* Soil sample collected from 4-6' interval for laboratory analysis. ags/bgs - above/below ground surface. NA - Not available.

Saturated Zones

Date / Time	Elevation	Depth
4/28/99		5.00 ▼

Project: 307.38.020
File: TW-4.LOG
Script: 99nbbl
Date: 07/12/99

Date Start/Finish: 4/28/99 / 4/28/99
Drilling Company: Mateco Drilling Co.
Driller's Name: Jim Priest
Drilling Method: Direct-Push

Rig Type: CME-45 Trailer Mount

Borehole Depth: 10 feet

Geologist: David Lay

Well No: TW-5

Client:
Danaher Corporation

Location:
Environmental Testing Systems, Inc.
Elkhart, Indiana

DEPTH	ELEVATION	Sample Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
										GROUND SURFACE	
		(0-2')		NA	NA	1.6	0.0/0.0			Dark brown TOPSOIL with grass, rootlets (Top 2"). Brown fine to medium SAND, little Silt, and Gravel loose, moist.	1.5" diameter PVC casing (0-4.6' bgs).
		(2-4')		NA	NA	0.8	0.0/0.0				
5		(4-6')*		NA	NA	1.5	0.0/0.0			Grades between wet at 5.5-6.0' bgs.	
		(6-8')		NA	NA	0.9	0.0/0.0				1.5" diameter hand-cut PVC screen (4.6-9.6').
10		(8-10')		NA	NA	1.3	0.0/0.0			End of sampling at 10' bgs. Installed as a temporary well. Abandoned after sampling, 4/28/99. Borehole backfilled with bentonite pellets.	

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
* Soil sample collected from 4-6' interval for laboratory analysis. ags/bgs - above/below ground surface. NA - Not available.

Saturated Zones

Date / Time	Elevation	Depth
4/28/99		5.10

Project: 307.38.020
File: TW-5.LOG
Script: 99nbbl
Date: 07/12/99

Date Start/Finish: 4/28/99 / 4/28/99
Drilling Company: Mateco Drilling Co.
Driller's Name: Jim Priest
Drilling Method: Direct-Push

Rig Type: CME-45 Trailer Mount

Borehole Depth: 10 feet

Geologist: David Lay

Well No: TW-6

Client:
Danaher Corporation

Location:
Environmental Testing Systems, Inc.
Elkhart, Indiana

DEPTH / ELEVATION	Sample Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
									GROUND SURFACE	
	(0-2')		NA	NA	1.6	0.0/0.0			Dark brown TOPSOIL (top 1"). Brown fine SAND and SILT, little medium Sand, wood particles, loose, moist.	1.5" diameter PVC casing (0-3.4' bgs).
	(2-4')*		NA	NA	0.9	0.0/0.0			Brown fine to medium SAND, little Silt, loose, moist.	
5	(4-6')		NA	NA	1.4	0.0/0.0				
	(6-8')		NA	NA	1.0	0.0/0.0			Wet at 6.0' bgs.	
	(8-10')		NA	NA	2.0	0.0/0.0			Brown medium SAND, trace Silt, loose, wet.	1.5" diameter hand-cut PVC screen (3.4-8.4').
10									End of sampling at 10' bgs.	
									Installed as a temporary well. Abandoned after sampling, 4/28/99. Borehole backfilled with bentonite pellets.	
15										

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
* Soil sample collected from 2-4' interval for laboratory analysis. ags/bgs - above/below ground surface. NA - Not available.

Saturated Zones

Date / Time	Elevation	Depth
4/28/99		5.55 ▼

Project: 307.38.020
File: TW-6.LOG
Script: 99nbbl
Date: 07/12/99

APPENDIX F
MANIFESTS FOR HAZARDOUS WASTES

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

5-082-01

State Form LPC 62 8/81 IL632-0810

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.)

EPA Form 0700-22 (Rev. 6-89)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: IND152094785 | Manifest Document No.: 30853

2. Page 1 of 1 | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address / Location If Different
ENVIRONMENTAL TEST SYSTEMS
23575 CO RD 106
ELKHART IN 46514

A. Illinois Manifest Document Number: IL1059687 3 FEE PAID IF APPLICABLE

B. Generator's IL ID Number: 9100025555

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*: 219 262-3060

5. Transporter 1 Company Name: SAFETY-KLEEN SYSTEMS, INC

6. US EPA ID Number: TXR000050930

C. Transporter's ID Number: UPUI512881L

D. Transporter's Phone: 574) 289-4510

7. Transporter 2 Company Name

8. US EPA ID Number

E. Transporter's ID Number

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address: 000654
SAFETY-KLEEN SYSTEMS, INC
633 E 138TH ST
DOLTON, IL 60419

10. US EPA ID Number: ILD980613913

G. Facility's IL ID Number: 0310690006

H. Facility's Phone: 708 225-8100

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. WASTE COMBUSTIBLE LIQUID, N.O.S. (PETROLEUM NAPHTHA)NA1993 PGIII (ERG#128) 6.7LBS/GAL (D039)	001	DF	00055	G	EPA HW Number D039
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

K. Handling Codes for Wastes Listed Above In Item #14: (A) T54

15. Special Handling Instructions and Additional Information
0304 10299708S 0022630853 0000233214 14
SK AUTHORIZED TO RETAIN LICENSED SUBSEQUENT CARRIER, AS NECESSARY.
*EMERGENCY RESP#800-468-1760 24HR

A 717 B C D

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Jon Brew | Signature | Date: Month 01 Day 23 Year 03

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Andrew J Bartkowiak | Signature | Date: Month 01 Day 23 Year 03

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name | Signature | Date: Month 01 Day 29 Year 03

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1988, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 1. TSD MAIL TO GENERATOR

FEB 11 2003

In case of a spill call the Illinois Office of Emergency Response at 217 / 782-7860 and the National Response Center at 800 / 424-8802 or 202 / 426-2675.

HER 083684

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's U.S. EPA ID Number: I N D 1 5 2 0 9 4 7 8 5
Manifest Document No.: 8.36.84
2. Page 1 of 2
Information in the shaded areas is not required by Federal Law.

3. Generator's Name and Mailing Address
ENVIRONMENTAL TEST SYSTEMS
23575 CR 106, ELKHART, IN 46514

4. Generator's Phone (574) 262-2060

A. State Manifest Document Number

B. State Generator's ID

C. State Transporter's ID: [illegible]

D. Transporter's Phone

E. State Transporter's ID

F. Transporter's Phone

G. State Facility's ID

H. Facility's Phone: [illegible]

5. Transporter 1 Company Name: HERITAGE TRANSPORT,LLC/TECH SERVICI
6. U.S. EPA ID Number: N D 0 5 8 4 8 4 1 1 4

7. Transporter 2 Company Name
8. U.S. EPA ID Number

9. Designated Facility Name and Site Address
VON ROLL AMERICA, INC.
1250 SAINT GEORGE STREET
EAST LIVERPOOL, OH 43920
10. U.S. EPA ID Number: O H D 9 8 0 6 1 3 5 4 1

11. U.S. DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol.	Waste No.
a. Waste Corrosive Liquids, Flammable, ~~Organic~~ n.o.s, 8, UN2920, PG II (Aetic Anhydride Hydrochloric ~~Acid~~) ERG# 132	00.1	D.F	00.00	P	D002
b. Waste Corrosive Liquid, Flammable, n.o.s, 8, UN2920, PG II (1-4 Diamino Butane, Sodium Hydroxide) ERG# 132	00.1	D.F	00.08.0	P	D002
c. Waste Flammable Liquids, Corrosive, n.o.s, 3, UN2924 PG II (G-Butyl Acetone, Acetonitrile) ERG# 132	00.1	D.F	002.0.0	P	U003
d. Waste Oxidizing Liquid, Corrosive, n.o.s, 5.1, UN3098, PG II (~~Peroxyacetic Acid~~, Potassium Permanganate, Hydrogen Peroxide) ERG# 140	0.0.1	D.F	00.00.8	P	D001

J. Additional Descriptions for Materials Listed Above
A) ETS-1, 1x55DF, D001, D002 B) ETS-2, 1x30DF, D001
C) ETS-3, 1x55DF, Multi Coded D) ETS-4, 1x50F, D002

K. Handling Codes for Wastes Listed Above
T52968

15. Special Handling Instructions and Additional Information
24 HOUR EMERGENCY PHONE #: 303-623-5716
WS# ETEI 600
H8030103283
PO# 88135

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Printed/Typed Name: John Dethen
Signature: [signature]
Date: Month 0.8 Day 2.0 Year 03

17. Transporter 1 - Acknowledgement of Receipt of Materials
Printed/Typed Name: Steve Gillard
Signature: [signature]
Date: Month 0.8 Day 2.0 Year 03

18. Transporter 2 - Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest (except as noted in Item 19).
Printed/Typed Name: Steve E. Billiter
Signature: [signature]
Date: Month 0.9 Day 03 Year 03

GENERATOR / TRANSPORTER / FACILITY

In case of a spill, call the National Response center at 800 / 424-8802 or 202 / 426-2675

EPA Form 8700-22 (Rev. 10-94) Previous editions are obsolete.

COPY 2 - RETURN TO GENERATOR

SEP 0 9 2003

SIGNATURE AND INFORMATION *MUST* BE LEGIBLE ON ALL COPIES

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UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator's U.S. EPA ID Number: FND.1.5.2.0.9.4.7.8.5 | Manifest Document No.: 8.3.6.8.4 | 22. Page: 2 of 2 | Information in the shaded areas is not required by Federal Law.

23. Generator's Name: Environmental Test System

L. State Manifest Document Number: ILER05.3684

M. State Generator's ID:

24. Transporter _____ Company Name | 25. U.S. EPA ID Number | N. State Transporter's ID:

O. Transporter's Name:

26. Transporter _____ Company Name | 26. U.S. EPA ID Number | P. State Transporter's ID:

Q. Transporter's Phone:

28. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	29. Containers No.	Type	30. Total Quantity	31. Unit Wt/Vol.	R. Waste No.
a. ~~Waste Oxidizing Liquids, Corrosive, N.O.S., 5.1, UN3098, PG II~~ (Hydrogen Peroxide, Potassium Permanganate) ERG# 143	001	DF	000.03	P	D001
b. Waste Zinc Dust, 4.3, UN1436, PGII ERG# 138	001	DF	000.08	P	D001
c. Waste Organic Peroxide, Type F, Liquid, 5.2, UN3109, PG II (Cumene hydroperoxide) ERG# 145	001	DF	000.07	P	D001
d. Waste Toxic Liquids, Flammable, Organic, N.O.S., 6.1, UN2929, PG II (Dichloroethylene, 3-Dimethylamino phenol) ERG# 131	001	DF	000.20	P	D028
e. Waste Flammable Liquids, N.O.S., 3, UN1993, PG II (Ethyl Acetate, Tetrahydrofuran) ERG# 128	001	DF	000.20	P	D215
f. Waste Toxic Solids, Inorganic, N.O.S., 6.1, UN3288, PG II (Sodium Azide, Calgamite) ERG# 151	001	DF	000.15	P	D105
g. Waste Aerosols, Flammable, N.O.S., 2.1, UN1950 (Petroleum Distillates, Isopropanol) ERG# 126	001	DF	000.18	P	D001
h.					
i.					

j. Additional Descriptions for Materials Listed Above: D018, D035, D039, D040, D043, Waste Liquid Flammable N.O.S. 3, UN1993, PG II, ERG# 128, Waste Solid Flammable N.O.S. 4.1, UN1325, PG II, ERG# 133, D018, D035, D039, D040, D043

k. Handling Codes for Wastes Listed Above:

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter _____ Acknowledgement of Receipt of Materials — Printed / Typed Name | Signature | DATE Month Day Year

34. Transporter _____ Acknowledgement of Receipt of Materials — Printed / Typed Name | Signature | DATE Month Day Year

FACILITY

35. Discrepancy Indication Space

In case of a spill, call the National Response center at 800 / 424-8802 or 202 / 426-2675

EPA Form 8700-22A (Rev. 10-94) Previous editions are obsolete.

COPY 2 - RETURN TO GENERATOR

HER117515

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's U.S. EPA ID Number: [illegible] Manifest Document No.: [illegible]

2. Page 1 of 1

Information in the shaded areas is not required by Federal Law.

3. Generator's Name and Mailing Address
ENVIRONMENTAL TEST SYSTEMS
[illegible] CR 106, ELKHART, IN 46514

4. Generator's Phone (574 [illegible]

5. Transporter 1 Company Name: HERITAGE TRANSPORT, LLC

6. U.S. EPA ID Number: [illegible]

7. Transporter 2 Company Name:

8. U.S. EPA ID Number:

9. Designated Facility Name and Site Address
HERITAGE ENVIRONMENTAL SERVICES LLC
7001 WEST MORRIS STREET
INDIANAPOLIS, IN 46231

10. U.S. EPA ID Number: [illegible]

A. State Manifest Document Number
B. State Generator's ID
C. State Transporter's ID
D. Transporter's Phone
E. State Transporter's ID
F. Transporter's Phone
G. State Facility's ID
H. Facility's Phone

11. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol.	Waste No.
a. RQ, WASTE ALCOHOLS, N.O.S., 3, UN1987, PG III, (ETHANOL, ISOPROPYL ALCOHOL) (F003,F005,D001,D004) EX38 117	002	DM	00110	G	
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

24 HOUR EMERGENCY PHONE #: 1-800 [illegible]

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Printed/Typed Name: David Morris Signature: [signature] Date: Month [illegible] Day [illegible] Year [illegible]

17. Transporter 1 - Acknowledgement of Receipt of Materials

Printed/Typed Name: Jim Hadley Signature: [signature] Date: Month [illegible] Day [illegible] Year [illegible]

18. Transporter 2 - Acknowledgement of Receipt of Materials

Printed/Typed Name: Signature: Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest (except as noted in item 19).

Printed/Typed Name: [signature] Signature: [signature] Date: Month [illegible] Day [illegible] Year [illegible]

GENERATOR

TRANSPORTER

FACILITY

In case of a spill, call the National Response center at 800 / 424-8802 or 202 / 426-2675

EPA Form 8700-22 (Rev. 10-94) Previous editions are obsolete.

COPY 2 - RETURN TO GENERATOR

APPENDIX G
PERSONNEL QUALIFICATIONS

CONLEY B. PHIFER

Education:

Purdue University
B.S.-Environmental Health, 1979
University of Pittsburgh
M.S.-Industrial Hygiene, 1985

Professional Affiliations/ Certifications:

Certified Hazardous Materials Manager
Certified Indoor Environmentalist
40-hour HazWoper Training

Experience:

Mr. Phifer has more than 20 years of professional environmental consulting experience. Mr. Phifer's experience includes serving as Department Manager/Senior Project Manager for environmental site assessments for commercial and industrial properties throughout the United States. In this capacity, Mr. Phifer has performed or had direct responsibility for management more than 1000 Phase I/II Environmental site assessments of varying degrees of complexity. Mr. Phifer also served as Environmental Consultant/Project Manager for numerous EPA Region IV Alternative Remedial Contracting Service (ARCS) sites. Specific projects have included performing Remedial Investigation/Feasibility Studies (RI/FS), Remedial Designs (RD) and Remedial Actions (RA) for several EPA "Superfund" sites in the southeastern United States. Mr. Phifer served as Technical Assistance Team (TAT) Leader for a dedicated EPA Region IV contract involved with emergency response and removal activities at sites involving the release or threat of release of hazardous materials. Mr. Phifer has assisted numerous industrial clients in the management of hazardous wastes (assessment, RCRA closure, remediation) and underground storage tank systems (assessment, removal remediation, closure).

Riverside Tool Corp. Response
Attachment 2

MSDS/SDS Sheets

3-24-14

Rochester Midland Corporation

MATERIAL SAFETY DATA SHEET

REVISION DATE: 05/21/2012 **REVISION NUMBER:** 9
DATE PRINTED: 05/21/2012 **PREPARED BY:** EH&S DEPARTMENT

1. CHEMICAL PRODUCT

PRODUCT NAME: **AC 500, ACID RUST, Scale & Oil Remover**
PRODUCT CODE: 100010

NFPA/HMIS HAZARD CODES(minimal=0; slight=1; moderate=2; serious=3; severe=4)

Health:	3/3	**Fire:**	0/0
Reactivity:	1/1	**Special/Protective Equipment:**	Acid/C

NAME OF THE MANUFACTURER:
Rochester Midland Corporation
155 Paragon Drive
Rochester, New York 14624
USA

Emergency Phone:
INFOTRAC: 1-800-535-5053
OUTSIDE US: 1-352-323-3500

2. HAZARDS IDENTIFICATION

EFFECTS FROM ACUTE EXPOSURE:

INGESTION: Severe burns to mucous membranes of mouth, throat and digestive tract.
SKIN CONTACT: Causes moderate skin irritation. Prolonged contact causes severe burns which may not be immediately painful or visible.
INHALATION: Inhalation of spray mist may be irritating. Possible damage to mucous membranes of nose and throat.
EYE CONTACT: Causes severe eye irritation. May Cause Eye Burns. May cause permanent eye damage. May cause blindness.
CHRONIC EFFECTS: Dermatitis. Possible respiratory damage from inhalation of dust or mist.
EFFECTS/CARCINOGENICITY: None listed under OSHA, IARC, or NTP.
ROUTES OF ENTRY: Routes of entry for solids and liquids include eye and skin contact, ingestion and inhalation.

3. COMPOSITION/INFORMATION ON INGREDIENTS

PRODUCT COMPOSITION CAS#	%	ACGIH TLV	OSHA PELs
Phosphoric acid 7664-38-2	45-55	1 mg/m^3	1 mg/m^3

4. FIRST AID MEASURES

INGESTION: Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.
SKIN: Flush with water for at least 15 minutes while removing all contaminated clothing and shoes. Get medical attention if irritation or burns develop.
INHALATION: If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult give oxygen. Get medical attention.
EYES: In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.
NOTES TO PHYSICIAN: None.

5. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:	**(F):** Not determined **(C):** Not determined
METHOD:	TCC
FLAMMABLE LIMITS IN AIR	
LOWER (%):	No data
UPPER (%):	No data
SENSITIVITY TO MECHANICAL IMPACT(Y/N):	NO
SENSITIVITY TO STATIC DISCHARGE:	Sensitivity to static discharge is not expected.
SUITABLE EXTINGUISHING MEDIA:	As for surrounding fire. Product will not burn.
FIRE FIGHTING PROCEDURES:	Corrosive material. Avoid exposure to mist and splashes. Fire-fighters should wear self-contained breathing apparatus and full protective clothing when fighting chemical fires. Cool exposed containers with water spray.

6. ACCIDENTAL RELEASE MEASURES

SPILL PROCEDURES:

SMALL SPILLS:	Flush with water.
LARGE SPILLS:	Dike to contain. Pick up with absorbant material. Put in suitable container for disposal. Flush remainder with water.
PERSONAL PRECAUTIONS:	Not applicable
ENVIRONMENTAL PRECAUTIONS:	Not applicable
METHODS FOR CLEANING UP:	Not applicable

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:	Danger: Corrosive. Concentrated acidic liquid. Avoid contact with eyes, skin and clothing. Do not breathe mist or vapors. Store only in original container and keep closed. Store in a well ventilated area. Mix only with water.
OTHER PRECAUTIONS:	Do not reuse container. Read and follow label instructions. Keep out of reach of children.
SPECIFIC USE(S):	Not applicable.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

PROTECTIVE EQUIPMENT:

EXPOSURE CONTROLS:	Use in a well ventilated area.
RESPIRATORY PROTECTION:	Use an approved NIOSH full-face air supplied respirator if TLV/PEL's are exceeded or if over-exposure is likely.
PROTECTIVE GLOVES:	Nitrile, neoprene, or other appropriate gloves are recommended to minimize hand skin contact.
EYE PROTECTION:	Goggles and face shield are recommended to minimize eye contact.
OTHER PERSONAL PROTECTION EQUIPMENT:	Appropriate protective clothing as needed to prevent skin contact. Liquid may penetrate leather shoes and cause delayed burns. Eyewash fountains and safety showers must be easily accessible. It is the responsibility of the end user of this product to determine level of PPE required that is consistent with safe use of this product.
VENTILATION:	Not normally required. General mechanical and/or local exhaust as needed to meet exposure limits if mist in air.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR:	Clear amber liquid.	
BOILING POINT (F):	Not determined	**(C)** Not determined
VAPOR PRESSURE:	Not determined	

9. PHYSICAL AND CHEMICAL PROPERTIES

VAPOR DENSITY (AIR=1):	Not determined
SOLUBILITY IN WATER:	Not determined
SPECIFIC GRAVITY:	1.32 - 1.36
VOC Content (%):	0
EVAPORATION RATE:	Not determined
PH:	Not determined

10. STABILITY AND REACTIVITY

STABILITY DATA:	STABLE
POLYMERIZATION:	Will Not Occur.
HAZARDOUS DECOMPOSITION:	If evaporated to dryness, as in a fire, may release: Soot. Smoke. Carbon Monoxide. Oxides of Phosphorus.
INCOMPATIBILITY (MATERIALS TO AVOID):	Alkalines. Chlorine containing materials. Peroxides. Reducing agents. Avoid contact with aluminum, zinc, other soft metals or galvanized metals. Do not mix with:
CONDITIONS/HAZARDS TO AVOID:	None.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:	Not Established
EFFECTS OF CHRONIC EXPOSURE:	Not established.
OTHER TOXIC EFFECTS:	Not established.

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION:	No data at this time
CHEMICAL FATE INFORMATION:	No data at this time.
MOBILITY:	Not applicable.
PERSISTENCE/DEGRADABILITY:	Not applicable
BIOACCUMULATIVE POTENTIAL:	Not applicable
OTHER ADVERSE EFFECTS:	Not applicable

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHODS: Dispose in accordance with Federal, State and Local regulations.

14. TRANSPORT INFORMATION

Please refer to the Bill of Lading/Receiving documents for up to date shipping information.

15. REGULATORY INFORMATION

PRODUCT COMPOSITION CAS#	%	TSCA:	EINECS:	Canada DSL:	CA PROP 65:
Phosphoric acid 7664-38-2	45-55	Listed	Listed	Listed	Not Listed

PRODUCT COMPOSITION CAS#	%	CERCLA:	SARA 302:	SARA 313:
Phosphoric acid 7664-38-2	45-55	2270 kg 5000 lb	Not Listed	Not Listed

PRODUCT COMPOSITION CAS#	%	Canada WHMIS:
Phosphoric acid 7664-38-2	45-55	Listed

The following components of this material are included in the Massachusetts Substance List and are present at or above reportable levels.

PRODUCT COMPOSITION CAS#	%	MARTK:
Phosphoric acid 7664-38-2	45-55	Listed

The following components of this material are included in the New Jersey Substance List and are present at or above reportable levels.

PRODUCT COMPOSITION CAS#	%	NJRTK:
Phosphoric acid 7664-38-2	45-55	Listed

The following components of this material are included in the Pennsylvania Substance List and are present at or above reportable levels.

PRODUCT COMPOSITION CAS#	%	PARTK:
Phosphoric acid 7664-38-2	45-55	Listed

16. OTHER INFORMATION

This information was compiled from current, reliable sources and is believed to be correct. As data, and/or regulations change, and conditions of use and handling are beyond our control, no warranty, express or implied, is made as to completeness or continuing accuracy of this information.

***** END OF MSDS *****

3-29-14

KAISER ALUMINUM

Material Safety Data Sheet

Material Name: Aluminum Alloys Containing Lead **MSDS ID: KDS-7**

* * * Section 1 - Chemical Product and Company Identification * * *

Identification Number: KDS-7
Chemical Name: Aluminum (Minimum 0.1% Lead)
Product Use: Fabricated Parts
Synonyms: None
Manufacturer Information

Kaiser Aluminum
27422 Portola Pkwy
Suite 200
Foothill Ranch, CA 92610

Emergency # CHEMTREC 1-800-424-9300

* * * Section 2 - Hazards Identification * * *

Emergency Overview

Product is solid metallic pieces. Product may form explosive dust/air mixtures if high concentration of product dust is suspended in air. Firefighters should wear full protective clothing and self contained breathing apparatus. Exposure to dust may be irritating to eyes, nose, and throat. Contact with hot metal may cause severe thermal burns. Do not touch or handle cast aluminum or heated materials before determining the temperature. Product contains lead, a suspect human carcinogen and reproductive hazard. It may cause damage to the central nervous system and brain. Excessive lead exposure may also adversely affect male and female reproductive capability and cause harm to the unborn fetus. Hot work operation such as welding, torch cutting, etc may potentially generate lead fumes and hexavalent chromium which has been identified as a carcinogen. See Section 15.

Potential Health Effects: Eyes

Dust, fumes or powder may irritate eye tissue. Eye contact with aluminum particles may cause corneal necrosis.

Potential Health Effects: Skin

Dust or powder may irritate the skin. Some products may contain residual coating. Prolonged skin contact with the coating oils and nickel component may result in skin sensitization (allergy) in some individuals. Do not touch or handle cast aluminum or heated materials before determining the temperature. Aluminum does not change color on heating. Contact with hot metal may cause severe thermal burns.

Potential Health Effects: Ingestion

Not a likely route of entry. Ingestion of large amounts of dusts or particulates may produce gastrointestinal disturbances including irritation, nausea, and diarrhea.

Potential Health Effects: Inhalation

Dusts of this product may cause irritation of the nose, throat, and respiratory tract.

HMIS Ratings: Health: 1* **Fire:** 1 **Reactivity:** 0 **Pers. Prot.:** Goggles, Gloves
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

* * * Section 3 - Composition / Information on Ingredients * * *

CAS #	Component	Percent[1]
7429-90-5	Aluminum	80-90
	Alloying Elements:	
7440-21-3	Silicon P, W**	0.1-1, 1-5, 5-10, 10-15
7439-89-6	Iron P, W	0.1-1, 1-5

[1] Where more than one range for a component is given in the "Percent" column, the range for the component includes all the individual ranges. Thus, if the column lists 0.1-1, 1-5, 5-10, the material is present in the product at a concentration between 0.1 and 10 percent.

7440-66-6	Zinc P, W	0.1-1, 1-5, 5-10
7440-50-8	Copper P, W	0.1-1, 1-5, 5-10
7439-96-5	Manganese P, W	0.1-1, 1-5
7439-95-4	Magnesium P, W	0.1-1, 1-5, 5-10
7440-69-9	Bismuth P, W	0.1-1, 1-3
7440-31-5	Tin P, W	0.1-1, 1-2
64771-72-8	Coating Oil	0.1-1
7440-47-3	Chromium P, W	0.1-1
7439-92-1	Lead P, W	0.1-1, 1-2

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Iron oxide (1309-37-1), Magnesium oxide fume (1309-48-4), Zinc oxide (1314-13-2).

Component Information/Information on Non-Hazardous Components

This material is considered hazardous under 29 CFR 1910.1200 (Hazard Communication) and the Canadian Workplace Hazardous Materials Information System (WHMIS). The information in this MSDS is provided for situations where this material may be deformed creating dusts or fumes which may be potentially hazardous.

Coating Oils: Certain products may be coated with residual processing materials which comprise less than 1% of the total product. These can include 111-82-0, 112-39-0, 112-72-1, 124-10-7, 30399-84-9, 64771-72-8, and proprietary corrosion inhibitors. See Section 16 for chemical names. With the exception of 64771-72-8 there are no established or recommended exposure limits.

**(P): Prime ingot hardener aluminum.
(W): Wrought Aluminum (fabricated products).

* * * Section 4 - First Aid Measures * * *

First Aid: Eyes

Flush immediately with water for at least 15 minutes. Do not rub eyes. If irritation persists get medical attention.

First Aid: Skin

For skin contact, flush with large amounts of water. If irritation persists, get medical attention.

First Aid: Ingestion

Due to the physical nature of this material, ingestion is unlikely to occur. If ingestion of a large amount does occur, seek medical attention.

First Aid: Inhalation

If symptoms are experienced, remove source of contamination or move victim to fresh air. Give oxygen if breathing is difficult. Call a physician if symptoms develop or persist.

* * * Section 5 - Fire Fighting Measures * * *

General Fire Hazards

High concentration of airborne dust may form explosive mixture with air. Use adequate ventilation.
Coating oils that may be present on some products can be ignited by open flames and other sources of ignition while the aluminum base product will ignite only under extreme conditions.
When heated to decomposition, it emits highly toxic fumes of lead.

Unusual Fire and Explosion Hazards

Fresh, very finely ground aluminum, may be pyrophoric when its particle size is 0.03 um or less. Dust is moderately flammable/explosive by heat, flame or chemical reaction with powerful oxidizers. May ignite on contact with vapors of AsCl3, SCl2, Se2Cl2, PCl5; on contact with barium peroxide; contact with O2; mixtures with picric acid + water after a delayed period; exothermic reaction with water + iron powder which emits hydrogen gas; and spontaneously ignites in CS2 vapors.
May ignite and react violently with mixtures of sodium peroxide and O2+H2O; on contact with halogens and interhalogens. May react violently with hydrochloric acid, hydrofluoric acid, hydrogen chloride gas and disulfur dibromide; non-metals

phosphorus, sulfur and selenium; with sulfur, Sb or As when heated; and potential violent reaction with sodium peroxide. May have a violent or explosive reaction when heated with metal oxides, oxosalts (nitrates, sulfates), some halocarbons, sulfides or hot copper oxide worked with an iron or steel tool. May have an explosive reaction with sodium sulfate above 800 oC; in powdered form with KClO4+Ba (NO3) 2+ KNO3+H2O and Ba (NO3)2+KNO3+sulfur+vegetable adhesives+H2O after a delayed period; powder forms sensitive explosive mixture with oxidants; mixtures with powdered AgCl, NH4NO3, or NH4NO3+Ca (NO3)2+formamide+H2O are powerful explosives; mixtures with ammonium peroxodisulfate+water is explosive; and potential explosive reaction with CCl4 during ball milling operations. Many violent or explosive reactions with the following halocarbons have occurred in industry: bromothane, bromotrifluoromethane, CCl4, chlorodifluoromethane, chloroform, chloromethane, chloromethane+2-methylpropane, dichlorodifluoromethane, 1, 2-dichloroethane, dichloromethane, 1, 2-dichloropropane, 1,2, -difluorotetrafluoroethane, fluorotrichloroethane, hexachloroethane alcohol, polytrifluorethylene oils and greases, tetrachlorethylene, tetrachlorethylene, tetrafluoromethane, 1,1,1-trichloroethane, trichloroethylene, 1,1,2-trichlorotrifluoroethane, and trichlorotrifluoroethane-dichlorobenzene. (Sax, Dangerous Properties of Industrial Materials, eighth edition).

Hazardous Combustion Products

Decomposition of base metal product may yield metallic oxides and toxic lead oxide fumes
Decomposition of coating oils present on some products will release carbon monoxide, carbon dioxide, and other hydrocarbon species.

Extinguishing Media

Use dry chemical, foam, carbon dioxide, water spray or water fog for oil fires.
Use dry powder, talc, or sand to extinguish metal fires.
Material in or near fires should be cooled with a water spray or fog if compatible with fire fighting techniques for the other materials involved in the fire.

Unsuitable Extinguishing Media

Do NOT use water or halogenated agents.

Fire Fighting Equipment/Instructions

Fire fighters should wear full-face, self contained breathing apparatus and impervious protective clothing. Fire fighters should avoid inhaling any combustion products. Avoid creation of dusts.

NFPA Ratings: Health: 1 **Fire:** 1 **Reactivity:** 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

* * * Section 6 - Accidental Release Measures * * *

Containment Procedures

Contain the discharged material. Remove sources of ignition.

Clean-Up Procedures

Shovel the material into waste container. Avoid the generation of dusts during clean-up. When dealing with aluminum powder/dust wear appropriate respiratory and protective equipment specified in Section 8. Isolate spill area, provide ventilation and extinguish sources of ignition. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Use non-sparking tools.

Evacuation Procedures

Isolate area. Keep unnecessary personnel away.

Special Procedures

Wear appropriate personal protective equipment. See Section 8. Follow all Local, State, Federal and Provencial regulations for disposal.

* * * Section 7 - Handling and Storage * * *

Handling Procedures

Do not breathe fumes or dusts from this material. Use with adequate ventilation. Keep dusts and powders of this product from heat, sparks, or open flame. Use non-sparking tools when opening or closing containers. Do not touch or handle cast aluminum or heated materials before determining the temperature. Aluminum does not change color on heating. Series 2000 and 7000 alloy ingots must be stress relieved prior to being sawed to prevent an explosion or violent cracking. Products may have sharp edges. Handle with caution and wear appropriate personal protective equipment. Dry metal properly before loading in a melting furnace. Moisture trapped in crevices and occlusions can cause a violent explosion.

Storage Procedures

Keep the container tightly closed and in a cool, well-ventilated place. Store away from incompatible materials. If dusts and powders are formed, use adequate ventilation in storage and do not handle or store dusts or powders of this product near an open flame, heat or other sources of ignition.

Good housekeeping and engineering practices should be employed to prevent the generation and accumulation of dusts. Vacuuming with a HEPA (High Efficiency Particulate Air) equipped vacuum is recommended to clean up any dusts that may be generated during handling and processing. Wash hands and face thoroughly before eating, drinking or smoking.

* * * Section 8 - Exposure Controls / Personal Protection * * *

A: Component Exposure Limits

Consult local authorities for acceptable exposure limits.

Aluminum (7429-90-5)

ACGIH:	10 mg/m3 TWA (metal dust)[2]
OSHA:	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
CAL-OSHA:	10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
NIOSH:	10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
Alberta:	10 mg/m3 TWA (dust)
British Columbia:	10 mg/m3 TWA (total dust); 3 mg/m3 TWA (respirable fraction)
Manitoba:	10 mg/m3 TWA
New Brunswick:	10 mg/m3 TWA (metal dust)
NW Territories:	10 mg/m3 TWA
	20 mg/m3 STEL
Nova Scotia:	10 mg/m3 TWA (metal dust)
Nunavut:	10 mg/m3 TWA
	20 mg/m3 STEL
Ontario:	5 mg/m3 TWAEV (powder); 10 mg/m3 TWAEV (metal and oxide dust)
Quebec:	10 mg/m3 TWAEV
Saskatchewan:	10 mg/m3 TWA
	20 mg/m3 STEL

[2] The ACGIH has proposed changing the TLV for aluminum from 10 mg/m3 as total dust to 1 mg/m3 as respirable particulate matter.

Silicon (7440-21-3)

OSHA:	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
CAL-OSHA:	10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
NIOSH:	10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
Alberta:	10 mg/m3 TWA
British Columbia:	10 mg/m3 TWA (total dust); 3 mg/m3 TWA (respirable fraction)
Manitoba:	10 mg/m3 TWA (total dust containing no asbestos and <1% free silica)
New Brunswick:	10 mg/m3 TWA
NW Territories:	5 mg/m3 TWA (respirable mass); 10 mg/m3 TWA (total mass)
Nova Scotia:	10 mg/m3 TWA
Nunavut:	5 mg/m3 TWA (respirable mass); 10 mg/m3 TWA (total mass)
Ontario:	10 mg/m3 TWAEV (total dust)
Quebec:	10 mg/m3 TWAEV (total dust, containing no asbestos and less than 1% crystalline silica)
Saskatchewan:	10 mg/m3 TWA 20 mg/m3 STEL
Yukon:	30 mppcf TWA; 10 mg/m3 TWA 20 mg/m3 STEL

Iron (7439-89-6)

ACGIH:	5 mg/m3 TWA (respirable fraction) (related to Iron oxide (Fe2O3))
OSHA:	10 mg/m3 TWA (fume) (related to Iron oxide)
CAL-OSHA:	5 mg/m3 TWA (fume) (related to Iron oxide)
NIOSH:	5 mg/m3 TWA (dust and fume, as Fe) (related to Iron oxide)
Alberta:	5 mg/m3 TWA (dust and fume, as Fe) (related to Iron oxide)
British Columbia:	5 mg/m3 TWA (dust and fume, as Fe) (related to Iron oxide) 10 mg/m3 STEL (fume, as Fe) (related to Iron oxide)
Manitoba:	5 mg/m3 TWA (as Fe, welding fumes, dust, total particulate) (related to Iron oxide (Fe2O3))
New Brunswick:	5 mg/m3 TWA (particulate matter containing no asbestos and < 1% crystalline silica, dust and fume, as Fe) (related to Iron oxide (Fe2O3))
NW Territories:	5 mg/m3 TWA (respirable mass); 10 mg/m3 TWA (total mass) (related to Rouge)
Nova Scotia:	5 mg/m3 TWA (respirable fraction) (related to Iron oxide (Fe2O3))
Nunavut:	5 mg/m3 TWA (respirable mass); 10 mg/m3 TWA (total mass) (related to Rouge)
Ontario:	5 mg/m3 TWAEV (dust and fume, as Fe) (related to Iron oxide)
Quebec:	5 mg/m3 TWAEV (dust and fume, as Fe) (related to Iron trioxide)
Saskatchewan:	5 mg/m3 TWA (fume, as Fe) (related to Iron oxide) 10 mg/m3 STEL (fume, as Fe) (related to Iron oxide)
Yukon:	5 mg/m3 TWA (fume as Fe2O3) (related to Iron oxide) 10 mg/m3 STEL (fume, as Fe2O3) (related to Iron oxide)

Zinc (7440-66-6)

ACGIH:	2 mg/m3 TWA (respirable fraction) (related to Zinc oxide) 10 mg/m3 STEL (respirable fraction) (related to Zinc oxide)
OSHA:	5 mg/m3 TWA (fume); 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction) (related to Zinc oxide)
CAL-OSHA:	5 mg/m3 TWA, 10 mg/m3 STEL (related to Zinc oxide fume) 10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
NIOSH:	5 mg/m3 TWA (dust and fume) (related to Zinc oxide) 10 mg/m3 STEL (fume) (related to Zinc oxide) 15 mg/m3 Ceiling (dust) (related to Zinc oxide)
Alberta:	10 mg/m3 TWA (dust); 5 mg/m3 TWA (fume) (related to Zinc oxide) 10 mg/m3 STEL (fume) (related to Zinc oxide)
British Columbia:	2 mg/m3 TWA (respirable) (related to Zinc oxide) 10 mg/m3 STEL (respirable) (related to Zinc oxide)
Manitoba:	5 mg/m3 TWA (fume); 10 mg/m3 TWA (total dust containing no asbestos and <1% crystalline silica) (related to Zinc oxide) 10 mg/m3 STEL (fume) (related to Zinc oxide)
New Brunswick:	5 mg/m3 TWA (fume); 10 mg/m3 TWA (particulate matter containing no asbestos and < 1% crystalline silica, dust) (related to Zinc oxide) 10 mg/m3 STEL (fume) (related to Zinc oxide)
NW Territories:	5 mg/m3 TWA (fume); 5 mg/m3 TWA (dust, respirable mass); 10 mg/m3 TWA (dust, total mass) (related to Zinc oxide) 10 mg/m3 STEL (fume) (related to Zinc oxide)
Nova Scotia:	2 mg/m3 TWA (respirable fraction) (related to Zinc oxide) 10 mg/m3 STEL (respirable fraction) (related to Zinc oxide)
Nunavut:	5 mg/m3 TWA (fume); 5 mg/m3 TWA (dust, respirable mass); 10 mg/m3 TWA (dust, total mass) (related to Zinc oxide) 10 mg/m3 STEL (fume) (related to Zinc oxide)
Ontario:	2 mg/m3 TWAEV (respirable) (related to Zinc oxide) 10 mg/m3 STEV (respirable) (related to Zinc oxide)
Quebec:	5 mg/m3 TWAEV (fume); 10 mg/m3 TWAEV (dust) (related to Zinc oxide) 10 mg/m3 STEV (fume) (related to Zinc oxide)
Saskatchewan:	5 mg/m3 TWA (fume); 10 mg/m3 TWA (dust) (related to Zinc oxide) 10 mg/m3 STEL (fume); 20 mg/m3 STEL (dust) (related to Zinc oxide)
Yukon:	5 mg/m3 TWA (fume); 30 mppcf TWA (dust); 10 mg/m3 TWA (dust) (related to Zinc oxide) 10 mg/m3 STEL (fume); 20 mg/m3 STEL (dust) (related to Zinc oxide)

Copper (7440-50-8)

ACGIH:	0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist, as Cu)
OSHA/CAL-OSHA:	0.1 mg/m3 TWA (fume), 1.0 mg/m3 (dust and mist)
NIOSH:	1 mg/m3 TWA (dust and mist); 0.1 mg/m3 (respirable fume)
Alberta:	0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist, as Cu)
British Columbia:	1 mg/m3 TWA (dust and mist, as Cu); 0.2 mg/m3 TWA (fume, as Cu)
Manitoba:	0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist, as Cu)
New Brunswick:	0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist, as Cu)
NW Territories:	0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist)
	0.6 mg/m3 STEL (fume); 2 mg/m3 STEL (dust and mist)
Nova Scotia:	0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist, as Cu)
Nunavut:	0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist, as Cu)
	0.6 mg/m3 STEL (fume); 2 mg/m3 STEL (dust and mist, as Cu)
Ontario:	0.2 mg/m3 TWAEV (fume, as Cu); 1 mg/m3 TWAEV (dust and mist, as Cu)
Quebec:	0.2 mg/m3 TWAEV (fume, as Cu); 1 mg/m3 TWAEV (dust and mist, as Cu)
Saskatchewan:	0.2 mg/m3 TWA (fume, as Cu); 1 mg/m3 TWA (dust and mist, as Cu)
	0.6 mg/m3 STEL (fume, as Cu); 2 mg/m3 STEL (dust and mist, as Cu)
Yukon:	0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist, as Cu)
	0.2 mg/m3 STEL (fume); 2 mg/m3 STEL (dust and mist, as Cu)

Manganese (7439-96-5)

ACGIH:	0.2 mg/m3 TWA
OSHA:	5 mg/m3 Ceiling (Mn fume and Mn compounds)
CAL-OSHA:	0.2 mg/m3 (Mn fume and Mn compounds)
	3 mg/m3 STEL (fume)
NIOSH:	1 mg/m3 TWA (Mn fume and Mn compounds)
	3 mg/m3 STEL (Mn fume and Mn compounds)
Alberta:	1 mg/m3 TWA (fume, as Mn)
British Columbia:	0.2 mg/m3 TWA
Manitoba:	1 mg/m3 TWA (fume)
	3 mg/m3 STEL (fume)
	5 mg/m3 Ceiling (dust)
New Brunswick:	0.2 mg/m3 TWA
NW Territories:	1 mg/m3 TWA (fume)
	3 mg/m3 STEL (fume)
	5 mg/m3 Ceiling
Nova Scotia:	0.2 mg/m3 TWA
Nunavut:	1 mg/m3 TWA (fume)
	3 mg/m3 STEL (fume)
	5 mg/m3 Ceiling
Ontario:	0.2 mg/m3 TWAEV
Quebec:	5 mg/m3 TWAEV (dust); 1 mg/m3 TWAEV (fume)
Saskatchewan:	5 mg/m3 TWA; 1 mg/m3 TWA (fume)
	5 mg/m3 STEL; 3 mg/m3 STEL (fume)
Yukon:	5 mg/m3 Ceiling

Magnesium (1309-48-4)

ACGIH:	10 mg/m3 TWA (inhalable fraction) (related to Magnesium oxide)
OSHA:	15 mg/m3 TWA (total particulate) (related to Magnesium oxide fume)
CAL-OSHA:	10 mg/m3 TWA (fume)
Alberta:	10 mg/m3 TWA (fume) (related to Magnesium oxide)
British Columbia:	10 mg/m3 TWA (fume, inhalable, as Mg); 3 mg/m3 TWA (respirable dust and fume, as Mg) (related to Magnesium oxide)
	10 mg/m3 STEL (respirable dust and fume, as Mg) (related to Magnesium oxide)
Manitoba:	10 mg/m3 TWA (fume) (related to Magnesium oxide)
New Brunswick:	10 mg/m3 TWA (fume) (related to Magnesium oxide)
NW Territories:	10 mg/m3 TWA (fume, as Mg) (related to Magnesium oxide)
	20 mg/m3 STEL (fume, as Mg) (related to Magnesium oxide)
Nova Scotia:	10 mg/m3 TWA (inhalable fraction) (related to Magnesium oxide)
Nunavut:	10 mg/m3 TWA (fume, as Mg) (related to Magnesium oxide)
	20 mg/m3 STEL (fume, as Mg) (related to Magnesium oxide)
Ontario:	10 mg/m3 TWAEV (inhalable) (related to Magnesium oxide)
Quebec:	10 mg/m3 TWAEV (fume, as Mg) (related to Magnesium oxide)
Saskatchewan:	10 mg/m3 TWA (fume) (related to Magnesium oxide)
	20 mg/m3 STEL (fume) (related to Magnesium oxide)
Yukon:	10 mg/m3 TWA (fume as Mg) (related to Magnesium oxide)
	10 mg/m3 STEL (fume, as Mg) (related to Magnesium oxide)

Bismuth (7440-69-9)

Note: There are currently no applicable limits for the bismuth component of the products in the US.

Tin (7440-31-5)

ACGIH:	2 mg/m3 TWA
OSHA:	2 mg/m3 TWA(inorganic compounds except oxides)
	0.1 mg/m3 TWA (organic compounds)
CAL-OSHA	0.1 mg/m3 TWA, 0.2 mg/m3 STEL (organic compounds)
NIOSH:	2 mg/m3 TWA
Alberta:	2 mg/m3 TWA
British Columbia:	2 mg/m3 TWA
Manitoba:	2 mg/m3 TWA
New Brunswick:	2 mg/m3 TWA
Nova Scotia:	2 mg/m3 TWA
Ontario:	2 mg/m3 TWAEV
Quebec:	2 mg/m3 TWAEV
Saskatchewan:	2 mg/m3 TWA
	4 mg/m3 STEL

Chromium (7440-47-3)

ACGIH:	0.5 mg/m3 TWA
OSHA:	1 mg/m3 TWA
CAL-OSHA:	0.5 mg/m3 TWA
NIOSH:	0.5 mg/m3 TWA
Alberta:	0.5 mg/m3 TWA
British Columbia:	0.5 mg/m3 TWA
Manitoba:	0.5 mg/m3 TWA
New Brunswick:	0.5 mg/m3 TWA
NW Territories:	0.5 mg/m3 TWA
	1.5 mg/m3 STEL
Nova Scotia:	0.5 mg/m3 TWA
Nunavut:	0.5 mg/m3 TWA
	1.5 mg/m3 STEL
Ontario:	0.5 mg/m3 TWAEV
Quebec:	0.5 mg/m3 TWAEV
Saskatchewan:	0.5 mg/m3 TWA
	1.5 mg/m3 STEL
Yukon:	0.1 mg/m3 TWA
	3.0 mg/m3 STEL

Lead (7439-92-1)

ACGIH:	0.05 mg/m3 TWA
OSHA:	50 µg/m3 TWA (as Pb); 30 µg/m3 Action Level (as Pb. Poison - see 29 CFR 1910.1025)
CAL-OSHA:	50 ug/m3 TWA (as Pb); 30 µg/m3 Action Level (see GISO, Title 8, Section 5198)
NIOSH:	0.05 mg/m3 TWA; Blood lead level <0.06mg/100 ml of whole blood
Alberta:	0.05 mg/m3 TWA
British Columbia:	0.05 mg/m3 TWA
Manitoba:	0.15 mg/m3 TWA (dust and fume)
New Brunswick:	0.05 mg/m3 TWA
NW Territories:	0.15 mg/m3 TWA
	0.45 mg/m3 STEL
Nova Scotia:	0.05 mg/m3 TWA
Nunavut:	0.15 mg/m3 TWA
	0.45 mg/m3 STEL
Ontario:	0.05 mg/m3 TWAEV (designated substance regulation)
Quebec:	0.15 mg/m3 TWAEV (dust and fume)
Saskatchewan:	0.15 mg/m3 TWA
	0.45 mg/m3 STEL

Engineering Controls

Use local exhaust ventilation.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Wear safety glasses with side shields.

Personal Protective Equipment: Skin

Wear leather or other appropriate work gloves, if necessary for type of operation.

Personal Protective Equipment: Respiratory

If ventilation is not sufficient to effectively control exposures, appropriate NIOSH approved respirators should be used. Respirators should be selected and used under the direction of trained health and safety professionals in accordance with all applicable health, safety, and environmental regulations.

Personal Protective Equipment: General

When handling lead dust. Splash goggles. Full suit. Boots. Gloves. A n appropriate NIOSH approved respirator should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a health and safety specialist or industrial hygienist BEFORE handling.

* * * Section 9 - Physical & Chemical Properties * * *

Appearance:	Solid metallic pieces	**Odor:**	None
Physical State:	Solid	**pH:**	Not Available
Vapor Pressure:	Not Available	**Vapor Density:**	Not Available
Boiling Point:	Not Available	**Melting Point:**	950-1215°F (510-660°C)
Solubility (H2O):	<1 %	**Specific Gravity:**	2.5-2.9 g/cc

* * * Section 10 - Chemical Stability & Reactivity Information * * *

Chemical Stability

Stable under normal conditions.

Chemical Stability: Conditions to Avoid

Avoid ignition sources where dust is produced. Avoid incompatible materials.

Special Sensitivity: Series 2000 and 7000 alloy ingots must be stress relieved prior to being sawed to prevent an explosion or violent cracking. When melting aluminum, aluminum alloys, or aluminum scrap, care must be taken to exclude water or moisture. Water or moisture trapped under hot or molten metal can result in a violent explosion. Strong oxidizing agents must be excluded during heating and melting operations to prevent the possibility of an explosion. Finely divided aluminum dusts may form explosive mixtures in air. Care should be taken to employ effective dust control measures.

Incompatibility

This product may react with strong acids, bases and oxidizing agents to produce hydrogen gas, which is highly flammable. Contact with chlorinated solvents may release toxic and corrosive hydrogen chloride gas. Hot aluminum may react with chlorinated solvents to produce phosgene, a highly irritating and toxic gas.

Hazardous Decomposition

Decomposition of this product may yield metallic oxides and toxic lead fumes

Decomposition of coating oils present on some products will release carbon monoxide, carbon dioxide, and other hydrocarbon species.

Possibility of Hazardous Reactions

Will not occur.

* * * Section 11 - Toxicological Information * * *

Acute Dose Effects

A: General Product Information

Inhalation of metal fumes may cause metal fume fever, a flu-like illness generally lasting 24 hours or less.

Aluminum: Chronic overexposure to aluminum can result in lung damage and has been associated with asthma-like syndrome. Accumulation of aluminum in the body may result in neurological damage, anemia and bone softening. Repeated overexposure to high levels of aluminum oxide may lead to pulmonary fibrosis, a progressive lung disorder.

Silicon: Silicon dust seems to have little adverse effect on lungs and does not appear to produce significant organic disease or toxic effects when exposures are kept under reasonable control.

Iron: Chronic inhalation of iron has resulted in mottling of the lungs, a condition referred to as siderosis. This is considered benign pneumoconiosis and does not ordinarily cause significant physiologic impairment.

Zinc: Zinc poisoning can cause anemia, lethargy and dizziness. Inhalation of zinc fumes may cause metal fume fever, a flu-like illness generally lasting 24 hours or less.

Manganese: Overexposure to manganese may result in CNS effects, anemia and pneumonitis which increases the risk of pneumonia.

Tin: Prolonged exposure to high concentration of tin-containing dusts and/or fumes may result in the development of Stannosis which is a rare benign pneumoconiosis. The maximum concentration of tin in the product is such that Stannosis should not present a potential hazard.

Chromium: Industrial exposure to chromium may cause dermatitis, skin ulcers, perforation of the nasal septum, as well as cancers of the lungs, nasal cavity and paranasal sinuses. The cancer sites are mainly associated with hexavalent chrome which can also cause skin sensitization, skin and nasal ulcers, and perforation of the nasal septum.

Lead: Inorganic lead has been found to have toxic effects on both the central and peripheral nervous systems. Symptoms of lead toxicity include behavioral disturbances such as irritability, restlessness, insomnia, and other sleep disturbances, fatigue, vertigo, headache, poor memory, tremor, depression, and apathy. With more severe exposure, symptoms can progress to drowsiness, stupor, hallucinations, delirium, convulsions, and coma. Lead compounds can have a variety of effects. Lead poisoning is characterized by muscle weakness, weight loss, listlessness, insomnia, gastrointestinal disturbances, and low blood pressure. In severe cases, neuromuscular damage can occur as well as permanent brain damage. In addition to generalized poisoning, lead can have potentially serious reproductive effects for both males and females. Lead exposure can cause decreased fertility in both males and females. Male sperm counts can be decreased and sperm morphology altered while the female ovulatory cycle can be disrupted. Lead can also cross the placental barrier and affect the developing fetus. Studies have shown that in-utero lead exposure can lead to potentially severe developmental disabilities.

B: Component Analysis - LD50/LC50

Silicon (7440-21-3)
Oral LD50 Rat: 3160 mg/kg

Iron (7439-89-6)
Oral LD50 Rat: 984 mg/kg

Zinc (7440-66-6)
Oral LD50 Rat: >5000 mg/kg (related to Zinc oxide)

Manganese (7439-96-5)
Oral LD50 Rat: 9 g/kg

Magnesium (7439-95-4)
Oral LD50 Rat: 230 mg/kg

Bismuth (7440-69-9)
Oral LD50 Rat: 5 g/kg

Repeated Dose Effects

Exposure to metal dusts and oxides may cause fume fever. Fume fever is a temporary flu-like condition characterized by chills, fever, muscle aches and pains, nausea and vomiting. Typically the symptoms appear within a few hours after exposure and subside within 2-3 days with no permanent effects.

Carcinogenicity

A: General Product Information

No carcinogenicity data available for this product.

B: Component Carcinogenicity

Iron (7439-89-6)

ACGIH: A4 - Not Classifiable as a Human Carcinogen (dust and fume) (related to Iron oxide)
IARC: Supplement 7 [1987], Monograph 1 [1972] (related to Ferric oxide) (Group 3 (not classifiable))

Magnesium (7439-95-4)

ACGIH: A4 - Not Classifiable as a Human Carcinogen (related to Magnesium oxide)

Chromium (7440-47-3)

ACGIH: A4 - Not Classifiable as a Human Carcinogen
IARC: Monograph 49 [1990] (listed under Chromium and Chromium compounds) Supplement 7 [1987] (Group 3 (not classifiable))

Lead (7439-92-1)

ACGIH: A3 - Confirmed animal carcinogen with unknown relevance to humans
OSHA: 50 µg/m3 TWA (as Pb); 30 µg/m3 Action Level (as Pb. Poison - see 29 CFR 1910.1025)
NTP: Reasonably Anticipated To Be A Carcinogen (Possible Select Carcinogen)
IARC: Supplement 7 [1987], Monograph 23 [1980] (evaluated as a group) (Group 2B (possibly carcinogenic to humans))

Reproductive Toxicology

Lead has a wide variety of reproductive effects in humans. It can affect both the male and female reproductive organs as well as egg and sperm production and development. Lead can also cause neurodevelopmental debilitations in children from both prenatal and postnatal exposures.

* * * Section 12 - Ecological Information * * *

Ecotoxicity

A: General Product Information

No data available for this product. Coating oils may present an environmental hazard to aquatic and terrestrial flora and fauna.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Iron (7439-89-6)

Test & Species		Conditions
96 Hr LC50 Morone saxatilis	13.6 mg/L	static

Zinc (7440-66-6)

Test & Species		Conditions
96 Hr LC50 Pimephales promelas	6.4 mg/L	
96 Hr EC50 Selenastrum capricornutum	30 µg/L	
72 Hr EC50 water flea	5 µg/L	

Copper (7440-50-8)

Test & Species		Conditions
96 Hr LC50 Pimephales promelas	23 µg/L	
96 Hr LC50 Oncorhynchus mykiss	13.8 µg/L	
96 Hr LC50 Lepomis macrochirus	236 µg/L	
72 Hr EC50 Scenedesmus subspicatus	120 µg/L	

96 Hr EC50 water flea	10 µg/L
96 Hr EC50 water flea	200 µg/L

Coating Oil (64771-72-8)

Test & Species		Conditions
96 Hr LC50 Pimephales promelas	>5000 mg/L	

Lead (7439-92-1)

Test & Species		Conditions
96 Hr LC50 Pimephales promelas	6.5 mg/L	
48 Hr EC50 water flea	600 µg/L	

Environmental Fate

No data available for this product.

* * * Section 13 - Disposal Considerations * * *

US EPA Waste Number & Descriptions

A: General Product Information

Material, if discarded, is not expected to be a characteristic hazardous waste under RCRA.

B: Component Waste Numbers

Chromium (7440-47-3)

RCRA: 5.0 mg/L regulatory level

Lead (7439-92-1)

RCRA: 5.0 mg/L regulatory level

Disposal Instructions

Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.
See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

* * * Section 14 - Transportation Information * * *

US DOT Information

Shipping Name: Not regulated.
Additional Info.: Aluminum and aluminum alloys are not regulated for transportation. Aluminum powder is regulated: Aluminum Powder, Class 4.3, UN 1396, PG II.

TDG Information

Shipping Name: Not regulated.
Additional Info.: Aluminum and aluminum alloys are not regulated for transportation. Aluminum powder is regulated: Aluminum Powder, Class 4.3, UN 1396, PG II.

* * * Section 15 - Regulatory Information * * *

US Federal Regulations

A: General Product Information

Components of this product have been checked against the non-confidential TSCA inventory by CAS Registry Number. Components not identified on this non-confidential inventory are either exempt from listing (i.e. polymers, hydrates) or are listed on the confidential inventory as declared by the supplier.

B: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Aluminum (7429-90-5)

SARA 313: 1.0 % de minimis concentration (dust or fume only)

Zinc (7440-66-6)

SARA 313: 1.0 % de minimis concentration (dust or fume only)

CERCLA: 1000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches); 454 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the solid metal released is equal to or exceeds 0.004 inches)

Copper (7440-50-8)

SARA 313: 1.0 % de minimis concentration

CERCLA: 5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches)

Manganese (7439-96-5)

SARA 313: 1.0 % de minimis concentration

Chromium (7440-47-3)

CERCLA: 5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches); 2270 kg final RQ (no reporting of releases of this hazardous material is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches)

Hot work operations such as welding, torch cutting, etc. will generate metal oxides, which can include hexavalent chromium. OSHA has enacted a standard for exposure to hexavalent chromium [29 CFR 1910.1026], which mandates very stringent exposure limits. Users of the product are urged to read this standard and determine how it might affect their operations.

Lead (7439-92-1)

SARA 313: 0.1 % Supplier notification limit; 0.1 % de minimis concentration (when contained in stainless steel, brass, or bronze)

CERCLA: 10 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches); 4.54 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches)

C: Component Marine Pollutants

This material contains one or more of the following chemicals required by US DOT to be identified as marine pollutants.

Component	CAS #	
Copper	7440-50-8	DOT regulated severe marine pollutant

Acute Health: Yes **Chronic Health:** Yes **Fire:** No **Pressure:** No **Reactive:** No

State Regulations

A: General Product Information

Other state regulations may apply. Check individual state requirements.

Aluminum and its alloys may contain up to 0.005% beryllium, 0.05% cadmium, <0.1% chromium, 0.05% lead, and 0.05% nickel as impurities if these elements are not listed in Section 3. Beryllium, cadmium, chromium, lead, and nickel have been identified as carcinogens or having developmental or reproductive toxicity by the State of California, as Special Health Hazard Substances by the States of New Jersey and Pennsylvania, and as Extraordinarily Hazardous Substances by the State of Massachusetts.

B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
Aluminum	7429-90-5	Yes	Yes	Yes	Yes	Yes	Yes
Silicon	7440-21-3	No	Yes	Yes	Yes	Yes	Yes
Iron ([1]related to Iron oxide) ([2]related to Iron oxide fume)	7439-89-6	Yes	Yes[1]	Yes[2]	Yes[1]	Yes[1]	Yes[1]
Zinc ([1]related to Zinc oxide)	7440-66-6	Yes	Yes	Yes[1]	Yes	Yes	Yes
Copper	7440-50-8	Yes	Yes	Yes	Yes	Yes	Yes
Manganese	7439-96-5	Yes	Yes	Yes	Yes	Yes	Yes
Magnesium ([1]related to Magnesium oxide fume)	7439-95-4	Yes	Yes	Yes[1]	Yes	Yes	Yes
Tin	7440-31-5	Yes	Yes	Yes	Yes	Yes	Yes
Chromium	7440-47-3	Yes	Yes	Yes	Yes	Yes	Yes
Lead	7439-92-1	Yes	Yes	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.
WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.

Canadian WHMIS Information

A: General Product Information

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all information required by CPR.

B: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Aluminum	7429-90-5	1 %
Iron	7439-89-6	1 % (related to Ferric oxide)
Zinc	7440-66-6	1 % (related to Zinc oxide)
Copper	7440-50-8	1 %
Manganese	7439-96-5	1 %
Magnesium	7439-95-4	1 % (related to Magnesium oxide)
Chromium	7440-47-3	0.1 %
Lead	7439-92-1	0.1 %

WHMIS Classification:

Class D2A: Very Toxic Material
Class D2B: Eye and skin irritation (If dusts are formed)

Additional Regulatory Information

A: General Product Information

No additional information available.

B: Component Analysis - Inventory

Component	CAS #	TSCA	CAN	EEC
Aluminum	7429-90-5	Yes	DSL	EINECS
Silicon	7440-21-3	Yes	DSL	EINECS
Iron	7439-89-6	Yes	DSL	EINECS
Zinc	7440-66-6	Yes	DSL	EINECS
Copper	7440-50-8	Yes	DSL	EINECS
Manganese	7439-96-5	Yes	DSL	EINECS
Magnesium	7439-95-4	Yes	DSL	EINECS
Bismuth	7440-69-9	Yes	DSL	EINECS
Tin	7440-31-5	Yes	DSL	EINECS
Coating Oil	64771-72-8	Yes	DSL	EINECS
Chromium	7440-47-3	Yes	DSL	EINECS
Lead	7439-92-1	Yes	DSL	EINECS

* * * Section 16 - Other Information * * *

Other Information

Coating Component Information:

111-82-0: Dodecanoic acid, methyl ester
112-39-0: Methyl palmitate
112-72-1: Myristic alcohol
124-10-7: Methyl tetradecanoate
30399-84-9: Isooctadecanoic acid
64771-72-8: Paraffins, petroleum, normal C5-20

Exercise caution when cutting the containment strapping that may secure some products, particularly wrought materials, during transportation. It may rebound and cause serious injury.

Reasonable care has been taken in the preparation of this information, but the manufacturer makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use.

Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists. AICS = Australian Inventory of Chemical Substances. CAS = Chemical Abstract Service. CERCLA = Comprehensive Environmental Response, Compensation and Liability Act. CFR = Code of Federal Regulations. CHEMTREC = Chemical Transportation Emergency Center. DSL = Canadian Domestic Substance List. EINECS = European Inventory of New and Existing Chemical Substances. ELINCS = European List of Notified Chemical Substances. EPA = Environmental Protection Agency. HEPA = High Efficiency Particulate Air. HMIS = Hazardous Material Information System. IARC = International Agency for Research on Cancer. IDLH = Immediately Dangerous to Life and Health. MITI = Japanese Ministry of International Trade and Industry. NDSL = Canadian Non-Domestic Substance List. NFPA = National Fire Protection Association. NIOSH = National Institute of Occupational Safety and Health. NJTSR = New Jersey Trade Secret Registry. NTP = National Toxicology Program. OSHA = Occupational Safety and Health Administration. NA = Not available or Not Applicable. SARA = Superfund Amendments and Reauthorization Act. TDG = Transportation of Dangerous Goods. TLV = Threshold Limit Value. TSCA = Toxic Substances Control Act. WHMIS = Workplace Hazardous Materials Information System.

End of Sheet KDS-7

MATERIAL SAFETY DATA SHEET

2-16-11
3-27-12
3-24-1

1. Product and Company Identification

Material Name	**ALUMINUM ALLOYS WITH LOW BERYLLIUM**
MSDS Number	1056
Chemical Formula	Mixture
Product use	Wrought aluminum products
Synonym(s)	2618A, Alumec 79, Alumec 89, Alumec 99, Alumec F7, Alumec HT, C89T, C805, E357.0, E357.1, E357.2, F357.0, F357.1, F357.2.
Manufacturer information	Alcoa Inc. 201 Isabella Street Pittsburgh, PA 15212-5858 US Health and Safety: +1-412-553-4649
Emergency Information	USA: Chemtrec: +1-703-527-3887 +1-800-424-9300 ALCOA: +1-412-553-4001
Website	For a current MSDS, refer to Alcoa websites: www.alcoa.com or Internally at my.alcoa.com EHS Community

2. Hazards Identification

Emergency overview

Solid. Silver colored. Odorless. Non-combustible as supplied. Small chips, fine turnings and dust from processing may be readily ignitable.
Explosion/fire hazards may be present when (See Sections 5, 7 and 10 for additional information):
- Dust or fines are dispersed in air.
- Chips, fines or dust are in contact with water.
- Dust and fines are in contact with certain metal oxides (e.g., rust, copper oxide).
- Molten metal is in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide).

Dust and fumes from processing: Can cause irritation of the eyes, skin and upper respiratory tract.

Potential health effects

The following statements summarize the health effects generally expected in cases of overexposures. User specific situations should be assessed by a qualified individual. Additional health information can be found in Section 11.
The health effects listed below are not likely to occur unless processing of this product generates dusts or fumes.

Eyes

Dust and fumes from processing: Can cause irritation.

Skin

Dust and fumes from processing: Can cause irritation. Prolonged or repeated skin contact may cause sensitization and allergic contact dermatitis.

Contact with residual oil/oil coating: Can cause irritation. Prolonged or repeated skin contact may cause dermatitis.

Inhalation

Health effects from mechanical processing (e.g., cutting, grinding): Can cause irritation of the upper respiratory tract. Chronic overexposures: Can cause reduction in the number of red blood cells (anemia), skin abnormalities (pigmentation changes), scarring of the lungs (pulmonary fibrosis), respiratory sensitization, central nervous system damage, secondary Parkinson's disease and reproductive harm in males.

Additional health effects from elevated temperature processing (e.g., welding): Acute overexposures: Can cause metal fume fever (nausea, fever, chills, shortness of breath and malaise), reduced ability of the blood to carry oxygen (methemaglobin) and the accumulation of fluid in the lungs (pulmonary edema). Chronic overexposures: Can cause benign lung disease and lung cancer.

Carcinogenicity and Reproductive Hazard

Product as shipped: Does not present any cancer or reproductive hazards.
Dust and fumes from mechanical processing: Can present a cancer hazard (Nickel, Beryllium). Can present a reproductive hazard for males (Manganese).
Dust and fumes from welding or elevated temperature processing: Can present a cancer hazard (Hexavalent chromium compounds, Nickel compounds, Welding fumes). Can present a reproductive hazard for males (Manganese compounds).

Dross Handling

Beryllium may concentrate in the dross formed when aluminum scrap is remelted. Therefore, the potential for exposures to beryllium when handling dross must be considered. Control of airborne dust levels would be critical in reducing or eliminating this potential. For more information on the hazards associated with handling dross that contains beryllium, refer to Alcoa MSDS No. 1013, Aluminum Dross with Low Beryllium. Copies of this MSDS are available on www.alcoa.com or by calling +1-412-553-4649.

Medical conditions aggravated by exposure to product

Dust or fume from processing: Asthma, chronic lung disease, Secondary Parkinson's disease and skin rashes.

3. Composition / Information on Ingredients

Composition comments

Complete composition is provided below and may include some components classified as non-hazardous.

Components

	CAS #	Percent
Aluminum	7429-90-5	>86
Zinc	7440-66-6	<10.6
Magnesium	7439-95-4	<6.6
Copper	7440-50-8	<5.1
Silicon	7440-21-3	<1.5
Manganese	7439-96-5	<1.5
Iron	7439-89-6	<1.5
Nickel	7440-02-0	<1.5
Chromium	7440-47-3	<0.36
Beryllium	7440-41-7	<0.002

Additional Information

Additional compounds which may be formed during processing are listed in Section 8.

4. First Aid Measures

First aid procedures

Eye contact

Dust and fume from processing: Rinse eyes with plenty of water or saline for at least 15 minutes. Consult a physician.

Skin contact

Dust and fumes from processing or Contact with residual oil/oil coating: Wash with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists.

Inhalation

Dust and fume from processing: Remove to fresh air. Check for clear airway, breathing, and presence of pulse. Provide cardiopulmonary resuscitation for persons without pulse or respirations. Consult a physician.

5. Fire Fighting Measures

Flammable/Combustible Properties

This product does not present fire or explosion hazards as shipped. Small chips, fine turnings, and dust from processing may be readily ignitable.

Fire / Explosion Hazards

May be a potential hazard under the following conditions:
• Dust clouds may be explosive. Even a minor dust cloud can explode violently.
Dust accumulation on the floor, ledges and beams can present a risk of ignition, flame propagation and secondary explosions.
• Chips, fines and dust in contact with water can generate flammable/explosive hydrogen gas. These gases could present an explosion hazard in confined or poorly ventilated spaces.
* Dust and fines in contact with certain metal oxides (e.g., rust).
A thermite reaction, with considerable heat generation, can be initiated by a weak ignition source.

• Molten metal in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide). Moisture entrapped by molten metal can be explosive. Contact of molten aluminum with certain metal oxides can initiate a thermite reaction. Finely divided metals (e.g., powders or wire) may have enough surface oxide to produce thermite reactions/explosions.

Extinguishing media

Suitable extinguishing media	Use Class D extinguishing agents on fines, dust or molten metal. Use coarse water spray on chips and turnings.
Unsuitable extinguishing media	DO NOT use halogenated extinguishing agents on small chips/fines. DO NOT use water in fighting fires around molten metal. These fire extinguishing agents will react with the burning material.

Protection of firefighters

Protective equipment for firefighters	Fire fighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.

6. Accidental Release Measures

Spill or leak procedure	If molten: Contain the flow using dry sand or salt flux as a dam. All tooling (e.g., shovels or hand tools) and containers which come in contact with molten metal must be preheated or specially coated and rust free. Allow the spill to cool before remelting as scrap.

7. Handling and Storage

Handling	Avoid generating dust. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different. Hot aluminum does not necessarily glow red.
Storage	Keep dry.
Requirements for Processes Which Generate Dusts or Fines	If processing of this product generates dust or if extremely fine particulate is generated, obtain and follow the safety procedures and equipment guides contained in Aluminum Association Bulletin F-1 and National Fire Protection Association (NFPA) brochures listed in Section 16. Use non-sparking handling equipment. Cover and reseal partially empty containers. Provide grounding and bonding where necessary to prevent accumulation of static charges during metal dust handling and transfer operations (See Section 15). Local ventilation and vacuum systems must be designed to handle explosive dusts. Dry vacuums and electrostatic precipitators must not be used, unless specifically approved for use with flammable/explosive dusts. Dust collection systems must be dedicated to aluminum dust only and should be clearly labeled as such. Do not co-mingle fines of aluminum with fines of iron, iron oxide (rust) or other metal oxides. Do not allow small chunks, fines or dust to contact water, particularly in enclosed areas. Avoid all ignition sources. Good housekeeping practices must be maintained. Do not use compressed air to remove settled material from floors, beams or equipment.

Requreiments for Remelting of Scrap Material or Ingot

Molten metal and water can be an explosive combination. The risk is greatest when there is sufficient molten metal to entrap or seal off the water. Water and other forms of contamination on or contained in scrap or remelt ingot are known to have caused explosions in melting operations. While the products may have minimal surface roughness and internal voids, there remains the possibility of moisture contamination or entrapment. If confined, even a few drops of water can lead to violent explosions.

All tooling and containers which come in contact with molten metal must be preheated or specially coated and rust free. Molds and ladles must be preheated or oiled prior to casting. Any surfaces that may contact molten metal (i.e., concrete) should be specially coated.

Drops of molten metal in water (e.g. from plasma arc cutting), while not normally an explosion hazard, can generate enough flammable hydrogen gas to present an explosion hazard. Vigorous circulation of the water and removal of the particles minimize the hazards.

During melting operations, the following minimum guidelines should be observed:
• Inspect all materials prior to furnace charging and completely remove surface contamination such as water, ice, snow, deposits of grease and oil or other surface contamination resulting from weather exposure, shipment, or storage.
• Store materials in dry, heated areas with any cracks or cavities pointed downwards.
• Preheat and dry large items adequately before charging into a furnace containing molten metal. This is typically done by use of a drying oven or homogenizing furnace. The drying cycle should bring the metal temperature of the coldest item of the batch to 400°F (200°C) and then hold at that temperature for 6 hours.

Thermite explosions have been reported when aluminum alloys were melted in furnaces used for alloying with lead, bismuth or other metals with low melting temperatures. These metals, when added as high purity ingots, can seep through cracks in furnace liners and become oxidized. During subsequent melts in the furnace, molten aluminum can contact these metal oxides resulting in a thermite explosion.

8. Exposure Controls / Personal Protection

Engineering controls

Dust and fumes from mechanical processing: Use with adequate explosion-proof ventilation to meet the limits listed in Section 8.

Exposure data

The U.S. Department of Energy has proposed an Action Level for Beryllium of 0.2 ug/m3 TWA. The ACGIH has proposed a new Threshold Limit Value for Beryllium of 0.00005 mg/m3 TWA and 0.0002 mg/m3 STEL.

Compounds Formed During Processing

U.S. - OSHA - Specifically Regulated Chemicals

Chromium (VI) compounds (18540-29-9)	2.5 µg/m3 Action Level (as Cr.); 5 µg/m3 TWA (as Cr, Cancer hazard - See 29 CFR 1910.1026)

Occupational exposure limits

U.S. - OSHA

Components	Type	Value	Form
Aluminum (7429-90-5)	TWA	5 mg/m3	(respirable fraction)
	TWA (total dust)	15 mg/m3	(total dust)
Beryllium (7440-41-7)	Ceiling	5 µg/m3	
	Peak	25 µg/m3	(30 minutes)
	TWA	2 µg/m3	
Chromium (7440-47-3)	TWA	1 mg/m3	
Copper (7440-50-8)	TWA	1 mg/m3	(dust and mist)
	TWA (fume)	0.1 mg/m3	(fume)
Manganese (7439-96-5)	Ceiling	5 mg/m3	(fume)
Nickel (7440-02-0)	TWA	1 mg/m3	
Silicon (7440-21-3)	TWA	5 mg/m3	(respirable fraction)
	TWA (total dust)	15 mg/m3	(total dust)
Compounds Formed During Processing	**Type**	**Value**	**Form**
Aluminum oxide (non-fibrous) (1344-28-1)	TWA	5 mg/m3	(respirable fraction)
	TWA (total dust)	15 mg/m3	(total dust)
Beryllium compounds (Not available)	Ceiling	5 µg/m3	

Compounds Formed During Processing	Type	Value	Form
		5 µg/m3	(as Be)
	Peak	25 µg/m3	(30 minutes, as Be)
		25 µg/m3	(30 minutes)
	TWA	2 µg/m3	
		2 µg/m3	(as Be)
Chromium (II) compounds (Not available)	TWA	0.5 mg/m3	(as Cr)
Chromium (III) compounds (Not available)	TWA	0.5 mg/m3	(as Cr)
Chromium (VI) compounds (18540-29-9)	Action	2.5 µg/m3	(as Cr)
	TWA (as Cr)	5 µg/m3	(as Cr)
Iron oxide (1309-37-1)	TWA	10 mg/m3	
Magnesium oxide (1309-48-4)	TWA	15 mg/m3	(total particulate)
Manganese compounds, inorganic (Not available)	Ceiling	5 mg/m3	(as Mn)
Nickel compounds, insoluble (Not available)	TWA	1 mg/m3	(as Ni)
Nitric oxide (10102-43-9)	TWA	25 ppm	
		30 mg/m3	
Nitrogen dioxide (10102-44-0)	Ceiling	5 ppm	
		9 mg/m3	
Oil mist, mineral (8012-95-1)	TWA	5 mg/m3	
Ozone (10028-15-6)	TWA	0.1 ppm	
		0.2 mg/m3	
Zinc oxide (1314-13-2)	TWA	5 mg/m3	(respirable fraction)
	TWA (fume)	5 mg/m3	(fume)
	TWA (total dust)	15 mg/m3	(total dust)

Alcoa

Components	Type	Value	Form
Aluminum (7429-90-5)	TWA	10 mg/m3	(8 Hour)
		5 mg/m3	(respirable fraction)
Beryllium (7440-41-7)	STEL	1 ug/m3	
	TWA	0.2 ug/m3	(8 Hour)
Manganese (7439-96-5)	TWA	0.02 mg/m3	(respirable fraction)
		0.05 mg/m3	(total dust)

Compounds Formed During Processing	Type	Value	Form
Aluminum oxide (non-fibrous) (1344-28-1)	TWA	5 mg/m3	(respirable fraction)
		10 mg/m3	(8 Hour)
Beryllium compounds (Not available)	STEL	1 ug/m3	(as Be)
	TWA	0.2 ug/m3	(as Be)
Chromium (VI) compounds (18540-29-9)	TWA	0.25 ug/m3	(as Cr)
Manganese compounds, inorganic (Not available)	TWA	0.05 mg/m3	(total dust, as Mn)
		0.02 mg/m3	(respirable fraction, as Mn)
Nickel compounds, insoluble (Not available)	TWA	0.1 mg/m3	(as Ni)
Oil mist, mineral (8012-95-1)	TWA	0.5 mg/m3	(8 Hour)

ACGIH

Components	Type	Value	Form
Aluminum (7429-90-5)	TWA	1 mg/m3	(respirable fraction)
Beryllium (7440-41-7)	TWA	0.05 ug/m3	
Chromium (7440-47-3)	TWA	0.5 mg/m3	
Copper (7440-50-8)	TWA	1 mg/m3	(dust and mist, as Cu)
	TWA (fume)	0.2 mg/m3	(fume)
Manganese (7439-96-5)	TWA	0.2 mg/m3	
Nickel (7440-02-0)	TWA	1.5 mg/m3	(inhalable fraction)

Compounds Formed During Processing	Type	Value	Form
Aluminum oxide (non-fibrous) (1344-28-1)	TWA	1 mg/m3	(respirable fraction, as Al)
Beryllium compounds (Not available)	TWA	0.05 ug/m3	(as Be)
Chromium (III) compounds (Not available)	TWA	0.5 mg/m3	(as Cr)
Chromium (VI) compounds, certain water insoluble forms (Not available)	TWA	0.01 mg/m3	(as Cr)

Compounds Formed During Processing	Type	Value	Form
Chromium (VI) compounds, water soluble forms (Not available)	TWA	0.05 mg/m3	(as Cr)
Iron oxide (1309-37-1)	TWA	5 mg/m3	(respirable fraction)
Magnesium oxide (1309-48-4)	TWA	10 mg/m3	(inhalable fraction)
Manganese compounds, inorganic (Not available)	TWA	0.2 mg/m3	(as Mn)
Nickel compounds, insoluble (Not available)	TWA	0.2 mg/m3	(inhalable fraction, as Ni)
Nitric oxide (10102-43-9)	TWA	25 ppm	
Nitrogen dioxide (10102-44-0)	STEL	5 ppm	
	TWA	3 ppm	
Oil mist, mineral (8012-95-1)	STEL	10 mg/m3	(sampled by method that does not collect vapor)
	TWA	5 mg/m3	(sampled by method that does not collect vapor)
Ozone (10028-15-6)	TWA	0.08 ppm	(moderate work)
		0.1 ppm	(light work)
		0.2 ppm	(any workload, <= 2 hours)
	TWA (heavy work)	0.05 ppm	(heavy work)
Zinc oxide (1314-13-2)	STEL	10 mg/m3	(respirable fraction)
	TWA	2 mg/m3	(respirable fraction)

Personal protective equipment

Eye / face protection Wear safety glasses with side shields.

Skin protection Wear impervious gloves to avoid direct skin contact.

Respiratory protection Dust and fumes from mechanical processing: Use NIOSH-approved respiratory protection as specified by an Industrial Hygienist or other qualified professional if concentrations exceed the limits listed in Section 8. Suitable respiratory protective device recommended: Filter NIOSH P95.

General

Beryllium can concentrate 10-fold or higher in dross. This can create a potential for over-exposures to beryllium during dross handling, particularly when dust levels are not adequately controlled. Appropriate exposure assessments should be conducted by a qualified Industrial Hygienist for all tasks involving welding, cutting and grinding. Engineering controls or other measures (e.g., approved respiratory protection) may be necessary to reduce dust and beryllium concentrations depending on the exposure potential. The presence of airborne beryllium has been detected during the welding of aluminum alloys with beryllium content as low as 0.002% by weight. In accordance with OSHA 29 CFR 1910.252: Welding or cutting operations involving beryllium-containing base or filler metals shall be done using local exhaust ventilation and airline respirators unless atmospheric tests under the most adverse conditions have established that the workers' exposures is within the acceptable concentrations defined by 29 CFR 1910.1000. In all cases, workers in the immediate vicinity of the welding or cutting operations shall be protected as necessary by local exhaust ventilation or airline respirators.

Good industrial hygiene practices, including reducing beryllium exposures to the greatest extent possible, are recommended. Beryllium work areas should be established where employees are exposed to beryllium levels above the occupational exposure limits recommended by Alcoa or where the potential exists for significant skin contact with dusts containing beryllium. Access to these work areas should be restricted and the number of employees exposed to beryllium should be limited.

Adequate protective work clothing should be provided to employees in beryllium work areas to prevent contamination of personal clothing. This work clothing should not be worn outside the work area. Special laundering practices should be followed (e.g., separation of contaminated clothing, use of water soluble laundry bags) and personnel assigned to launder contaminated clothing should be advised of beryllium's presence and potential health effects.

Good housekeeping and personal hygiene practices should be implemented. Dry cleaning of dust (e.g., broom sweeping, use of compressed air) should not be permitted. When vacuuming, high efficiency particulate (HEPA) filters are recommended. Food, tobacco and cosmetic products should be prohibited in the work area. Employees in beryllium work areas should be required to shower at the end of the work shift.

Medical surveillance is recommended for all employees exposed to >0.1 ug/m3 beryllium as a TWA or >1.0 ug/m3 beryllium as a STEL. Surveillance should include baseline chest X-rays (periodic as required by a physician) and annual respiratory history, spirometry, and serum lymphocyte transformation tests (LTT-Be). Employees sensitized or showing symptoms of beryllium related disease should be restricted from further exposure to beryllium.

Personnel who handle and work with molten metal should utilize primary protective clothing like polycarbonate face shields, fire resistant tapper's jackets, neck shades (snoods), leggings, spats and similar equipment to prevent burn injuries. In addition to primary protection, secondary or day-to-day work clothing that is fire resistant and sheds metal splash is recommended for use with molten metal. Synthetic materials should never be worn even as secondary clothing (undergarments).

Minimize breathing oil vapors and mist. Remove oil contaminated clothing; launder or dry-clean before reuse. Remove oil contaminated shoes and thoroughly clean and dry before reuse. Cleanse skin thoroughly after contact, before breaks and meals, and at the end of the work period. Oil coating is readily removed from skin with waterless hand cleaners followed by a thorough washing with soap and water.

9. Physical & Chemical Properties

Form	Solid.
Appearance	Silvery
Boiling point	Not applicable
Melting point	1000 - 1150 °F (537.8 - 621.1 °C)
Flash point	Not applicable
Auto-ignition temperature	Not applicable
Flammability limits in air, lower, % by volume	Not applicable
Flammability limits in air, upper, % by volume	Not applicable
Vapor pressure	Not applicable
Vapor density	Not applicable
Solubility (water)	None
Density	2.7 - 2.8 g/cm3 (0.098 - 0.101 lb/in3)
pH	Not applicable
Odor	Odorless.
Partition coefficient (n-octanol/water)	Not applicable

10. Chemical Stability & Reactivity Information

Chemical stability

Stable under normal conditions of use, storage, and transportation as shipped.

Conditions to avoid

Chips, fines, dust and molten metal are considerably more reactive with the following:
• Water: Slowly generates flammable/explosive hydrogen gas and heat. Generation rate is greatly increased with smaller particles (e.g., fines and dusts). Molten metal can react violently/explosively with water or moisture, particularly when the water is entrapped.
• Heat: Oxidizes at a rate dependent upon temperature and particle size.
• Strong oxidizers: Violent reaction with considerable heat generation. Can react explosively with nitrates (e.g., ammonium nitrate and fertilizers containing nitrate) when heated or molten.
• Acids and alkalis: Reacts to generate flammable/explosive hydrogen gas. Generation rate is greatly increased with smaller particles (e.g., fines and dusts).
• Halogenated compounds: Many halogenated hydrocarbons, including halogenated fire extinguishing agents, can react violently with finely divided or molten aluminum.
• Iron oxide (rust) and other metal oxides (e.g., copper and lead oxides): A violent thermite reaction generating considerable heat can occur. Reaction with aluminum fines and dusts requires only very weak ignition sources for initiation. Molten aluminum can react violently with iron oxide without external ignition source.
• Iron powder and water: Explosive reaction forming hydrogen gas when heated above 1470°F (800°C).

Hazardous polymerization

Hazardous polymerization does not occur.

11. Toxicological Information

Health effects associated with ingredients

Aluminum dust/fines and fumes: Low health risk by inhalation. Generally considered to be biologically inert.

Beryllium: Can cause lung sensitization in susceptible individuals. Skin contact: Can cause irritant dermatitis, allergic contact dermatitis and lumps on the skin (granulomas). Acute overexposures: Can cause inflammation of the lung tissues (Acute Beryllium Disease). Acute Beryllium Disease can be fatal but is unlikely to occur when processing beryllium-containing aluminum alloys.

Chronic exposures: Chronic inhalation of dust and fumes by sensitized individuals can result in a serious, progressive disease called Chronic Beryllium Disease (CBD). This disease is an allergic condition in which the lung tissues become inflamed. This inflammation, sometimes accompanied with scarring of the lungs (pulmonary fibrosis), restricts the uptake of oxygen into the blood stream. CBD can, over time, be fatal.

Beryllium studies with experimental animals by inhalation have found lung tumors. IARC/NTP: Listed as "known to be a human carcinogen" by the NTP. Listed as carcinogenic to humans by IARC (Group 1).

Chromium dust and fumes: Can cause irritation of eye, skin and respiratory tract. Metallic chromium and trivalent chromium: Not classifiable as to their carcinogenicity to humans by IARC.

Copper dust/mists: Can cause irritation of the eyes, mucous membranes, skin, and respiratory tract. Chronic overexposures: Can cause reduction in the number of red blood cells (anemia), skin abnormalities (pigmentation changes) and hair discoloration.

Manganese dust or fumes: Chronic overexposures: Can cause inflammation of the lung tissues, scarring of the lungs (pulmonary fibrosis), central nervous system damage, Secondary Parkinson's Disease and reproductive harm in males.

Nickel dust and fume: Can cause irritation of eyes, skin and respiratory tract. Eye contact: Can cause inflammation of the eyes and eyelids (conjunctivitis). Skin contact: Can cause sensitization and allergic contact dermatitis. Chronic overexposures: Can cause perforation of the nasal septum, inflammation of the nasal passages (sinusitis), respiratory sensitization, asthma and scarring of the lungs (pulmonary fibrosis).
Nickel alloys IARC/NTP: Reviewed and not recommended for listing by NTP. Listed as possibly carcinogenic to humans by IARC (Group 2B).

Silicon (inert dusts): Chronic overexposures: Can cause chronic bronchitis and narrowing of airways.

Some products are supplied with an oil coating or have residual oil from the manufacturing process.
Oil: Can cause irritation of skin. Skin contact (prolonged or repeated): Can cause dermatitis.

Health effects associated with compounds formed during processing

The following could be expected if welded, remelted or otherwise processed at elevated temperatures:

Hexavalent chromium compounds (Chromium VI): Can cause irritation of eye, skin and respiratory tract. Skin contact: Can cause irritant dermatitis, allergic reactions and skin ulcers. Chronic overexposures: Can cause perforation of the nasal septum, respiratory sensitization, asthma, the accumulation of fluid in the lungs (pulmonary edema), lung damage, kidney damage, lung cancer, nasal cancer and cancer of the gastrointestinal tract. IARC/NTP: Listed as "known to be a human carcinogen" by the NTP. Listed as carcinogenic to humans by IARC (Group 1).

Nickel compounds: Associated with lung cancer, cancer of the vocal cords and nasal cancer. IARC/NTP: Listed as "known to be a human carcinogen" by the NTP. Listed as carcinogenic to humans by IARC (Group 1).

Magnesium oxide fumes: Can cause irritation of the eyes and respiratory tract. Acute overexposures: Can cause metal fume fever (nausea, fever, chills, shortness of breath and malaise).

Manganese oxide fumes: Can cause irritation of the eyes, skin, and respiratory tract. Acute overexposures: Can cause metal fume fever (nausea, fever, chills, shortness of breath and malaise).

Copper fume: Can cause irritation of the eyes, mucous membranes, and respiratory tract. Acute overexposures: Can cause metal fume fever (nausea, fever, chills, shortness of breath and malaise).

Iron oxide: Chronic overexposures: Can cause benign lung disease (siderosis). Ingestion: Can cause irritation of gastrointestinal tract, bleeding, changes in the pH of the body fluids (metabolic acidosis) and liver damage.

Zinc oxide fumes: Can cause irritation of upper respiratory tract. Acute overexposures: Can cause metal fume fever (nausea, fever, chills, shortness of breath and malaise).

Silica, amorphous: Acute overexposures: Can cause dryness of eyes, nose and upper respiratory tract.

Alumina (aluminum oxide): Low health risk by inhalation. Generally considered to be biologically inert.

If the product is heated well above ambient temperatures or machined, oil vapor or mist may be generated.
Oil vapor or mist: Can cause irritation of respiratory tract. Acute overexposures: Can cause bronchitis, headache, central nervous system effects (nausea, dizziness and loss of coordination) and drowsiness (narcosis).

Welding, plasma arc cutting, and arc spray metalizing can generate ozone.
Ozone: Can cause irritation of eyes, nose and upper respiratory tract. Acute overexposures: Can cause shortness of breath, tightness of chest, headache, cough, nausea and narrowing of airways. Effects are reversible on cessation of exposure. Acute overexposures (high concentrations): Can cause respiratory distress, respiratory tract damage, bleeding and the accumulation of fluid in the lungs (pulmonary edema). Effects can be delayed up to 1-2 hours. Additional information: Studies (inhalation) with experimental animals have found genetic damage, reproductive harm, blood cell damage, lung damage and death.

Welding fumes: IARC/NTP: Listed as possibly carcinogenic to humans by IARC (Group 2B). Additional information: In one study, occupational asthma was associated with exposures to fumes from aluminum welding.

Plasma arc cutting of aluminum can generate oxides of nitrogen.
Oxides of nitrogen (NO and NO2): Can cause irritation of eyes, skin and respiratory tract. Acute overexposures: Can cause reduced ability of the blood to carry oxygen (methemaglobin). Can cause cough, shortness of breath, accumulation of fluid in the lungs (pulmonary edema) and death. Effects can be delayed up to 2-3 weeks.
Nitrogen dioxide (NO2): Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis).

Component analysis - LD50

Components

Toxicology Data - Selected LD50s and LC50s

Iron (7439-89-6)	Oral LD50 Rat: 984 mg/kg
Magnesium (7439-95-4)	Oral LD50 Rat: 230 mg/kg
Manganese (7439-96-5)	Oral LD50 Rat: 9 g/kg
Nickel (7440-02-0)	Oral LD50 Rat: >9000 mg/kg
Silicon (7440-21-3)	Oral LD50 Rat: 3160 mg/kg

Compounds Formed During Processing

Toxicology Data - Selected LD50s and LC50s

Aluminum oxide (non-fibrous) (1344-28-1)	Oral LD50 Rat: >5000 mg/kg
Iron oxide (1309-37-1)	Oral LD50 Rat: >10000 mg/kg

Component analysis - LD50

Compounds Formed During Processing

Toxicology Data - Selected LD50s and LC50s

Nitric oxide (10102-43-9)	Inhalation LC50 Rat: 1068 mg/m3/4H
Nitrogen dioxide (10102-44-0)	Inhalation LC50 Rat: 88 ppm/4H; Inhalation LC50 Rat:165 mg/m3/4H; Inhalation LC50 Rat:220 mg/m3/1H
Oil mist, mineral (8012-95-1)	Oral LD50 Mouse: 22 g/kg
Ozone (10028-15-6)	Inhalation LC50 Rat: 4800 ppb/4H
Zinc oxide (1314-13-2)	Oral LD50 Rat: >5000 mg/kg

Carcinogenicity Hazardous by OSHA criteria. Cancer hazard. Risk of cancer cannot be excluded with prolonged exposure.

Components

ACGIH - Threshold Limit Values - Carcinogens

Aluminum (7429-90-5)	A4 - Not Classifiable as a Human Carcinogen
Beryllium (7440-41-7)	A1 - Confirmed Human Carcinogen
Chromium (7440-47-3)	A4 - Not Classifiable as a Human Carcinogen
Nickel (7440-02-0)	A5 - Not Suspected as a Human Carcinogen

IARC - Group 1 (Carcinogenic to Humans)

Beryllium (7440-41-7)	Monograph 58 [1993], Supplement 7 [1987]

IARC - Group 2B (Possibly Carcinogenic to Humans)

Nickel (7440-02-0)	Monograph 49 [1990], Supplement 7 [1987]

NTP (National Toxicology Program) - Report on Carcinogens - Known Human Carcinogens

Beryllium (7440-41-7)	Known Human Carcinogen

Compounds Formed During Processing

ACGIH - Threshold Limit Values - Carcinogens

Aluminum oxide (non-fibrous) (1344-28-1)	A4 - Not Classifiable as a Human Carcinogen
Beryllium compounds (Not available)	A1 - Confirmed Human Carcinogen
Chromium (III) compounds (Not available)	A4 - Not Classifiable as a Human Carcinogen
Chromium (VI) compounds, certain water insoluble forms (Not available)	A1 - Confirmed Human Carcinogen
Chromium (VI) compounds, water soluble forms (Not available)	A1 - Confirmed Human Carcinogen
Iron oxide (1309-37-1)	A4 - Not Classifiable as a Human Carcinogen
Magnesium oxide (1309-48-4)	A4 - Not Classifiable as a Human Carcinogen
Nickel compounds, insoluble (Not available)	A1 - Confirmed Human Carcinogen
Nitrogen dioxide (10102-44-0)	A4 - Not Classifiable as a Human Carcinogen
Ozone (10028-15-6)	A4 - Not Classifiable as a Human Carcinogen

IARC - Group 1 (Carcinogenic to Humans)

Beryllium compounds (Not available)	Monograph 58 [1993] (evaluated as a group), Supplement 7 [1987] (evaluated as a group)
Chromium (VI) compounds (18540-29-9)	Monograph 49 [1990] (evaluated as a group)
Nickel compounds, insoluble (Not available)	Monograph 49 [1990] (evaluated as a group)

IARC - Group 2B (Possibly Carcinogenic to Humans)

Welding fumes (Not available)	Monograph 49 [1990]

NTP (National Toxicology Program) - Report on Carcinogens - Known Human Carcinogens

Beryllium compounds (Not available)	Known Human Carcinogen
Chromium (VI) compounds (18540-29-9)	Known Human Carcinogen
Nickel compounds, insoluble (Not available)	Known Human Carcinogen

U.S. - OSHA - Specifically Regulated Carcinogens (1910.1001 to 1910.1096)

Chromium (VI) compounds (18540-29-9)	Workers exposed to Cr(VI) are at an increased risk of developing lung cancer - see 29 CFR 1910.1026

12. Ecological Information

Ecotoxicity No data available for this product.

Components

Ecotoxicity - Freshwater Algae Data

Copper (7440-50-8)	72 Hr EC50 Scenedesmus subspicatus: 120 µg/L
Nickel (7440-02-0)	72 Hr EC50 freshwater algae (4 species): 0.1 mg/L; 72 Hr EC50 Selenastrum capricornutum: 0.18 mg/L
Zinc (7440-66-6)	96 Hr EC50 Selenastrum capricornutum: 30 µg/L

Ecotoxicity - Freshwater Fish Species Data

Copper (7440-50-8)	96 Hr LC50 Pimephales promelas: 23 µg/L; 96 Hr LC50 Oncorhynchus mykiss: 13.8 µg/L; 96 Hr LC50 Lepomis macrochirus: 236 µg/L
Iron (7439-89-6)	96 Hr LC50 Morone saxatilis: 13.6 mg/L [static]
Nickel (7440-02-0)	96 Hr LC50 Oncorhynchus mykiss: 31.7 mg/L (adult); 96 Hr LC50 Pimephales promelas: 3.1 mg/L; 96 Hr LC50 Brachydanio rerio: >100 mg/L
Zinc (7440-66-6)	96 Hr LC50 Pimephales promelas: 6.4 mg/L

Ecotoxicity - Water Flea Data

Copper (7440-50-8)	96 Hr EC50 water flea: 10 µg/L; 96 Hr EC50 water flea: 200 µg/L
Nickel (7440-02-0)	96 Hr EC50 water flea: 510 µg/L
Zinc (7440-66-6)	72 Hr EC50 water flea: 5 µg/L

Compounds Formed During Processing

Ecotoxicity - Freshwater Fish Species Data

Chromium (VI) compounds (18540-29-9)	96 Hr LC50 Pimephales promelas: 36.2 mg/L; 96 Hr LC50 Oncorhynchus mykiss: 7.6 mg/L

Ecotoxicity - Water Flea Data

Chromium (VI) compounds (18540-29-9)	24 Hr EC50 water flea: 435 µg/L

Environmental Fate No data available for this product.

13. Disposal Considerations

Disposal instructions Reuse or recycle material whenever possible. Dispose in accordance with all applicable regulations. Keep scrap separate from other metal scrap.

Waste codes RCRA Status: Must be determined at the point of waste generation. If material is disposed as a waste, it must be characterized under RCRA according to 40 CFR, Part 261, or state equivalent in the U.S.
TCLP testing is recommended for chromium.

14. Transport Information

General Shipping Information

Basic shipping description:

UN number	-
Proper shipping name	Not regulated
Hazard class	-
Packing group	-

General Shipping Notes

- When "Not regulated", enter the proper freight classification, MSDS Number and Product Name onto the shipping paperwork.

15. Regulatory Information

US federal regulations All electrical equipment must be suitable for use in hazardous atmospheres involving aluminum powder in accordance with 29 CFR 1910.307. The National Electrical Code, NFPA 70, contains guidelines for determining the type and design of equipment and installation which will meet this requirement.

In reference to Title VI of the Clean Air Act of 1990, this material does not contain nor was it manufactured using ozone-depleting chemicals.

Components

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

Beryllium (7440-41-7)	10 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers); 4.54 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers)

Components

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

Chromium (7440-47-3)	5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers)
Copper (7440-50-8)	5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers)
Nickel (7440-02-0)	100 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers); 45.4 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers)
Zinc (7440-66-6)	1000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers); 454 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the solid metal released is larger than 100 micrometers)

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

Aluminum (7429-90-5)	1.0 % de minimis concentration (dust or fume only)
Beryllium (7440-41-7)	0.1 % de minimis concentration
Chromium (7440-47-3)	1.0 % de minimis concentration
Copper (7440-50-8)	1.0 % de minimis concentration
Manganese (7439-96-5)	1.0 % de minimis concentration
Nickel (7440-02-0)	0.1 % de minimis concentration
Zinc (7440-66-6)	1.0 % de minimis concentration (dust or fume only)

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - Yes

State regulations

WARNING: This product contains a chemical or chemicals known to the State of California to cause cancer. Chemicals known to the State of California to cause cancer: Beryllium and beryllium compounds, Chromium (hexavalent compounds), Nickel (metallic) and certain Nickel compounds.

Components

U.S. - California - 8 CCR Section 339 - Director's List of Hazardous Substances

Aluminum (7429-90-5)	Present
Beryllium (7440-41-7)	Present (exempt when encapsulated in a capsule which meets the definition of Special Form Materials prescribed in 49 CFR 173.403(z))
Chromium (7440-47-3)	Present
Copper (7440-50-8)	Present
Iron (7439-89-6)	Present
Magnesium (7439-95-4)	Present
Manganese (7439-96-5)	Present
Nickel (7440-02-0)	Present
Zinc (7440-66-6)	Present

U.S. - California - Proposition 65 - Carcinogens List

Beryllium (7440-41-7)	carcinogen, initial date 10/1/87 Trace amount
Nickel (7440-02-0)	carcinogen, initial date 10/1/89

U.S. - Massachusetts - Right To Know List

Aluminum (7429-90-5)	Present
Beryllium (7440-41-7)	Carcinogen; Extraordinarily hazardous
Chromium (7440-47-3)	Carcinogen; Extraordinarily hazardous
Copper (7440-50-8)	Present
Magnesium (7439-95-4)	Present
Manganese (7439-96-5)	Present
Nickel (7440-02-0)	Carcinogen; Extraordinarily hazardous
Silicon (7440-21-3)	Present (dust, exempt when encapsulated or if particulates are not present and cannot be substantially generated through use of the product)
Zinc (7440-66-6)	Present

Components

U.S. - Minnesota - Hazardous Substance List

Aluminum (7429-90-5)	Present (dust)
Beryllium (7440-41-7)	Carcinogen
Chromium (7440-47-3)	Present
Copper (7440-50-8)	Present (dust, fume, and mist)
Manganese (7439-96-5)	Present
Nickel (7440-02-0)	Carcinogen
Silicon (7440-21-3)	Present (dust)

U.S. - New Jersey - Right to Know Hazardous Substance List

Aluminum (7429-90-5)	sn 0054
Beryllium (7440-41-7)	sn 0222
Chromium (7440-47-3)	sn 0432
Copper (7440-50-8)	sn 0528
Magnesium (7439-95-4)	sn 1136
Manganese (7439-96-5)	sn 1155 (dust and fume)
Nickel (7440-02-0)	sn 1341 (dust and fume)
Silicon (7440-21-3)	sn 3125 (powder)
Zinc (7440-66-6)	sn 2021 (dust and fume)

U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

Beryllium (7440-41-7)	Present
Chromium (7440-47-3)	Present
Nickel (7440-02-0)	Present

U.S. - Pennsylvania - RTK (Right to Know) List

Aluminum (7429-90-5)	Environmental hazard
Beryllium (7440-41-7)	Environmental hazard; Special hazardous substance
Chromium (7440-47-3)	Environmental hazard; Special hazardous substance
Copper (7440-50-8)	Environmental hazard
Magnesium (7439-95-4)	Present
Manganese (7439-96-5)	Environmental hazard
Nickel (7440-02-0)	Environmental hazard; Special hazardous substance
Silicon (7440-21-3)	Present
Zinc (7440-66-6)	Environmental hazard

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of New and Existing Chemicals (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

Inventory information Pure metals are not specifically listed by CAS or ENCS number. The class of compounds for each of these metals is listed on the ENCS inventory.

16. Other Information

MSDS History

Origination date: September 7, 1999
Supersedes: October 24, 2008
Revision date: April 29, 2009

MSDS Status	April 29, 2009: Change(s) in Section: 2, 7, 10 and 11. October 24, 2008: New format. September 28, 2007: Change(s) in Section: 1, 2, 3 and 8. December 20, 2006: Reviewed on a periodic basis in accordance with Alcoa policy. Change(s) in Section: 1, 2, 3, 4, 5, 7, 8, 10, 11, 12 and 15. December 4, 2003: Reviewed on a periodic basis in accordance with Alcoa policy. Change(s) in Section: 1 and 2.
Prepared By	Hazardous Materials Control Committee Preparer: Jon N. Peace, 412-553-2293/Robert W. Barr, 412-553-2618
MSDS System Number	151060

Other information

- Aluminum Association's Bulletin F-1, "Guidelines for Handling Aluminum Fines Generated During Various Aluminum Fabricating Operations." The Aluminum Association, 1525 Wilson Boulevard, Suite 600, Arlington, Virginia 22209, www.aluminum.org.
- Aluminum Association, "Guidelines for Handling Molten Aluminum, The Aluminum Association, 1525 Wilson Boulevard, Suite 600, Arlington, Virginia 22209, www.aluminum.org.
- NFPA 65, Standard for Processing and Finishing of Aluminum (NFPA phone: 800-344-3555)
- NFPA 651, Standard for Manufacture of Aluminum and Magnesium Powder
- NFPA 70, Standard for National Electrical Code (Electrical Equipment, Grounding and Bonding)
- NFPA 77, Standard for Static Electricity
- Guide to Occupational Exposure Values-2008, Compiled by the American Conference of Governmental Industrial Hygienists (ACGIH).
- Documentation of the Threshold Limit Values and Biological Exposure Indices, Sixth Edition, 1991, Compiled by the American Conference of Governmental Industrial Hygienists, Inc. (ACGIH).
- NIOSH Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, February 2004.
- Patty's Industrial Hygiene and Toxicology: Volume II: Toxicology, 4th ed., 1994, Patty, F. A.; edited by Clayton, G. D. and Clayton, F. E.: New York: John Wiley & Sons, Inc.
- expub, www.expub.com, Expert Publishing, LLC.

Key/Legend:

ACGIH	American Conference of Governmental Industrial Hygienists
AICS	Australian Inventory of Chemical Substances
CAS	Chemical Abstract Services
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CPR	Cardio-pulmonary Resuscitation
DOT	Department of Transportation
DSL	Domestic Substances List (Canada)
EC	Effective Concentration
ED	Effective Dose
EINECS	European Inventory of Existing Commercial Chemical Substances
ENCS	Japan - Existing and New Chemical Substances
EWC	European Waste Catalogue
EPA	Environmental Protective Agency
IARC	International Agency for Research on Cancer
LC	Lethal Concentration
LD	Lethal Dose
MAK	Maximum Workplace Concentration (Germany) "maximale Arbeitsplatz-Konzentration"
NDSL	Non-Domestic Substances List (Canada)
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
PIN	Product Identification Number
PMCC	Pensky Marten Closed Cup
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
SIMDUT	Système d'Information sur les Matières Dangereuses Utilisées au Travail
STEL	Short Term Exposure Limit
TCLP	Toxic Chemicals Leachate Program
TDG	Transportation of Dangerous Goods
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
WHMIS	Workplace Hazardous Materials Information System

m meter, cm centimeter, mm millimeter, in inch,
g gram, kg kilogram, lb pound, µg microgram,
ppm parts per million, ft feet

*** End of MSDS ***

ALUMINUM ALLOYS \ TH LOW BERYLLIUM

WARNING

Non-combustible as supplied. Small chips, fine turnings and dust from processing may be readily ignitable. Explosion/fire hazards may be present when: Dust or fines are dispersed in air; Chips, fines or dust are in contact with water; Dust and fines are in contact with certain metal oxides (e.g., rust, copper oxide). Molten metal is in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide).

Dust and fumes from processing: Can cause irritation of the eyes, skin and upper respiratory tract. Chronic overexposures: Can cause reduction in the number of red blood cells, skin abnormalities, scarring of the lungs, respiratory sensitization, central nervous system damage, secondary Parkinson's disease and reproductive harm in males.

FIRST AID

Eye contact	Dust and fume from processing: Rinse eyes with plenty of water or saline for at least 15 minutes. Consult a physician.
Skin contact	Dust and fumes from processing or Contact with residual oil/oil coating: Wash with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists.
Inhalation	Dust and fume from processing: Remove to fresh air. Check for clear airway, breathing, and presence of pulse. Provide cardiopulmonary resuscitation for persons without pulse or respirations. Consult a physician.

FIRE FIGHTING

Suitable extinguishing media	Use Class D extinguishing agents on fines, dust or molten metal. Use coarse water spray on chips and turnings.
Extinguishing media which must not be used for safety reasons	DO NOT use halogenated extinguishing agents on small chips/fines. DO NOT use water in fighting fires around molten metal. These fire extinguishing agents will react with the burning material.

SPILL PROCEDURES

Spill or leak procedure	If molten: Contain the flow using dry sand or salt flux as a dam. All tooling (e.g., shovels or hand tools) and containers which come in contact with molten metal must be preheated or specially coated and rust free. Allow the spill to cool before remelting as scrap.

HANDLING AND STORAGE

Handling	Avoid generating dust. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different. Hot aluminum does not necessarily glow red.
Storage	Keep dry.

See Alcoa Material Safety Data Sheet No. 1056 for more information about use and disposal.
Emergency Phone: (412) 553-4001.

Contains:	
Aluminum	7429-90-5
Zinc	7440-66-6
Magnesium	7439-95-4
Copper	7440-50-8
Silicon	7440-21-3
Manganese	7439-96-5
Iron	7439-89-6
Nickel	7440-02-0
Chromium	7440-47-3
Beryllium	7440-41-7

Alcoa Inc.
201 Isabella Street, Pittsburgh PA 15212-5858 United States

ALCOA

3-27-12
3-24-14

MATERIAL SAFETY DATA SHEET

PART# 66243522398
DATE PRINTED: MAR 31, 2010
MSDS NO. ALRESIN053 OUTBOUND
Aluminum Oxide Resin Grinding Wheel

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

PRODUCT NAME
Aluminum Oxide Resin Grinding Wheel
TRADE NAME
Alundum Wheel
MANUFACTURER(4)
Saint-Gobain Abrasives, Inc.
One New Bond Street
Worcester, MA, 01606
(508) 795-5000
REVISION DATE
1/26/2010
MSDS PRINT FORMAT
NUSA

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

SUBSTANCE DESCRIPTION		PERCENT	CAS#
Aluminum Oxide, Non-fibrous		50.000- 90.000	1344-28-1
Cured PhenolFormaldehyde Resin		2.000- 18.000	9003-35-4
Fiberglass		1.000- 10.000	65997-17-3
Iron Disulfide		2.000- 15.000	12068-85-8
Sulfates & Sulfides	**	1.000- 10.000	NA

** SUBSTANCE IS A COMPOUND AND/OR MIXTURE
OTHER
Not Applicable

SECTION 3. HAZARDS IDENTIFICATION

INHALATION ACUTE EXPOSURE EFFECTS
Dust may be slightly irritating to eyes and respiratory tract at high concentrations.
INHALATION CHRONIC EXPOSURE EFFECTS
Chronic: May affect breathing capacity.
For products containing phenol/formaldehyde resin, dust generated from intended use may contain trace amounts of phenol and formaldehyde which under excessive exposure may cause skin sensitization and airway obstruction.

For products containing inorganic fluorides:
Excessive exposure to inorganic fluorides have been shown to increasebone density.
EYE CONTACT ACUTE EXPOSURE EFFECTS
Dust may irritate eyes.
SKIN CONTACT ACUTE EXPOSURE EFFECTS
Some may experience skin irritation from dust.

INGESTION ACUTE EXPOSURE EFFECTS
No known adverse effects, but ingestion not recommended.

SECTION 4. FIRST AID MEASURES

INHALATION
Remove to fresh air. If breathing has stopped, give artifical respiration. Get medical attention immediately .
SKIN CONTACT
Wash affected areas with soap and water. Obtain medical assistance.
EYE CONTACT
Wash with large amounts of water. Obtain first aid and medical assistance, if needed.
INGESTION
Call poison control center, hospital emergency room or physician immediately.

SECTION 5. FIRE FIGHTING MEASURES

FIRE FIGHTING PROCEDURES
Not Applicable
HAZARDOUS PRODUCTS/COMBUSTION
None.
HAZARD RATING SOURCE
NFPA
HEALTH
1
FLAMMABILITY
0
REACTIVITY
0
OTHER

SECTION 6. ACCIDENTAL RELEASE MEASURES

CLEAN-UP
Follow normal clean up procedures.

SECTION 7. HANDLING AND STORAGE

HANDLING
Always HANDLE AND STORE wheels in a CAREFUL manner.
Always VISUALLY INSPECT all wheels before mounting.
Always CHECK MACHINE SPEED against the established maximum safe operating speed MARKED ON THE WHEEL.
Always CHECK MOUNTING FLANGES for equal and correct diameter.
Always USE MOUNTING BLOTTERS.
Always be sure WORK REST is properly adjusted.
Always USE A SAFETY GUARD covering at least one-half of the grinding wheel.
Always allow NEWLY MOUNTED WHEELS to run at operating speed, with guard in place, for at least one minute before grinding.
Always TURN OFF COOLANT before stopping wheel to avoid creating an out-of-balance wheel.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

VENTILATION PROTECTION

HAZARD CLASS
N/A

SECTION 15. REGULATORY INFORMATION

EXPOSURE LIMITS/REGULATORY INFORMATION

SUBSTANCE DESCRIPTION	UNITS	OSHA	ACGIH	MOL
Aluminum Oxide, Non-fibrous	MG/M3	15.0000	10.0000	10.0000
Cured PhenolFormaldehyde Resin	PPM	0.0000	0.0000	0.0000
Fiberglass	FBR/CC	1.0000	0.0000	0.0000
Iron Disulfide	MG/M3	10.0000	10.0000	10.0000
Sulfates & Sulfides	MG/M3	0.0000	0.0000	0.0000

LEGEND:

EXPOSURE LIMIT DESCRIPTIONS
CA PROP 65
Not Applicable
TSCA
Section 8(b) - Inventory Status

All components of this product are registered under the regulations of the Toxic Substance Control Act.
DOMESTIC SUBSTANCE LIST
All components of this product are found on the Domestic Substance List of the country of Canada.

SECTION 16. OTHER INFORMATION

DISCLAIMER
The information and recommendations set forth herein are taken from sources believed to be accurate as of the date hereof; however, the Company makes no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assumes no liability to any user thereof.

KEY TO ABBREVIATIONS:

EQ=EQual LT=Less Than GT=Greater Than
AP=APproximately TR=TRace ND=No Data available
=

3-27-12
3-24-14

MATERIAL SAFETY DATA SHEET

PART# 61463610405
DATE PRINTED: FEB 26, 2010
MSDS NO. ALVIT001 OUTBOUND
Aluminum Oxide Vitrified Product

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

PRODUCT NAME
Aluminum Oxide Vitrified Product
TRADE NAME
Alundum
MANUFACTURER(4)
Saint-Gobain Abrasives, Inc.
One New Bond Street
Worcester, MA, 01606
(508) 795-5000
REVISION DATE
2/04/2010
MSDS PRINT FORMAT
NUSA

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

SUBSTANCE DESCRIPTION	PERCENT	CAS#
Aluminum Oxide, Non-fibrous	30.000- 97.000	1344-28-1
Amorphous Silica, Fused	2.000- 35.000	60676-86-0
Titanium Dioxide	1.000- 3.000	13463-67-7

OTHER
Not Applicable

SECTION 3. HAZARDS IDENTIFICATION

INHALATION ACUTE EXPOSURE EFFECTS
Dust may be slightly irritating to eyes and respiratory tract at high concentrations.
INHALATION CHRONIC EXPOSURE EFFECTS
May affect breathing capacity. For products containing Amorphous Silica, Fused, there is limited evidence in animals that excessive and prolonged exposure to this chemical may cause pulmonary fibrosis.
EYE CONTACT ACUTE EXPOSURE EFFECTS
Dust may irritate eyes.
SKIN CONTACT ACUTE EXPOSURE EFFECTS
Some may experience skin irritation from dust.
INGESTION ACUTE EXPOSURE EFFECTS
No known adverse effects, but ingestion not recommended.

SECTION 4. FIRST AID MEASURES

INHALATION
Remove to fresh air. If breathing has stopped, give artifical respiration. Get medical attention immediately .
SKIN CONTACT
Wash affected areas with soap and water. Obtain medical assistance.

EYE CONTACT
Wash with large amounts of water. Obtain first aid and medical assistance, if needed .
INGESTION
Call poison control center, hospital emèrgency room or physician immediately.

SECTION 5. FIRE FIGHTING MEASURES

FIRE FIGHTING PROCEDURES
Not Applicable
HAZARDOUS PRODUCTS/COMBUSTION
None.
HAZARD RATING SOURCE
NFPA
HEALTH
1
FLAMMABILITY
0
REACTIVITY
0
OTHER

SECTION 6. ACCIDENTAL RELEASE MEASURES

CLEAN-UP
Follow normal clean up procedures.

SECTION 7. HANDLING AND STORAGE

HANDLING
Always HANDLE AND STORE wheels in a CAREFUL manner.
Always VISUALLY INSPECT all wheels before mounting.
Always CHECK MACHINE SPEED against the established maximum safe operating speed MARKED ON THE WHEEL.
Always CHECK MOUNTING FLANGES for equal and correct diameter.
Always USE MOUNTING BLOTTERS.
Always be sure WORK REST is properly adjusted.
Always USE A SAFETY GUARD covering at least one-half of the grinding wheel.
Always allow NEWLY MOUNTED WHEELS to run at operating speed, with guard in place, for at least one minute before grinding.
Always TURN OFF COOLANT before stopping wheel to avoid creating an out-of-balance wheel.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

VENTILATION PROTECTION
Recommend using local exhaust ventilation when general ventilation is not keeping the airborne concentration below the TLV.
RESPIRATORY PROTECTION
Respirators are required when airborne contaminant levels exceed the TLV(s).
EYE PROTECTION
Always WEAR SAFETY GLASSES or some type of eye protection when grinding.
OTHER PROTECTION
Use of this product may create elevated sound levels. Hearing

protection should be worn where required (see OSHA 29 CFR 1910.134 and other applicable regulations).

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE & ODOR
Solid article. Odorless.

SECTION 10. STABILITY AND REACTIVITY

INCOMPATIBILITIES
Avoid acids of all types with a pH < 4.0.
DECOMPOSITION
In use, dusts and decomposing odors may be generated. In most cases, the material removed from the workpiece will be significantly greater than the grinding wheel components. Coolants may produce other decomposition products.

For products containing phenol and formaldehyde resin, thermal decomposition may produce trace amounts of phenol and formaldehyde.

For products containing inorganic fluorides, thermal decomposition may produce trace amounts of fluorides.

SECTION 11. TOXICOLOGICAL INFORMATION

CARCINOGENICITY
Silica, Amorphous, Fused - IARC-3, NIOSH-X
LD50/LC50
Values are not appropriate or available.

SECTION 12. ECOLOGICAL INFORMATION

CHEMICAL FATE
Vitrified products do not appreciably decay.

SECTION 13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL
Use standard landfill methods consistent with applicable Federal, State, Provincial and local laws.
Products with listed flourides may have slightly soluble flouride swarf.

SECTION 14. TRANSPORT INFORMATION

HAZARD CLASS
This product is not hazardous as defined by the Department of Transportation. (USA)
This product is "Not Regulated" under the Transportation of Dangerous Goods Act. (CAN)

SECTION 15. REGULATORY INFORMATION

EXPOSURE LIMITS/REGULATORY INFORMATION

SUBSTANCE DESCRIPTION	UNITS	OSHA	ACGIH	MOL
Aluminum Oxide, Non-fibrous	MG/M3	15.0000	10.0000	10.0000
Amorphous Silica, Fused	MG/M3	0.1000	0.1000	0.0000
Titanium Dioxide	MG/M3	10.0000	10.0000	0.0000

LEGEND:

EXPOSURE LIMIT DESCRIPTIONS
CA PROP 65
Not Applicable
TSCA
Section 8(b) - Inventory Status

All components of this product are registered under the regulations of the Toxic Substance Control Act.
DOMESTIC SUBSTANCE LIST
All components of this product are found on the Domestic Substance List.

SECTION 16. OTHER INFORMATION

DISCLAIMER
The information and recommendations set forth herein are taken from sources believed to be accurate as of the date hereof; however, the Company makes no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assumes no liability to any user thereof.

KEY TO ABBREVIATIONS:

EQ=EQual	LT=Less Than	GT=Greater Than
AP=APproximately	TR=TRace	ND=No Data available
=		

4-6-11
3-27-12
3-24-14

MSDS 027
Revised 11/2010

MATERIAL SAFETY DATA SHEET

MWS Wire Industries
31200 Cedar Valley Drive
Westlake Village, CA 91362
(818) 991-8553

Trade Name: Bare Copper, OFHC Copper Wire, ETP Copper Wire

Chemical Family: Copper

Chemical Formula: N/A

HAZARDOUS INGREDIENTS

Ingredient	CAS No.	TLV	PEL	STEL
Copper	7440-50-8	1 (D) / 0.2 (F)	1 (D) / 0.1 (F)	2

Note: TLV - American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (mg/m^3)
PEL - OSHA Permissible Exposure Level (mg/m^3), 8 hour time weighted average
STEL - ACGIH Short Term Exposure Limit (mg/m^3), 15 minutes maximum
* Ceiling Level (Not to be exceeded) D = Dust F = Fume NS = Not Specified

PHYSICAL DATA

Boiling Point °C: N/A
Vapor Pressure: N/A
Vapor Density: N/A
% Volatile: N/A
Evaporation Rate: N/A
Solubility in H_20: Insoluble
Specific Gravity: 8.89
Melting Temperature: 1083°C
Appearance & Odor: Lustrous orange-red metal. No odor.

FIRE & EXPLOSION HAZARD DATA

Flash Point: N/A
Fire or Explosion Hazard: None

Note: Copper is nonflammable, although sparks from other operations may ignite flammable or combustible materials. Use extinguishing media suitable for surrounding materials. Fire fighters should use self-contained breathing apparatus as deemed necessary.

HEALTH HAZARD DATA

Fine powders, granules and fumes from welding or abrasive operations may pose a health hazard. When burned, soldered or brazed copper wire and solder or brazing material may give off fumes that cause eye and/or respiratory irritation. Use adequate local exhaust to prevent irritation and maintain fume levels below OSHA ceiling limits.

Short Term Exposure: Dust and fumes irritate the eyes, nose and throat. Symptoms may include cough, metallic taste in mouth, fever, fatigue and nausea.

Long Term Exposure: Watering of the eyes, headaches, difficulty in breathing, coughing, severe chest pains and in acute cases, lung disease, lung fibrosis, pneumoconiosis or neurological damage.

Emergency First Aid Procedure:

- In case of fume inhalation, remove from exposure and consult a physician.
- In case of eye contact, flush with large amounts of water for at least fifteen minutes. Seek medical attention.
- In case of ingestion, seek immediate medical attention.

Carcinogenic assessment: Copper has not been identified as a known or suspected carcinogen by NTP, IARC or OSHA.

REACTIVITY DATA

Stability: Stable. Hazardous polymerization will not occur.

SPILL, LEAK, DISPOSAL PROCEDURES

Scrap copper wire has reclamation value. Where this is not practical, it may be disposed in accordance with state and federal regulations. In solid form, copper poses no special clean up problems. If material is in powder or dust form, clean up should be conducted to minimize generation of airborne powder and dust and to avoid contamination of water. Depending on the quantity, spills or releases to the environment may require a report to the National Response Center at (800) 424-8802.

SARA TITLE II SECTION 313

Copper is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372 of the Federal Register. Additional information can be obtained from the Emergency Planning and Community Right-To-Know Information Hot Line, US EPA, at (800) 535-0202.

EC RoHS DIRECTIVE COMPLIANCE

Bare copper wire complies with Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

ECHA REACH COMPLIANCE

Copper magnet wire meets the definition of an article under REACH and does not contain SVHC listed as of the revision date of this MSDS. Also see *http://www.mwswire.com/pdf_files/reach.pdf* for more information on MWS Wire products and REACH.

SPECIAL PROTECTION

Wear safety glasses when risk of eye injury is present, particularly during machining, grinding, welding, powder handling, etc. Gloves and other protective equipment may be required during handling operations as appropriate to the circumstances of exposure.

SPECIAL PRECAUTIONS

When welding, melting, casting, grinding, sanding, polishing or otherwise abrading the surface of copper wire in a manner which generates finely divided particles, an exposure to copper in excess of the occupational standard can occur. Use with adequate ventilation to meet listed exposure limits. Processes generating airborne particles must be air sampled to determine exposure levels. Where exposure data indicate, medical surveillance should be conducted.

PACKAGING & LABELING REQUIREMENTS

D.O.T. Shipping Name: Not regulated Hazard Class: NA

MWS Wire Industries (MWS) has attempted to provide current and accurate information in this data sheet, however MWS makes no representations regarding the accuracy or completeness of the information. Information is supplied upon the condition that the persons receiving it will make their own determinations as to its suitability prior to use. MWS assumes no liability for any loss, damage or injury of any kind which may arise out of the use or reliance on the information by any person. No warranties, either express or implied, of merchantability, fitness for a particular purpose or of any other nature are made with respect to the foregoing information or the product to which the information refers. Contact person: Ken Goss at (818) 991-8553.

3-25-19

Material Safety Data Sheet

Diamond Grit Blasting Abrasive

©TCC Materials | March 14, 2012 Version 5.0

TCC Materials
2025 Centre Pointe Boulevard, Suite 300
Mendota Heights, MN 55120-1221

Emergency Telephone Number:
651-688-9116
Information Telephone Number:
651-688-9116

SECTION I: PRODUCT IDENTIFICATION

Product Types: **Blasting Abrasive**

Product Name:
Black Blast

SECTION II: HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Black Diamond abrasives are stable, amorphous glass-like compounds.

Chemical identity	CAS #	Percent	OSHA PEL	ACGIH TLV
Coal slag	68476-96-0	99+ %	15 mg/m^3 (total) 5 mg/m^3 (respirable)	10 mg/m^3 (inhalable) 3 mg/m^3 (respirable)
Beryllium	7440-41-7	.00036%	2 µg/m^3	0.05 µg/m^3
Crystalline silica (quartz)	14808-60-7	(See Note*)	0.1mg/m^3 (respirable)	0.05mg/m^3 (respirable)

**Crystalline silica concentrations for 30-60 grade average <0.37% and in 2006, 2007, 2008, 2010, and 2011 were below the detection level of 0.3%. Silica concentrations for 40-80 range from <0.3% to 1.6% in samples taken over the last nine years. (average=0.8%)*

SECTION III: PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling point >>2500 °F

Melting Point: 2500 °F

Solubility in water: Negligible

Specific gravity: (H_20 = 1) 2.65

Vapor Density: (AIR =1) N/A

Hardness: #7

Vapor Pressure: (mmHg) N/A

Evaporation Rate:(Butyl acetate=1)N/A

Appearance and odor: Black granular solid, no apparent odor

SECTION IV: FIRE AND EXPLOSION HAZARD DATA

Flash point: (Method used) N/A
Flammable limits: N/A
Extinguishing Media: None required
Special fire fighting procedures: None
Unusual Fire and Explosion Hazards: None

SECTION V: REACTIVITY DATA

Stability:

Unstable	Conditions to avoid
Stable **X**	None

Incompatibility *(Materials to Avoid):* none known

Hazardous Decomposition or Byproducts: N/A

Hazardous Polymerization:

May Occur	Conditions to Avoid
Will Not Occur **X**	None

SECTION VI: HEALTH HAZARD DATA

Route(s) of Entry	Inhalation?	Skin?	Ingestion?
	Yes	Eyes, Yes	Not significant

Health Hazards (Acute and Chronic): May cause mechanical irritation to eyes and skin. Low toxicity by ingestion. Primarily hazardous by inhalation. Dust can cause mucous membrane irritation. Repeated or extremely high exposures to dust could cause pneumoconiosis.

Carcinogenicity	NTP?	IARC?	OSHA Regulated
	No (yes for quartz & beryllium)	No (yes for quartz & beryllium)	No

Signs and Symptoms of Overexposure: Shortness of breath, coughing, impaired lung function
Medical Conditions Generally Aggravated by Exposure: Respiratory illnesses
Emergency and First Aid Procedures:
Eyes: Flush with water for 15 minutes.
Ingestion: Drink large amounts of water.
Skin: wash with mild soap and water
Inhalation: Move the person to fresh air; support breathing

SECTION VII: PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to Be Taken in Case Material is Released or Spilled: Follow established procedures for handling unregulated dusts and sands. Scoop or shovel into container, controlling dust. The material can be wetted with water to control dust. If material has been used for abrasive blasting, the waste material may be contaminated from the blasting.

Waste Disposal Method: May be disposed of in an approved landfill in accordance with all EPA, state, and county disposal regulations. Disposal requirements may change once material has been used for abrasive blasting

Precautions to be Taken in Handling and Storing: Minimize inhalation and direct skin contact. Minimize dust generation. Respirator required in enclosed or poorly ventilated spaces and all other work involving high exposure.

Other Precautions: Carefully follow all EPA, state, and county regulations
Respiratory Protection (*Specify Type)*
NIOSH approved Type CE airline respirator for abrasive blasting. NIOSH approved disposable dust mask (N100 recommended) for comfort, protection against dust when pouring material

SECTION VIII: CONTROL MEASURES

Ventilation	Local Exhaust	Special	Mechanical *(General)*	Other
	To maintain exposure below TLV/PEL	None	To maintain exposure below TLV/PEL	None

Protective Gloves: Use gloves to prevent skin abrasion
Eye Protection: Safety glasses or chemical goggles
Other Protective Clothing or Equipment: Safety glasses and normal work clothing for limited exposure. Type CE abrasive blasting respirator (including head and face protection) and sturdy coveralls to protect against high dust levels and abrasive effects when doing abrasive blasting
Work/Hygienic Practices: Normal practices.

FOOT NOTES
This information is furnished without warranty representation, or license of any kind, except that it is accurate to the best of TCC Materials knowledge or obtained from sources believed by TCC Materials to be accurate. TCC Materials does not assume any legal responsibility for use or reliance upon same. Customers are encouraged to conduct their own tests. Before using any product, read its label.

2-17-11
3-27-12
3-25-14

Wolverine
Joining Technologies

Code: BLACK-FLUX
Date: 17 DEC 1999
Revised: 01 JAN 2010
Printed: 01 JAN 2010

WOLVERINE JOINING TECHNOLOGIES, LLC.

MATERIAL SAFETY DATA SHEET

Product: BLACK FLUX

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Common Name : BRAZING FLUX
Chemical Name : CHEMICAL MIXTURE
Formula : CHEMICAL MIXTURE
Product CAS No.: CHEMICAL MIXTURE
Product Use : Welding/Brazing/Soldering

Supplier : WOLVERINE JOINING TECHNOLOGIES, LLC.
Address : 235 KILVERT STREET
City, St, Zip : WARWICK, RI 02886
Phone : 1-401-739-9550

FOR CHEMICAL EMERGENCY CALL CHEMTREC (24 HOURS):
1-800-424-9300 (US, Canada, Puerto Rico, Virgin Islands)
1-703-527-3887 (Outside Above Area)

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT	CAS NO.	% Wt.
POTASSIUM TETRABORATE	1332-77-0	30-40
BORIC ACID	10043-35-3	20-30
POTASSIUM BIFLUORIDE	7789-29-9	20-30
POTASSIUM PENTABORATE	11128-29-3	1-5
SODIUM DODECYL SULFATE	151-21-3	0-0.5
BORON	7440-42-8	1-5
WATER	7732-18-5	10-20

NOTE: The percentage by weight values reported for the ingredients in this product represent approximate formulation values. See Section 8 for exposure Limits and Section 11 for Toxicological Information.

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Black creamy paste

Odorless

Flash Point: Not Applicable

Prolonged or repeated exposure may cause gastrointestinal and neuromuscular effects, as well as injury to the kidneys and reproductive system.
May cause eye, skin and respiratory tract irritation.
Causes burns which are not immediately visible or painful.
Harmful if inhaled, swallowed or absorbed through skin. May cause abdominal pain, diarrhea, vomiting, excess salivation, thirst, perspiration and spasms. Large amounts may be fatal.
Inhalation may cause nasal discharge, nosebleed, cough, sore throat, labored breathing, bronchospasm, pulmonary edema and systemic toxicity.
Not a fire or explosion hazard. However, toxic and corrosive fluoride compounds may be released in a fire situation.

ROUTES OF ENTRY

Eyes? YES Skin? YES Inhalation? YES Ingestion? YES

POTENTIAL HEALTH EFFECTS

EYE CONTACT causes irritation and may cause burns.

SKIN CONTACT may cause fluoride burns which may not be immediately painful or evident, especially on prolonged contact. This material may be absorbed through the skin resulting in systemic poisoning. Symptoms of poisoning are similar to those that occur with ingestion.

INHALATION may cause respiratory tract and mucous membrane irritation. Symptoms include nasal discharge and nosebleeds, coughing, sore throat and labored breathing. Severe exposure may cause bronchospasm and pulmonary edema. Absorption may cause systemic poisoning similar to that which occurs with ingestion.

INGESTION may cause abdominal pain, diarrhea, vomiting, excess salivation, thirst, perspiration and painful spasms of the limbs. Large amounts may be fatal.

CARCINOGENICITY

NTP? NO IARC? NO OSHA? NO

CHRONIC HEALTH HAZARDS

Exposure to FLUORIDES over years may produce mottling of tooth enamel, embrittlement and calcification of bones, and increased calcification of ligaments and vertebrae resulting in spinal stiffness (fluorosis).

Prolonged absorption of BORON COMPOUNDS may cause mild gastrointestinal irritation, loss of appetite, nausea and erythematous rash. Dryness of the skin and mucous membranes, loss of hair, conjunctivitis and kidney injury have also been observed. Reproductive effects have been observed in laboratory animals.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

May adversely affect existing medical conditions such as eye, skin, respiratory, liver and/or kidney ailments, and central nervous system disorders.

NOTE: See Section 8 for Exposure Limits, Section 11 for Toxicological Information and Section 12 for Ecological Information.

SECTION 4: FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 30 minutes. Hold eyelids open during this flushing with water. Call a physician immediately.

SKIN CONTACT: Flush area with water while removing contaminated clothing and shoes. Follow by washing with soap and large amounts of water until no evidence of chemical remains (15-20 minutes). Get medical attention if needed.

INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician.

INGESTION: If swallowed,"DO NOT INDUCE VOMITING", give 3-4 glasses of water. Do not give anything by mouth to an unconscious or convulsing person. Get immediate medical attention.

SECTION 5: FIRE-FIGHTING MEASURES

Flash Point: Not Applicable
Auto-Ignition: Not Applicable
LEL: Not Applicable
UEL: Not Applicable

NFPA HAZARD CLASSIFICATION

Health: 3	Flammable: 0	Reactivity: 0

HMIS HAZARD CLASSIFICATION

Health: 3*	Flammable: 0	Reactivity: 0

* Indicates the possibility of chronic health effects. See

Chronic Health Hazards in Section 3 for more information.

EXTINGUISHING MEDIA

Use water spray, dry chemical, alcohol foam, or carbon dioxide. Use water to keep fire-exposed containers cool.

SPECIAL FIRE FIGHTING PROCEDURES

Wear NIOSH/MSHA approved positive-pressure self-contained breathing apparatus and protective clothing as specified in 29 CFR 1910.156.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Not a fire or explosion hazard. However, toxic and corrosive fluoride compounds may be released in a fire situation.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Wearing full protective clothing, control spill source, contain by diking and ventilate area. Soak up spill using an absorbent. Scoop into container. Notification of the National Response Center (800/424-8802) may be required. Refer to EPA, DOT and applicable state and local regulations for current response information.

It is recommended that each user establish a spill prevention, control and countermeasure plan (SPCC). Such plan should include procedures applicable to proper storage, control and clean-up of spills, including reuse or disposal as appropriate (see Section 13: Disposal Considerations).

NOTE In the event of an accidental release of this material, the above procedures should be followed. Additionally, proper exposure controls and personal protection equipment should be used (see Section 8: Exposure Control/Personal Protection), and disposal of the material should be in accordance with Section 13: Disposal Considerations.

SECTION 7: HANDLING AND STORAGE

Wash thoroughly after handling.
Keep container closed.
Store in a cool, dry location away from incompatible materials.

Avoid contact with any dusts, mists or fumes resulting from the use of this product.

Do not eat, drink, or smoke in work area.

Use with adequate ventilation.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS

INGREDIENT	PEL-OSHA	TLV-ACGIH
POTASSIUM TETRABORATE CAS NO.: 1332-77-0	None Established	None Established
BORIC ACID CAS NO.: 10043-35-3	None Established	None Established
POTASSIUM BIFLUORIDE CAS NO.: 7789-29-9	2.5 mg/m3 (as F)	2.5 mg/m3 (as F)
POTASSIUM PENTABORATE CAS NO.: 11128-29-3	None Established	None Established
SODIUM DODECYL SULFATE CAS NO.: 151-21-3	None Established	None Established
BORON CAS NO.: 7440-42-8	None Established	None Established
WATER CAS NO.: 7732-18-5	None Established	None Established

Unless otherwise noted, all values are reported as 8-hour Time-Weighted Averages (TWAs) and total dust (particulates only). All ACGIH TLVs refer to the 1999 Standards. All OSHA PELs refer to 29 CFR Part 1910 Air Contaminants: Final Rule, January 19, 1989.

RESPIRATORY PROTECTION

If there is a potential to exceed the TLV, NIOSH/MSHA approved respiratory protection is required. For airborne levels up to 10 times the appropriate TLV's, an air purifying acid gas cartridge respirator would be suitable. If used in a manner that generates a mist, a dust/mist cartridge as well as the acid gas cartridge would be necessary. Above 10 times the TLV, an air supplied full facepiece respirator would be required. If respiratory protection is used, follow all the requirements for respirator programs set forth in the OSHA regulations (29 CFR 1910.139).

VENTILATION

General; local exhaust ventilation as necessary to control any air contaminants to within their PELs or TLVs during the use of this product.

PROTECTIVE EQUIPMENT

Chemical goggles.
Rubber or neoprene gloves.
Body protection as necessary to prevent skin contact.
Refer to ANSI/ASC Z49.1-94 (Safety in Welding, Cutting and Allied Processes), published by the American Welding Society, for further information on the selection of personal protective equipment.

PERSONNEL SAMPLING PROCEDURE

For FLUORIDE COMPOUNDS: Refer to NIOSH Manual of Analytical Methods (NMAM), 4th Edition, Methods 7902, 7906.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Black creamy paste
Odor: Odorless
Boiling Point: Not Applicable
Specific Gravity (H2O=1): 1.5
Melting Point: 422.4 °C
Vapor Pressure (mm Hg): Not Applicable
Vapor Density (Air=1): Not Applicable
Evaporation Rate: Not Applicable
% Solubility In Water: 100 %
pH: 8 to 9

SECTION 10: STABILITY AND REACTIVITY

Stability: Generally considered stable.
Avoid: Temperatures at or above 225°C.

INCOMPATIBILITY (Materials to Avoid)

Strong acids, combustibles and alkalies.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS

Emits toxic and corrosive fluoride compounds. May also emit oxides of boron and potassium when heated to decomposition.

Polymerization: Polymerization is not expected to occur.
Avoid: Not applicable.

SECTION 11: TOXICOLOGICAL INFORMATION

CHEMICAL NAME	% Wt.	LD50	LC50
POTASSIUM TETRABORATE CAS NO.: 1332-77-0	30-40	Not Available	Not Available
BORIC ACID CAS NO.: 10043-35-3	20-30	3,450 mg/kg MOUSE, oral	9,600 ug/m3/4 hr RAT
POTASSIUM BIFLUORIDE CAS NO.: 7789-29-9	20-30	Not Available	Not Available

POTASSIUM PENTABORATE CAS NO.: 11128-29-3	1-5	Not Available	Not Available
SODIUM DODECYL SULFATE CAS NO.: 151-21-3	0-0.5	1,288 mg/m3 RAT, oral	Not Available
BORON CAS NO.: 7440-42-8	1-5	2,000 mg/kg MOUSE, oral	Not Available
WATER CAS NO.: 7732-18-5	10-20	Not Available	Not Available

NOTE: See Sections 3, 8 and 12 for additional information.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICITY

No data available.

ENVIRONMENTAL FATE

No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

US EPA Waste Number: Not Regulated

Federal, state and local disposal laws and regulations will determine the proper waste disposal/recycling/reclamation procedure. All waste materials should be reviewed to determine the applicable hazards (testing may be necessary). Disposal requirements are dependent on the hazard classification and will vary by location and the type of disposal selected.

NOTE Chemical additions, processing or otherwise altering this material may make the waste management information presented above incomplete, inaccurate or otherwise inappropriate.

As local regulations may vary; all waste must be disposed/recycled/reclaimed in accordance with federal, state, and local environmental control regulations.

SECTION 14: TRANSPORT INFORMATION

INTERNATIONAL
UN Number: UN3266

UNITED STATES

EPA Waste Number: Not Regulated
DOT Classification: 8 Corrosive material
DOT Proper Shipping Name: Corrosive liquid, basic, inorganic, n.o.s. (Contains Potassium Bifluoride) Consumer quantity, ORM-D, in inner packagings not over 4L (1 gal) net capacity each for liquids, packed in strong outer packagings.)

Packing Group: III

CANADA
PIN Number: UN3266
TDG Class: 8 Corrosive material

EC
DGL: Corrosive substance

SECTION 15: REGULATORY INFORMATION

US FEDERAL REGULATIONS

TSCA: IN TSCA

SARA 311 AND 312 HAZARD CATEGORIES

IMMEDIATE (Acute) Health Hazard: YES
DELAYED (Chronic) Health Hazard: YES
FIRE Hazard: NO
REACTIVITY Hazard: NO
Sudden Release of PRESSURE: NO

SARA SECTION 313 NOTIFICATION

This product does not contain toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

OZONE DEPLETING SUBSTANCES (ODS)

This product neither contains nor is manufactured with an ozone depleting substance subject to the labeling requirements of the Clean Air Act Amendments 1990 and 40 CFR Part 82.

VOLATILE ORGANIC COMPOUNDS (VOC)

None

US STATE REGULATIONS

VOLATILE ORGANIC COMPOUND (CARB): Not Determined

CANADIAN REGULATIONS
"This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* and the MSDS contains all the information required by the *Controlled Products Regulations*."

DSL/NDSL: DSL
WHMIS Classification: Class D Division 2 Subdivision B

EUROPEAN REGULATIONS

EINECS: Yes

OTHER REGULATIONS

MITI (Japan): No AICS (Australia): Yes

SECTION 16: OTHER INFORMATION

REVISIONS
Revision Number: 17

PREPARATION INFORMATION

Prepared By: Wolverine Joining Technologies, and Wolverine Tube Inc. Corporate Environmental, Health and Safety Group.

Phone Number/Address: See Section 1

This Material Data Sheet is offered pursuant to OSHA';s Hazard Communication Standard (29 CRF 1910.1200). Other government regulations must be reviewed for applicability to these products. The information in this Material Safety Data Sheet should be provided to all who will use, handle, store, transport, or otherwise be exposed to this product. This information has been prepared for the guidance of plant engineering, operations, and management and for persons working with or handling these products. The information presented in the MSDS is premised upon proper handling and anticipated uses and is for the material without chemical additions/alterations. We believe this information to be reliable and up-to-date as of the date of publication, but make no warranty that it is. Additionally, if this Material Safety Data Sheet is more than three years old, please contact the supplier at the phone number listed in Section 1 to make certain that this sheet is the most current. Copyright Wolverine Joining Technologies, LLC. License granted to make unlimited copies for internal use only.

THE PRINCE/IZANT COMPANY

MATERIAL SAFETY DATA SHEET

BLACK FLUX

PRODUCT NAME: BLACK FLUX **Rev.** 12/15/2012

MANUFACTURER: The Prince & Izant Company
12999 Plaza Drive
Cleveland, Ohio 44130

T: 216-362-7000
F: 216-362-7456
www.princeizant.com

EMERGENCY PHONE #: 1-800-424-9300 (CHEMTREC)

H.M.I.S. Information: HEALTH = 3 FLAMMABILITY = 0 REACTIVITY = 0

SECTION I - IDENTIFICATION

Common Name: NA
CAS Number: See Below
Formula: See Below

Chemical Family: NA
Chemical Name: NA

SECTION II - COMPOSITION INFORMATION

Hazardous Components	OSHA PEL	ACGIH TLV	CAS NO.	%
POTASSIUM TETRABORATE	NA	NA	1332-77-0	30-40
BORIC ACID	NA	NA	10043-35-3	20-30
POTASSIUM PENTABORATE	NA	NA	11128-29-3	1-5
POTASSIUM BIFLUORIDE	2.5 mg/m^3 (as F)	2.5 mg/m^3 (as F)	7789-29-9	20-30
SODIUM DODECYL SULFATE	NA	NA	151-21-3	0-0.5
BORON	NA	NA	7440-42-8	1-5
WATER	NA	NA	7732-18-5	10-20

SECTION III - HEALTH HAZARDS

EMERGENCY AND FIRST AID PROCEDURES

Inhalation	Remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.
Eyes	Immediately flush with plenty of water for at least 30 minutes. Do NOT use Zephiran Chloride solutions on eyes. Call a physician.
Skin	Immediately flush with cold water for at least 15 minutes while removing contaminated clothing and shoes, paying particular attention to skin under nails. Then immerse and soak contaminated area in 0.13% (1:750) iced, aqueous Zephiran Chloride solution for 30-60 minutes. Saturated compresses can be used if area cannot be immersed. Change compresses every two minutes. If irritation persists after initial Zephiran Chloride treatment, continue with Zephiran Chloride (BENZALKONIUM CHLORIDE) and call a physician.
Ingestion	If swallowed, NO NOT INDUCE VOMITING. Give large quantities of water. Call a physician immediately. Never give anything by mouth to an unconscious person.
Primary Routes of Entry into Body	Inhalation, ingestion, skin, eyes
Symptoms of Overexposure	May cause burns. May cause eye, skin and respiratory tract irritation. Exposure to FLUORIDES over years may produce embrittlement and decalcification of bones, and increased calcification of ligaments and vertebrae resulting in spinal stiffness (fluorosis). Prolonged absorption of BORON COMPOUNDS may cause mild gastrointestinal irritation, loss of appetite, nausea and erythematous rash. Dryness of the skin and mucous membranes, loss of hair, conjunctivitis and kidney injury have also been observed. Reproductive effects have been observed in laboratory animals.
Medical Conditions Aggravated by Exposure	May aggravate existing respiratory and/or skin aliments. Prolonged or repeated inhalation and ingestion may cause delayed injury involving the kidneys and the blood, gastrointestinal, nervous and reproductive systems.
Chemical Listed as Carcinogen	NA
OSHA Permissible Exposure Limit (PEL)	NA

ACGIH Threshold Limit Value (TLV)	NA

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point	NA
Flammable Limits	Lower: NA Upper: NA
Extinguishing Media	Use water spray, dry chemical, alcohol foam, or carbon dioxide. Use water to keep fire-exposed containers cool.
Auto Ignition Temperature	NA
Special Fire Fighting Procedures	Wear NIOSH/MSHA approved positive-pressure self-contained breathing apparatus and protective clothing as specified in 29 CFR 1910.156.
Unusual Fire and Explosion Hazards	Not a fire or explosion hazard. However, toxic and corrosive fluoride compounds may be released in a fire situation.

SECTION V - ACCIDENTAL RELEASE MEASURES

Steps to be Taken in Case Material is Spilled

Wearing full protective clothing, control spill source, contain by diking and ventilate area. Soak up spill using absorbent. Scoop into container. Notification of the National Response Center (800-424-8802) may be required. Refer to EPA, DOT and applicable state and local regulations for current response information.

It is recommended that each user establish a spill prevention, control and countermeasure plan (SPCC). Such plan should include procedures applicable to proper storage, control and clean up of spills, including reuse or disposal as appropriate (see Section 11: Disposal Considerations).

NOTE In the event of an accidental release of this material, the above procedures should be followed. Additionally, proper exposure controls and personal protection equipment should be used (see Section 8 – Exposure Control/Personal Protection) and disposal of the material should be in accordance with Section 11-Disposal Considerations.

SECTION VI - STABILITY AND REACTIVITY

Stability: NA	**(Conditions to Avoid):** NA
Incompatibility	Strong acids and alkalis.
Hazardous Decomposition Products	Emits toxic and corrosive fluoride compounds. May also emit oxides of boron and potassium when heated to decomposition.
Hazardous Polymerization: Will not occur.	**(Conditions to Avoid):** NA

SECTION VII - CONTROL MEASURES

Ventilation	General; local exhaust ventilation as necessary to control any air contaminants to within their PELs or TLVs during the use of this product.
Local Exhaust	NA
Protective Gloves	Rubber or neoprene gloves.
Eye Protection	Chemical goggles.
Mechanical (General)	NA
Respiratory Protection (Type):	If there is a potential to exceed the TLV, NIOSH/MSHA approved respiratory protection is required. For airborne levels up to 10 times the appropriate TLVs, an air purifying acid gas cartridge respirator would be suitable. If used in a manner that generates a mist, a dust/mist cartridge as well as the acid gas cartridge would be necessary. Above 10 times the TLV, an air supplied full face piece respirator would be required. If respiratory protection is used, follow all the requirements for respirator programs set forth in the OSHA regulations (29 CFR 1910.134).
Other Protective Clothing or Equipment	Body protection as necessary to prevent skin contact.

SECTION VIII - HANDLING AND STORAGE

Handling & Storage Precautions	Store in a cool, dry location away from incompatible materials.
Work/Hygienic Practices	Wash thoroughly after handling. Avoid contact with any dusts, mists or fumes resulting from the use of this product.

	Do not eat, drink, or smoke in work area.
Other Precautions	Use with adequate ventilation.

SECTION IX - PHYSICAL AND CHEMICAL CHARACTERISTICS

Boiling Point	NA
Vapor Pressure (mm Hg)	NA
Vapor Density (Air = 1)	NA
Melting Point	422.4° C
Reactivity in Water	NA
Specific Gravity (Water = 1)	1.5
Percent Volatile by Volume	NA
Evaporation Rate (Butyl Acetate = 1)	NA
Solubility in Water	100%
Appearance and Odor	Black creamy paste, odorless

SECTION X - TRANSPORTATION AND DISPOSAL CONSIDERATIONS

D.O.T. Proper Shipping Name	NA
Identification Number	NA
Type of D.O.T. Label Required Information	NA
Hazard Class	**FEDERAL**
	SARA HAZARD CATEGORIES
	IMMEDIATE (Acute) Health Hazard: YES
	DELAYED (Chronic) Health Hazard: YES
	FIRE Hazard: NO
	REACTIVITY Hazard: NO
	Sudden Release of PRESSURE: NO

SARA SECTION 313 NOTIFICATION

This product does not contain toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Packing Group

NA

Waste Disposal Method

EPA Waste # : D002

Federal, state and local disposal laws and regulations will determine the proper waste disposal/recycling/reclamation procedure. All waste material should be reviewed to determine the applicable hazards (testing may be necessary). Any waste solution with a pH of <=2 or >=12.5 is considered a hazardous waste under EPA hazardous waste regulations. Disposal requirements are dependent on the hazard classification and will vary by location and the type of disposal selected.

NOTE Chemical additions, processing or otherwise altering this material may make the waste management information presented above incomplete, inaccurate or otherwise inappropriate.

As local regulations may vary; all waste must be disposed/recycled/reclaimed in accordance with federal, state, and local environmental control regulations.

Individuals requiring further information and Engineering Specification Documents may wish to contact the Engineering Society for Advanced Mobility, Land Sea Air and Space, The Society of Automotive Engineers http://www.sae.org/ (SAE AMS) or The American Welding Society (AWS) http://aws.org/

NOTE:

DISCLAIMER

The information and recommendations contained in this publication have been provided without charge & compiled from sources believed to be reliable and to represent the best information available on the subject at the time of issue. No warranty, guarantee, or representation is made by the Prince and Izant Company, Inc. as to the absolute correctness or sufficiency of any representation contained in this and other publications; Prince and Izant Company, Inc. assumes no responsibility in connection therewith; nor can it be assumed that all acceptable safety measures are contained in this (and other publications, or that other or additional measures may not be required under particular or exceptional conditions or circumstances. Latest Revision: 1/01/2013

3-25-14

Safety Data Sheet

Issue Date 06-Jul-2011 **Revision Date:** 24-Jun-2013 **Version** 1

1. IDENTIFICATION

Product Identifier

Product Name Blade & Bit

Other means of identification

SDS # **891**

Product Code 891

Recommended use of the chemical and restrictions on use

Recommended Use Blade and Bit maintenance

Details of the supplier of the safety data sheet

Supplier Information:
PMS Products, Inc.
76 Veterans Dr. #110
Holland, MI 49423

Emergency Telephone Number

Company Phone Number 800-962-1732
Emergency Telephone (24 hr) INFOTRAC 1-352-323-3500 (International)
1-800-535-5053 (North America) INFOTRAC REFERENCE NO. 88867

2. HAZARDS IDENTIFICATION

Classification

Skin corrosion/irritation	Category 1 Sub-category C
Serious eye damage/eye irritation	Category 1
Flammable Liquids	Category 4

Signal Word
Danger

Hazard Statements
Causes severe skin burns and eye damage
Combustible liquid

Appearance Pale yellow liquid **Physical State** Liquid **Odor** Mild

Precautionary Statements - Prevention
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Keep away from heat/sparks/open flames/hot surfaces. — No smoking

Precautionary Statements - Response
Immediately call a POISON CENTER or doctor/physician
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTER or doctor/physician
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a POISON CENTER or doctor/physician
IF SWALLOWED: rinse mouth. Do NOT induce vomiting
In case of fire: Use CO2, dry chemical, or foam for extinction

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other Hazards
Toxic to aquatic life

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
Potassium hydroxide	1310-58-3	<5
Isopropyl alcohol	67-63-0	<10
Ethoxylated Alcohol	66455-14-9	<10
Diethylene glycol monobutyl ether	112-34-5	<5

4. FIRST-AID MEASURES

First Aid Measures

General Advice — Provide this SDS to medical personnel for treatment.

Eye Contact — Flush material out immediately with large amounts of water for at least 15 minutes, holding eye lids apart to insure flushing of the entire surface. Washing eyes within several seconds is essential to achieve maximum effectiveness. Get medical attention immediately.

Skin Contact — Immediately remove contaminated clothing and flush affected areas with plenty of water for at least 15 minutes. Wash contaminated clothing before reuse, discard footwear, which cannot be decontaminated. Get medical attention immediately.

Inhalation — IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Seek immediate medical attention/advice.

Ingestion	Never give anything by mouth to an unconscious person. If swallowed, do not induce vomiting. Drink 1-2 glasses of water. If vomiting occurs spontaneously, keep airway clear. Get medical attention immediately.

Most important symptoms and effects

Symptoms	Corrosive to all body tissues by all routes of exposure. The effect of local dermal exposure may consist of multiple areas of superficial destruction of the skin or of primary irritant dermatitis. Similarly, inhalation of dust, spray or mist may result in varying degrees of irritation or damage to the respiratory tract tissues and an increased susceptibility to respiratory illness.

Indication of any immediate medical attention and special treatment needed

Notes to Physician	Exposure may aggravate medical conditions such as asthma, lung disease, and skin disorders. Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Carbon dioxide, dry chemical, water fog, foam.

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical
May cause a combustible environment in closed conditions due to the relative volatility of the components. Will not cause a combustible environment in open conditions.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions	Wear protective clothing as described in Section 8 of this safety data sheet.
Environmental Precautions	See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up

Methods for Containment	Prevent further leakage or spillage if safe to do so. Absorb spill with inert material (e.g. dry sand or earth).
Methods for Clean-Up	Sweep up and shovel into suitable containers for disposal. For waste disposal, see section 13 of the SDS.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling	Handle in accordance with good industrial hygiene and safety practice. Do not breathe dust/fume/gas/mist/vapors/spray. Wear appropriate personal protective equipment. Wash face, hands, and any exposed skin thoroughly after handling. Avoid contact with skin, eyes or clothing. Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Storage temperature should be between 50°F - 120°F. Keep locked up and out of reach of children.

Incompatible Materials Strong oxidizing agents. Acids. Metals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Potassium hydroxide 1310-58-3	Ceiling: 2 mg/m³	(vacated) Ceiling: 2 mg/m³	Ceiling: 2 mg/m³
Isopropyl alcohol 67-63-0	STEL: 400 ppm TWA: 200 ppm	TWA: 400 ppm TWA: 980 mg/m³ (vacated) TWA: 400 ppm (vacated) TWA: 980 mg/m³ (vacated) STEL: 500 ppm (vacated) STEL: 1225 mg/m³	IDLH: 2000 ppm TWA: 400 ppm TWA: 980 mg/m³ STEL: 500 ppm STEL: 1225 mg/m³

Appropriate engineering controls

Engineering Controls Good general room ventilation should be adequate under normal conditions.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Wear approved safety goggles.

Skin and Body Protection Wear protective gloves and protective clothing. Rubber or PVC (gloves and boots).

Respiratory Protection No special equipment needed.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid		
Appearance	Pale yellow liquid	**Odor**	Mild
Color	Pale yellow	**Odor Threshold**	Not determined

Property	Values	Remarks • Method
pH	12.5	
Melting Point/Freezing Point	Not available	
Boiling Point/Boiling Range	Not determined	
Flash Point	58.33 °C / 137 °F	
Evaporation Rate	1	(butyl acetate = 1)
Flammability (Solid, Gas)	Not determined	
Upper Flammability Limits	Not determined	
Lower Flammability Limit	Not determined	
Vapor Pressure	Not determined	
Vapor Density	Not determined	
Specific Gravity	1.02	
Water Solubility	Completely soluble	
Solubility in other solvents	Not determined	
Partition Coefficient	Not determined	
Autoignition Temperature	Not determined	
Decomposition Temperature	Not determined	

Kinematic Viscosity	Not determined
Dynamic Viscosity	Not determined
Explosive Properties	Not determined
Oxidizing Properties	Not determined

10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization Hazardous polymerization does not occur.

Conditions to Avoid
Excessive heat or cold. Contamination of any kind.

Incompatible Materials
Strong oxidizing agents. Acids. Metals.

Hazardous Decomposition Products
None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact Causes severe eye damage.

Skin Contact Causes severe skin burns.

Inhalation May cause irritation to the mucous membranes and upper respiratory tract.

Ingestion Can burn mouth, throat, and stomach.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Diethylene glycol monobutyl ether 112-34-5	= 3384 mg/kg (Rat)	= 2700 mg/kg (Rabbit)	-
Potassium hydroxide 1310-58-3	= 214 mg/kg (Rat)	-	-
Ethoxylated Alcohol 66455-14-9	> 10 g/kg (Rat)	> 2 g/kg (Rat)	-
Isopropyl alcohol 67-63-0	= 4396 mg/kg (Rat)	= 12800 mg/kg (Rat) = 12870 mg/kg (Rabbit)	= 72.6 mg/L (Rat) 4 h

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity Isopropyl Alcohol (IPA) is an IARC Monograph Group 3 chemical. IPA is a Group 1 when manufactured by the strong-acid process.

Chemical Name	ACGIH	IARC	NTP	OSHA
Isopropyl alcohol 67-63-0		Group 3		X

IARC (International Agency for Research on Cancer)
Group 3 IARC components are "not classifiable as human carcinogens"
Group 1 - Carcinogenic to Humans
OSHA (Occupational Safety and Health Administration of the US Department of Labor)
X - Present

Numerical measures of toxicity
Not determined

12. ECOLOGICAL INFORMATION

Ecotoxicity
Toxic to aquatic organisms.

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Diethylene glycol monobutyl ether 112-34-5	100: 96 h Desmodesmus subspicatus mg/L EC50	1300: 96 h Lepomis macrochirus mg/L LC50 static		2850: 24 h Daphnia magna mg/L EC50 100: 48 h Daphnia magna mg/L EC50
Potassium hydroxide 1310-58-3		80: 96 h Gambusia affinis mg/L LC50 static		
Isopropyl alcohol 67-63-0	1000: 96 h Desmodesmus subspicatus mg/L EC50 1000: 72 h Desmodesmus subspicatus mg/L EC50	9640: 96 h Pimephales promelas mg/L LC50 flow-through 11130: 96 h Pimephales promelas mg/L LC50 static 1400000: 96 h Lepomis macrochirus µg/L LC50		13299: 48 h Daphnia magna mg/L EC50

Persistence/Degradability
Not determined

Bioaccumulation
Not determined

Mobility
Not determined

Chemical Name	Partition Coefficient
Potassium hydroxide 1310-58-3	0.65 0.83
Isopropyl alcohol 67-63-0	0.05

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging Do not reuse container. Triple rinse empty container with water. Plastic containers may be offered for recycling.

Chemical Name	California Hazardous Waste Status
Potassium hydroxide 1310-58-3	Toxic Corrosive
Isopropyl alcohol 67-63-0	Toxic Ignitable

14. TRANSPORT INFORMATION

Note Based on package size, product may be eligible for limited quantity exception. Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT Limited Quantity

IATA

UN/ID No	UN1760
Proper Shipping Name	Corrosive liquid, n.o.s. (Potassium hydroxide)
Hazard Class	8
Packing Group	III
Special Provisions	May qualify for Limited Quantity based on inner package size

IMDG Limited Quantity

UN/ID No	UN1760
Proper Shipping Name	Corrosive liquid, n.o.s. (Potassium hydroxide)
Hazard Class	8
Packing Group	III

15. REGULATORY INFORMATION

International Inventories

TSCA	Listed
DSL	Listed
NDSL	Listed

Legend:

TSCA *- United States Toxic Substances Control Act Section 8(b) Inventory*

DSL/NDSL *- Canadian Domestic Substances List/Non-Domestic Substances List*

EINECS/ELINCS *- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances*

ENCS *- Japan Existing and New Chemical Substances* ***IECSC***

- China Inventory of Existing Chemical Substances ***KECL*** *-*

Korean Existing and Evaluated Chemical Substances

PICCS *- Philippines Inventory of Chemicals and Chemical Substances*

US Federal Regulations

CERCLA

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Potassium hydroxide 1310-58-3	1000 lb		RQ 1000 lb final RQ RQ 454 kg final RQ

SARA 313

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Diethylene glycol monobutyl ether - 112-34-5	112-34-5	<5	1.0
Isopropyl alcohol - 67-63-0	67-63-0	<10	1.0

CWA (Clean Water Act)

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Potassium hydroxide 1310-58-3 (<5)	1000 lb			X

US State Regulations

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Diethylene glycol monobutyl ether 112-34-5	X		X
Potassium hydroxide 1310-58-3	X	X	X
Isopropyl alcohol 67-63-0	X	X	X

16. OTHER INFORMATION

NFPA	Health Hazards	Flammability	Instability	Special Hazards
	2	1	0	Not determined
HMIS	Health Hazards	Flammability	Physical Hazards	Personal Protection
	2	1	0	Not determined

Issue Date 06-Jul-2011
Revision Date: 24-June-2013
Revision Note New format

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

3-25-14

MATERIAL SAFETY DATA SHEET

Date: 02-19-2013

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **BOESHIELD T-9® AEROSOL**
PRODUCT CODE: L-11911

MANUFACTURER'S NAME: PMS PRODUCTS, INC
76 VETERANS DRIVE, STE #110
HOLLAND, MI 49423

INFORMATION PHONE : 616-355-6615
EMERGENCY PHONE : 800-424-9300 (CHEMTREC) 703-527-3887

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

REPORTABLE COMPONENTS	CAS NUMBER	VAPOR PRESSURE mm Hg @ TEMP		WEIGHT PERCENT
PETROLEUM DISTILLATE, ODORLESS MINERAL SPIRITS	64742-48-9	2	100 F	34
OSHA PEL: 200 PPM, ACGIH TLV: 200 PPM				
PETROLEUM DISTILLATE	64742-47-8	.066	68 F	18
OSHA PEL: 400 PPM, ACGIH TLV: 200 PPM				
WHITE MINERAL OIL	8042-47-5	.00003	100 F	9
OSHA PEL: 5 MG/M3, ACGIH TLV: 5 MG/M3, : OIL MIST				
PROPANE	74-98-6	.6350	68 F	8
OSHA PEL: 1000 PPM, ACGIH TLV: ASPHYXIANT				
BUTANE	106-97-8	1640	68 F	7
OSHA PEL: 800 PPM, ACGIH TLV: 800 PPM				
NON-HAZARDOUS COMPONENTS				24

*** No toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372 are present. ***

SECTION 3 - HAZARDS IDENTIFICATION

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
RESPIRATORY IRRITATION, HEADACHE, NAUSEA, FATIGUE, DROWSINESS, IMPAIRED CO-ORDINATION.
SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE
SKIN: CONTACT MAY DRY THE SKIN; PROLONGED CONTACT MAY CAUSE MODERATE IRRITATION.
EYES: LIQUID OR VAPOR CAN CAUSE MODERATE TO SEVERE IRRITATION.
SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
NOT EASILY ABSORBED. SOLVENT ACTION CAN DRY AND DEFAT THE SKIN CAUSING THE SKIN TO CRACK, LEADING TO DERMATITIS.
INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
NOT A LIKELY ROUTE OF EXPOSURE. IF SWALLOWED, SEEK IMMEDIATE MEDICAL ADVICE AND/OR ATTENTION.
HEALTH HAZARDS (ACUTE AND CHRONIC)
ACUTE: EYE IRRITANT. POSSIBLE SKIN IRRITANT.
CHRONIC: NONE KNOWN.
CARCINOGENICITY: NTP CARCINOGEN: No IARC MONOGRAPHS: No OSHA REGULATED: No
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE KNOWN.

SECTION 4 - FIRST AID MEASURES

EMERGENCY AND FIRST AID PROCEDURES
INHALATION: REMOVE TO FRESH AIR. ADMINISTER OXYGEN IF NEEDED. APPLY ARTIFICIAL RESPIRATION IF BREATHING HAS STOPPED. GET MEDICAL ATTENTION.
SKIN: WIPE OFF WITH TOWEL. WASH WITH SOAP AND WATER. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.
EYES: WASH IMMEDIATELY WITH LARGE VOLUMES OF FRESH WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION.

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT: 120 deg F (WITHOUT PROPELLANT) METHOD USED: ESTIMATED
FLAMMABLE LIMITS IN AIR BY VOLUME- LOWER: .7 UPPER: 9.8
EXTINGUISHING MEDIA: FOAM, CO2, DRY CHEMICAL, WATER FOG
SPECIAL FIREFIGHTING PROCEDURES
WATER SPRAY MAY BE INEFFECTIVE. WATER MAY BE USED TO COOL CONTAINERS TO PREVENT PRESSURE BUILD-UP AND EXPLOSION WHEN EXPOSED TO EXTREME HEAT. IF WATER IS USED, FOG NOZZLES PREFERRED. WEAR GOGGLES AND SELF-CONTAINED BREATHING APPARATUS.
UNUSUAL FIRE AND EXPLOSION HAZARDS
CLOSED CONTAINERS MAY EXPLODE FROM INTERNAL PRESSURE BUILD-UP WHEN EXPOSED TO EXTREME HEAT AND DISCHARGE CONTENTS. VAPOR ACCUMULATION CAN FLASH OR EXPLODE IF IGNITED. OVEREXPOSURE TO DECOMPOSITION PRODUCTS MAY CAUSE A HEALTH HAZARD. SYMPTOMS MAY NOT BE READILY APPARENT. OBTAIN MEDICAL ATTENTION.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
AVOID BREATHING VAPORS. VENTILATE AREA. REMOVE ALL SOURCES OF IGNITION. CLEAN UP AREA WITH ABSORBENT MATERIAL AND PLACE IN CLOSED CONTAINERS FOR DISPOSAL.

SECTION 7 - HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
STORE AND USE IN COOL, DRY, WELL-VENTILATED AREAS. VAPORS MAY CAUSE FLASH FIRE. KEEP AWAY FROM HEAT, SPARKS AND FLAME. DO NOT STORE ABOVE 120 DEG F. DO NOT PUNCTURE OR INCINERATE (BURN) CANS. DO NOT STICK PIN, NAIL OR ANY OTHER SHARP OBJECT INTO OPENING ON TOP OF CAN. DO NOT SPRAY IN EYES. SEE PRODUCT LABEL FOR ADDITIONAL INFORMATION.

SECTION 8 - EXPOSURE CONTROL / PERSONAL PROTECTION

PRECAUTIONS
USE WITH ADEQUATE VENTILATION. TO PREVENT VAPOR BUILD-UP, OPEN DOORS AND WINDOWS OR USE AN EXPLOSION-PROOF EXHAUST FAN TO ENSURE FRESH AIR EXCHANGE DURING AND AFTER USE. DO NOT BREATHE VAPOR, GAS OR SPRAY MIST. WHEN USING, DO NOT EAT, DRINK OR SMOKE. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. WEAR PROTECTIVE EQUIPMENT. WASH THOROUGHLY AFTER HANDLING. REMOVE CONTAMINATED CLOTHING AND WASH IT BEFORE REUSE. EMPTY CONTAINERS RETAIN PRODUCT RESIDUES; FOLLOW LABEL WARNINGS EVEN AFTER CAN IS EMPTIED. DO NOT STORE IN BASEMENTS.
RESPIRATORY PROTECTION
AVOID BREATHING VAPORS. USE WITH ADEQUATE VENTILATION EQUAL TO OUT OF DOORS. IN RESTRICTED AREAS, USE APPROVED CHEMICAL/ MECHANICAL FILTERS DESIGNED TO REMOVE A COMBINATION OF PARTICLES AND VAPOR. IN CONFINED AREAS, USE APPROVED AIR LINE TYPE RESPIRATOR OR HOOD. SELF-CONTAINED BREATHING APPARATUS IS REQUIRED FOR VAPOR CONCENTRATIONS ABOVE PEL/TLV LIMITS.
VENTILATION
SUFFICIENT TO PREVENT INHALATION OF SOLVENT VAPORS. GENERAL DILUTION AND/OR LOCAL EXHAUST VENTILATION IN VOLUME OR PATTERN TO KEEP PEL/TLV OF MOST HAZARDOUS INGREDIENT BELOW ACCEPTABLE LIMIT AND LEL BELOW STATED LIMIT.
PROTECTIVE GLOVES
SOLVENT RESISTANT GLOVES REQUIRED FOR PROLONGED OR REPEATED CONTACT.
EYE PROTECTION
USE OF SAFETY GLASSES WITH SPLASH GUARDS OR FULL FACE SHIELD IS RECOMMENDED.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT
USE OF SOLVENT RESISTANT APRONS OR OTHER CLOTHING IS RECOMMENDED.
WORK/HYGIENIC PRACTICES
EYE WASHES AND SAFETY SHOWERS IN THE WORKPLACE ARE RECOMMENDED.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

BOILING RANGE: -44 deg F - 611 deg F
SPECIFIC GRAVITY (H2O=1): 0.77
VAPOR DENSITY: HEAVIER THAN AIR
EVAPORATION RATE: SLOWER THAN ETHER
SOLUBILITY IN WATER: NIL
VOC CONTENT: 49.6% BY WEIGHT
FLASH POINT: >100 deg F (WITHOUT PROPELLANT)
METHOD USED: ESTIMATED
FLAMMABLE LIMITS IN AIR BY VOLUME- LOWER: .7
UPPER: 9.8
APPEARANCE AND ODOR: AEROSOL PRODUCT (CALIFORNIA PROPOSAL 65 COMPLIANT)

SECTION 10 - STABILITY AND REACTIVITY

STABILITY: STABLE
CONDITIONS TO AVOID
APPLICATION TO HOT SURFACES. STORAGE ABOVE 120 DEG F. EXPOSURE TO OPEN FLAME.
INCOMPATIBILITY (MATERIALS TO AVOID): STRONG OXIDIZING AGENTS.
HAZARDOUS DECOMPOSITION OR BYPRODUCTS
MAY PRODUCE FUMES WHEN HEATED TO DECOMPOSITION. FUMES MAY CONTAIN CARBON MONOXIDE AND OTHER TOXIC FUMES.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION 11 - TOXICOLOGICAL INFORMATION

LONG-TERM TOXICOLOGICAL STUDIES HAVE NOT BEEN CONDUCTED FOR THIS PRODUCT.

SECTION 12 - ECOLOGICAL INFORMATION

LONG-TERM ECOLOGICAL STUDIES HAVE NOT BEEN CONDUCTED FOR THIS PRODUCT.

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD
DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS. BEFORE ATTEMPTING CLEAN UP, REFER TO OTHER SECTIONS OF THIS MSDS FOR HAZARD CAUTION INFORMATION.

SECTION 14 - TRANSPORT INFORMATION

BY LAND: SHIPPING NAME: LUBRICANTS, NOI
BY WATER: DOT PROPER SHIPPING NAME: UN 1950, Aerosols, 2.1, LTD QTY
BY AIR: DOT PROPER SHIPPING NAME: UN1950, Aerosols, flammable, 2.1, LTD QTY (Packing instruction Y203 applies)

SECTION 15 - REGULATORY INFORMATION

ALL INGREDIENTS ARE EITHER LISTED ON THE TSCA INVENTORY OR ARE EXEMPT.

SECTION 16 - OTHER INFORMATION

HMIS CODES: H-1 F-4 R-0 P-0

DATE PRINTED: 02/19/2013 NAME OF PREPARER: ESP

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. BECAUSE THE INFORMATION CONTAINED HEREIN MAY BE APPLIED UNDER CONDITIONS BEYOND OUR CONTROL, WE ASSUME NO RESPONSIBILITY FOR ITS USE.

3-25-19

MATERIAL SAFETY DATA SHEET

Date: 02-19-2013

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **BOESHIELD T-9® (LIQUID)**
PRODUCT CODE: L-11912

MANUFACTURER'S NAME: PMS PRODUCTS, INC
76 VETERANS DRIVE, STE #110
HOLLAND, MI 49423

INFORMATION PHONE: 616-355-6615
EMERGENCY PHONE: 800-424-9300 (CHEMTREC) 703-527-3887

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

REPORTABLE COMPONENTS	CAS NUMBER	VAPOR PRESSURE mm Hg @ TEMP		WEIGHT PERCENT
PETROLEUM DISTILLATE, ODORLESS MINERAL SPIRITS OSHA PEL: 200 PPM, ACGIH TLV: 200 PPM	64742-48-9	2	100 F	40
PETROLEUM DISTILLATE OSHA PEL: 400 PPM, ACGIH TLV: 200 PPM	64742-47-8	.066	68 F	21
WHITE MINERAL OIL OSHA PEL: 5 MG/M3, ACGIH TLV: 5 MG/M3, : OIL MIST	8042-47-5	.00003	100 F	10
NON-HAZARDOUS COMPONENTS				29

*** No toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372 are present. ***

SECTION 3 - HAZARDS IDENTIFICATION

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
RESPIRATORY IRRITATION, HEADACHE, NAUSEA, FATIGUE, DROWSINESS, IMPAIRED CO-ORDINATION.
SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE
SKIN: CONTACT MAY DRY THE SKIN; PROLONGED CONTACT MAY CAUSE IRRITATION.
EYES: LIQUID OR VAPOR CAN IRRITATE.
SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
NOT EASILY ABSORBED. SOLVENT ACTION CAN DRY AND DEFAT THE SKIN CAUSING THE SKIN TO CRACK, LEADING TO DERMATITIS.
INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
NOT A LIKELY ROUTE OF EXPOSURE. IF SWALLOWED, DO NOT INDUCE VOMITING. SEEK IMMEDIATE MEDICAL ADVICE AND/OR ATTENTION.
HEALTH HAZARDS (ACUTE AND CHRONIC)
ACUTE: EYE IRRITANT, SKIN IRRITANT, NARCOTIC IN HIGH CONCENTRATIONS.
CHRONIC: LIVER AND KIDNEY DISEASE, SKIN IRRITATION AND DERMATITIS.
CARCINOGENICITY: NTP CARCINOGEN: No IARC MONOGRAPHS: No OSHA REGULATED: No
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: ACUTE AND CHRONIC LIVER AND KIDNEY DISEASE, ANEMIA.

SECTION 4 - FIRST AID MEASURES

EMERGENCY AND FIRST AID PROCEDURES
INHALATION: REMOVE TO FRESH AIR. ADMINISTER OXYGEN IF NEEDED. APPLY ARTIFICIAL RESPIRATION IF BREATHING HAS STOPPED. GET MEDICAL ATTENTION.
SKIN: WIPE OFF WITH TOWEL. WASH WITH SOAP AND WATER. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.
EYES: WASH IMMEDIATELY WITH LARGE VOLUMES OF FRESH WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION.

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT: 120 deg F METHOD USED: TCC
FLAMMABLE LIMITS IN AIR BY VOLUME- LOWER: .7 UPPER: 9.8
EXTINGUISHING MEDIA: FOAM, ALCOHOL FOAM, CO2, DRY CHEMICAL, WATER FOG
SPECIAL FIREFIGHTING PROCEDURES
WATER SPRAY MAY BE INEFFECTIVE. WATER MAY BE USED TO COOL CONTAINERS TO PREVENT PRESSURE BUILD-UP AND EXPLOSION WHEN EXPOSED TO EXTREME HEAT. IF WATER IS USED, FOG NOZZLES PREFERRED. WEAR GOGGLES AND SELF-CONTAINED BREATHING APPARATUS.
UNUSUAL FIRE AND EXPLOSION HAZARDS
KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, SPARKS, ELECTRICAL EQUIPMENT AND OPEN FLAME. CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. VAPOR ACCUMULATION CAN FLASH OR EXPLODE IF IGNITED. OVEREXPOSURE TO DECOMPOSITION.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
AVOID BREATHING VAPORS. VENTILATE AREA. DIKE AREA TO CONTAIN SPILL. CLEAN UP AREA WITH ABSORBENT MATERIAL AND PLACE IN CLOSED CONTAINERS FOR DISPOSAL.

SECTION 7 - HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
STORE AND USE IN COOL, DRY, WELL-VENTILATED AREAS. KEEP CONTAINERS CLOSED WHEN NOT IN USE. KEEP AWAY FROM EXCESSIVE HEAT OR OPEN FLAME. VAPORS MAY IGNITE EXPLOSIVELY. VAPORS MAY SPREAD LONG DISTANCES. PREVENT BUILD-UP

OF VAPORS. EXTINGUISH ALL PILOT LIGHTS AND TURN OFF HEATERS, NON-EXPLOSION PROOF ELECTRICAL EQUIPMENT AND IGNITION SOURCES DURING USE.

SECTION 8 - EXPOSURE CONTROL / PERSONAL PROTECTION

PRECAUTIONS
KEEP CLOSURE TIGHT AND CONTAINER UPRIGHT TO PREVENT LEAKAGE. OPEN CONTAINER SLOWLY. GROUND CONTAINERS WHEN FILLING OR EMPTYING. DO NOT GET IN EYES. AVOID SKIN CONTACT AND CONTACT WITH CLOTHING. DO NOT WELD OR FLAME-CUT AN EMPTY DRUM. DO NOT TAKE INTERNALLY. DO NOT TRANSFER CONTENTS TO UNLABELED CONTAINERS.
RESPIRATORY PROTECTION
IN RESTRICTED AREAS, USE APPROVED CHEMICAL/MECHANICAL FILTERS DESIGNED TO REMOVE A COMBINATION OF PARTICLES AND VAPOR. IN CONFINED AREAS, USE APPROVED AIR LINE TYPE RESPIRATOR OR HOOD. SELF-CONTAINED BREATHING APPARATUS IS REQUIRED FOR VAPOR CONCENTRATIONS ABOVE PEL/TLV LIMITS.
VENTILATION
SUFFICIENT TO PREVENT INHALATION OF SOLVENT VAPORS. GENERAL DILUTION AND/OR LOCAL EXHAUST VENTILATION IN VOLUME OR PATTERN TO KEEP PEL/TLV OF MOST HAZARDOUS INGREDIENT BELOW ACCEPTABLE LIMIT AND LEL BELOW STATED LIMIT.
PROTECTIVE GLOVES
SOLVENT RESISTANT GLOVES REQUIRED FOR PROLONGED OR REPEATED CONTACT.
EYE PROTECTION
SAFETY GLASSES WITH SPLASH GUARDS OR FULL FACE SHIELD.
SOLVENT RESISTANT APRON.
WORK/HYGIENIC PRACTICES
EYE WASHES AND SAFETY SHOWERS IN THE WORKPLACE ARE RECOMMENDED.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

BOILING RANGE: 350 deg F - 611 deg F
SPECIFIC GRAVITY (H2O=1): 0.83
VAPOR DENSITY: HEAVIER THAN AIR
EVAPORATION RATE: SLOWER THAN ETHER
SOLUBILITY IN WATER: NIL
VOC CONTENT: 40.6% BY WEIGHT (CALIFORNIA PROP 65 COMPLIANT)
FLASH POINT: 120 deg F METHOD USED: TCC
FLAMMABLE LIMITS IN AIR BY VOLUME- LOWER: .7 UPPER: 9.8
APPEARANCE AND ODOR: COLORLESS LIQUID; TYPICAL SOLVENT ODOR.

SECTION 10 - STABILITY AND REACTIVITY

STABILITY: STABLE
CONDITIONS TO AVOID: APPLICATION TO HOT SURFACES.
INCOMPATIBILITY (MATERIALS TO AVOID): UNKNOWN.
HAZARDOUS DECOMPOSITION OR BYPRODUCTS: MAY PRODUCE FUMES WHEN HEATED TO DECOMPOSITION. FUMES MAY CONTAIN CARBON MONOXIDE AND OTHER TOXIC FUMES.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION 11 - TOXICOLOGICAL INFORMATION

LONG-TERM TOXICOLOGICAL STUDIES HAVE NOT BEEN CONDUCTED FOR THIS PRODUCT.

SECTION 12 - ECOLOGICAL INFORMATION

LONG-TERM ECOLOGICAL STUDIES HAVE NOT BEEN CONDUCTED FOR THIS PRODUCT

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD
DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS. BEFORE ATTEMPTING CLEAN UP, REFER TO OTHER SECTIONS OF THIS MSDS FOR HAZARD CAUTION INFORMATION.

SECTION 14 - TRANSPORT INFORMATION

BY LAND: NOT REGULATED
BY WATER: DOT PROPER SHIPPING NAME: UN1993, FLAMMABLE LIQUID, n.o.s. (PETROLEUM DISTILLATES), 3, III
BY AIR: DOT PROPER SHIPPING NAME: UN1993, FLAMMABLE LIQUID, n.o.s. (PETROLEUM DISTILLATES), 3, III
(Packing instruction 309 applies)

SECTION 15 - REGULATORY INFORMATION

ALL INGREDIENTS ARE EITHER LISTED ON THE TSCA INVENTORY OR ARE EXEMPT.

SECTION 16 - OTHER INFORMATION

HMIS CODES: H-1 F-2 R-0 P-

DATE PRINTED: 02/19/2013 NAME OF PREPARER: ESP

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. BECAUSE THE INFORMATION CONTAINED HEREIN MAY BE APPLIED UNDER CONDITIONS BEYOND OUR CONTROL, WE ASSUME NO RESPONSIBILITY FOR ITS USE.

3-29-12
3-27-14

SAFETY DATA SHEET

ceradyne, inc.
ADVANCED TECHNICAL CERAMICS

1. Identification of Substance/Material

Trade Name : Boron Carbide (as labeled)

Product Name : Boron Carbide (B4C)

Supplier : Ceradyne Inc.
3169 Red Hill Ave.
Costa Mesa California, 92626
Telephone: (714) 549-0421
Website: www.ceradyne.com

Emergency Telephone Number : (714) 673-9288

E-mail address of person: of person responsible for SDS bhernandez@ceradyne.com

Recommended Use : Various technical ceramic applications.

2. Hazard(s) Identification

Inhalation : Should be classified as a nuisance dust. May cause coughing and/or sneezing.

Ingestion : No known adverse effects, but ingestion is not recommended. Seek medical attention.

Skin Contact : May cause irritation, but not absorbed through skin.

Eye Contact : May cause irritation.

3. Composition

CHEMICAL NAME	CAS NUMBER	PERCENT
Boron Carbide	12069-32-8	100%

4. First-Aid Measures

Inhalation : Remove to fresh air. Apply artificial respiration if needed.

Ingestion : If swallowed induce vomiting immediately and give two glasses of milk.* Seek medical attention.

Skin Contact : Wash exposed area with mild soap and water for 15 minutes. Seek medical attention if needed.

Eye Contact : Rinse with lukewarm water or saline solution for at least 15 minutes, lifting eye lids occasionally.

* Never give anything by mouth to an unconscious person

5. Fire-Fighting Measures

Extinguishing Media : Use Dry chemical, CO2 extinguisher.

Unusual Fire/Explosion : None

Protection of Fire Fighters: Wear full protective equipment (Bunker Gear) and self-contained breathing apparatus (SCBA).

6. Accidental Release Measures

Utilize NIOSH approved dust/mist/fume cartridge respirator and vacuum-clean to pick up dust, avoid dust inhalation and promulgation. Do not use decompressed air or dry sweeping to remove dust from area. If sweeping is required, only wet cleaning methods should be used.

7. Handling and Storage

Store in a cool, dry, well-ventilated place away from incompatible materials. Wash thoroughly after handling. Avoid breathing dust. Handle with adequate ventilation for nuisance dust, See OSHA 29 CFR 1910.94 (Ventilation) and CFR 1910.1000 (Air Contaminants).

8. Exposure Controls/Personal Protection

CHEMICAL NAME	CAS NUMBER	PERCENT	AGENCY	EXPOSURE LIMITS
Boron Carbide	12069-32-8	100%	OSHA (PEL) ACGIH	15 mg/m3 (Total Dust) 10 mg/m3 (Total Dust)

Exposure Controls : Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposures below PELs or TLVs.

Hygiene Measures : Wash hands after handling.

Personal Protective Equipment

Respiratory : NIOSH/MSHA approved respirators recommended if PELs or TLVs are exceeded.

Eyes : Wear safety glasses or goggles if dust is generated.

Hands : Gloves recommended when handling this product.

Skin and Body : General working clothes.

9. Physical and Chemical Properties

Appearance	: Black Crystalline powder, no odor
Specific Gravity	: 2.6gm/cc
Boiling Point	: N/A
Melting Point	: 2350 °C
Vapor Pressure	: N/A
% Volatile by Volume	: N/A
Solubility in water	: Insoluble
Vapor Density	: N/A
Flash Point	: N/A
LEL	: N/A
UEL	: N/A

10. Stability and Reactivity Data

Stability	: Stable
Conditions to Avoid	: None
Incompatibility	: Molten Alkalis
Hazardous Decomposition	: B2O3
Hazardous Polymerization	: Will not occur

11. Toxicological Information

Boron Carbide is insoluble and non-reactive and poses minimal acute health risks. Long term chronic exposure to Boron Carbide may cause lung granulomas.

Fertility effects	: No specific data.
Chronic Toxicity	: No specific data.
Carcinogenicity	: No specific data.
Mutagenicity	: No specific data.
Teratogenicity	: No specific data.
Reproductive Toxicity	: No specific data.

12. Ecological Information

Environmental Effect	: Not Available
Aquatic Eco Toxicity	: Not Available
Other Adverse Effects	: Not Available

13. Disposal Considerations

All waste and unused product must be disposed of in accordance with Federal, state and local environmental regulations.

14. Transport and Regulatory Information

International transport regulations

Packing Group	: Not Regulated
UN Number	: Not Regulated
IMDG Class	: Not Regulated
IATA Class	: Not Regulated
ADNR Class	: Not Regulated

15. Regulatory Information

TSCA	: The chemical components of this product are registered under the Toxic Substance Control Act.
California Prop 65	: Not Regulated

16. Other Information

Reader Notice

The information contained in the Safety Data Sheet is believed to be correct at the date of issuance. The user is responsible for determining whether the Ceradyne product is fit for the purpose and suitable for user's intended purpose. The information is intended to educate the user of the Ceradyne product in controlling potential exposures if applicable and is not to be construed as a warranty or specification of product quality.

4-11-14

Friday, February 24, 2012

MSDS - Material Safety Data Sheet

Product Name: BRAKE PARTS CLEANER (CHLORINATED)

MSDS No.: M720

I. Basic Information:

Manufacturer: RADIATOR SPECIALTY COMPANY
Address: 600 RADIATOR ROAD
City, ST Zip: INDIAN TRAIL, NC 28079
Country:

Contact: Robert Geer
Information Telephone Number: 704-684--181 1
Emergency Contact: RMPDC (877-740-5015)
Emergency Telephone Number: 303-623-5716
Emergency Restrictions:

Product Name: BRAKE PARTS CLEANER (CHLORINATED)
MSDS No.: M720

Issue Date: 01/09/2012
Supersedes Date: 05/18/2011

II. Hazards Identification:

EMERGENCY OVERVIEW

Danger: Harmful or Fatal if Swallowed. Vapor harmful. Eye and Skin Irritant. Contents Under Pressure.

Level 1 Aerosol

OSHA Regulatory Status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Potential Health Effects

Route(s) of Entry:

Absorption, inhalation, and ingestion

Health Hazards (Acute and Chronic):

Affects of overexposure are:
Acute: Eye Contact: Liquid splashed on eyes and skin can result in discomfort, pain and irritation. Contact may cause tearing, redness, a stinging or burning.
Inhalation may cause upper respiratory tract irritation and central nervous system depression with symptoms such confusion, lightheadness, nausea, headache and fatigue., loss of coordination and equilibrium, unconsciousness and even death in confined or poorly ventilated areas.
Ingestion may result in irritation of the mouth and GI tract. May cause nausea, vomiting, abdominal cramps and diarrhea, possibly with bloody stools and narcotic affects as in acute inhalation.

Prolonged exposure above the OSHA permissible exposure limit may complicate existing liver and kidney diseases.

Chronic Effects: Carcinogenicity of perchloroethylene has been documented in certain strains of mice and rats exposed by inhalation or oral routes. Other long-term inhalation studies in rats failed to show tumorigenic response. Human data are limited and have not extablished an association between perchloroethylene exposure and cancer. Methylene Chloride may cause liver damage. It may cause cancer based on animal data.

Signs and Symptoms:

Eye Contace: Irritant. Prolonged contact may cause conjunctivitis.
Skin Contact: Irritant. Defatting of tissue, dermatitis may occur.
Inhalation: Irritant to mucous membranes. Repeated exposure may cause narcosis..
Ingestion: HARMFUL OR FATAL IF SWALLOWED. May cause burns to mouth, throat & stomach.

Medical Conditions Generally Aggravated by Exposure:

May complicate existing liver and kidney diseases.

Other Health Warnings:

Vomiting and subsequent aspiration into the lungs may lead to chemical pneumonia and pulmonary edema which is a potentially fatal condition.

Potential Environmental Effects

Not Available

III. Composition/Information on Ingredients:

Chemical Name	CAS No.	% Range	Trade Secret
Carbon dioxide	124-38-9	1.0 - 5.0	
Dichloromethane	75-09-2	30.0 - 60.0	

MSDS - Material Safety Data Sheet

Product Name: BRAKE PARTS CLEANER (CHLORINATED)

MSDS No.: M720

Tetrachloroethylene	127-18-4	30.0 - 60.0

IV. First Aid Measures:

Emergency and First Aid Procedures:

Eye Contact: Flush eyes with clean water for 15 minutes while lifting eyelids. Get prompt medical attention.
Skin Contact: Wash with soap and water thoroughly. If adverse effects persist, get prompt medical attention. Launder contaminated clothing before reuse.
Inhalation: Remove to fresh air. If breathing becomes difficult, get prompt medical attention.
Ingestion: DO NOT INDUCE VOMITING! Call Poison Control Center, physician, or hospital emergency room immediately.

Note to Physicians:

N/E

V. Fire Fighting Measures:

Suitable Extinguishing Media:

Water Fog, Foam, Carbon Dioxide, Dry Chemical

Unsuitable Extinguishing Media:

Do not use forced water stream as this could cause the fire to spread.

Products of Combustion:

Normal products of combustion: Carbon monoxide, carbon dioxide. In the presence of water: hydrochloric acid is liberated. Ignition sources and hot metals surfaces may generate: phosgene and chlorine gases. Flames, welding, and high temperatures will induce decomposition.

Protection of Firefighters:

Wear self-contained positive pressure breathing apparatus and protective clothes. Use shield to protect from rupturing and venting containers. At elevated temperatures containers may vent, rupture or burst, even violently. Vapors of this product may present a future health hazard in poorly ventilated areas. May liberate corrosive hydrochloric acid or toxic phosgene fumes.

VI. Accidental Release Measures:

Personal Precautions:

Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Wear positive-pressure self-contained breathing apparatus (SCBA) if needed.

Environmental Precautions:

Prevent run-off to sewers, streams, or other bodies of water. If run-off occurs, notify proper authorities as required that a spill has occurred.

Methods for Containment:

Dike or contain spill and absorb with inert materials (sand, sawdust, absorbent sweeping compounds, rags, etc).

Methods for Cleanup:

Using a non-metalic scoop, place contaminated material into an approved chemical waste container.

Other Information:

If run-off occurs, notify proper authorities as required that a spill has occurred.

VII. Handling and Storage:

Handling Precautions:

Handling: Use with adequate ventilation and proper protective equipment.
Do not use or store near fire, sparks, or flame. Do not puncture or incinerate container. Exposure to temperatures above 120° may cause container to vent, rupture, or burst. Avoid contact with eyes, skin and clothing. Avoid breathing vapors. Do not swallow. Do not enter confined spaces with this product unless adequately ventilated. Keep away from food.

Storage Precautions:

Vapors are heavier that air and will collect in low areas. This material or its vapors when in contact with flames, hot glowing surfaces or electric arcs can decompose to form hydrogen chloride gas and possible traces of phosgene. Avoid contamination with water supplies. Do not expose to fire, sparks or flames. Do not store above 120°. Keep container closed.

VIII. Exposure Controls/Personal Protection:

MSDS - Material Safety Data Sheet

Product Name: BRAKE PARTS CLEANER (CHLORINATED)

MSDS No.: M720

Chemical Name	OSHA PEL	ACGIH TLV	Other Limits
Tetrachloroethylene	25 ppm	25 ppm	Not Available
Carbon dioxide	N/AV	5000 ppm	Not Available
Dichloromethane	25 ppm (TWA)	25 ppm (TWA)	Not Available

Engineering Controls:

See above Section for applicable exposure limits. Maintain adequate ventilation.
Avoid breathing vapors. In restricted areas, use respirator with approved chemical filters designed to remove vapor. In confined areas, use approved air line type respirator or hood. A self-contained breathing apparatus is required for vapor concentrations above TLV limit

Personal Protective Equipment:

Maintain adequate ventilation. Avoid breathing vapors. For prolonged exposure wear protective safety glasses, gloves, and apron.

IX. Physical and Chemical Properties:

Boiling Point: 132°F
Boiling Range: N/D
Solubility In Water: 530 ppm @ 25°C
Flash Point: None
Odor Threshold: N/D
Vapor Density (AIR = 1): N/D
pH Range: N/A
Decomposition Temp: N/A
Lower Explosive Limit: N/A
Specific Gravity (H20 = 1): 1.47
Other Information: VOC Content: 0 %

Melting Point: N/A
Freezing Point: < -20°C
Evaporation Rate (Butyl Acetate = 1): 0.09
Flash Point Method: N/A
Appearance and Odor: Clear colorless volatile liquid with midly sweet, chloroform-like odor
Vapor Pressure (mm Hg.): N/D
Partition Coefficient: N/D
Auto-Ignition Temp: N/A
Upper Explosive Limit: N/A

X. Stability and Reactivity:

Stability:

Stable

Conditions to Avoid:

Avoid heat, sparks, and flames. Exposure to elevated temperatures can cause product to decompose. Avoid direct sunlight or ultraviolet sources.

Incompatible Materials:

Liquid oxygen, other strong oxidizers and strong bases. Avoid contact with metals such as Zinc powders, aluminum powders, magnesium powders, potassium and Sodium. Avoid unintended contact with amines.

Hazardous Decomposition Products:

Normal products of combustion: Carbon monoxide, carbon dioxide. In the presence of water: hydrochloric acid is liberated. Ignition sources and hot metals surfaces may generate: phosgene and chlorine gases. Flames, welding, and high temperatures will induce decomposition.

Possibility of Hazardous Reactions:

Will not occur.

XI. Toxicological Information:

MSDS - Material Safety Data Sheet

Product Name: BRAKE PARTS CLEANER (CHLORINATED)

MSDS No.: M720

Tetrachloroethylene
ACUTE INHALATION LC50: (rats) 5040 ppm for 8 hours. Moderately toxic.
ACUTE DERMAL LD50: (rabbit) > 3228 mg/kg. Slight to very low toxicity
SKIN IRRITATION: Mildly irritating.
EYE IRRITATION: Mildly irritating.
ACUTE ORAL LD50: (rats) 2629 mg/kg. Moderalely toxic.

Methylene Chloride
Methylene Chloride is not believed to pose a measurable carcinogenic risk to man when handled as recommended. Studies have shown that tumors observed in mice are unique to that species.
ACUTE ORAL LD50 (rats): 1600 mg/kg
ACUTE INHALATION LC50 (rats) 52 mg/liter, 6 hours.

This product is listed under IARC as a 2A

XII. Ecological Information:

Toxic to aquatic life.(Marine Pollutant)
100 - 10 ppm (fish) 96-hours TLM LC50

XIII. Disposal Considerations:

DISPOSAL: This container may be recycled in aerosol recycling centers when empty. Before offering for recycling, empty the can by using the product according to the label. DO NOT PUNCTURE! If recycling is not available, wrap the container and discard in the trash. Dispose of unused product in accordance with all local, state government and federal laws and regulations.

XIV. Transport Information:

Shipping Name: Consumer Commodity

DOT Hazard Class: ORM-D

UN/NA#: Not Available

DOT Subsidiary Hazard Class: Not Available

Packing Group: Not Available

Transportation Information:

DOT Hazard Class: ORM-D
Shipping Name: Consumer Commodity

The DOT description is provided to assist in the proper shipping classification of this product and may not be suitable for international and air shipping purposes.

ICAO/IATA (US)
Shipping Name: Aerosols
Class: 2.2 (6.1)
UN number: UN1950

International:

ICAO/IATA
UN number: UN1950
Shipping Name: Aerosols
Class: 2.2 (6.1)

IMDG
UN number: UN1950
Shipping Name: Aerosols
Class: 2.2 (6.1)
EmS: F-D, S-U

XV. Regulatory Information:

Friday, February 24, 2012

MSDS - Material Safety Data Sheet

Product Name: BRAKE PARTS CLEANER (CHLORINATED)

MSDS No.: M720

SARA 313 REPORTABLE:
Tetrachloroethylene - 127-18-4
Methylene Chloride - 75-09-2

USA TSCA: All chemicals used are listed on the TSCA Inventory.

CERCLA RQ: 100 lbs (Tetrachloroethylene), 1000 lbs (Methylene Chloride)
SARA 302: Not listed as a Extremely Hazardous Substance
SARA 311/312 HAZARD CLASS: Acute, Chronic

State RTK Chemicals:
Tetrachloroethylene - 127-18-4
Methylene Chloride - 75-09-2

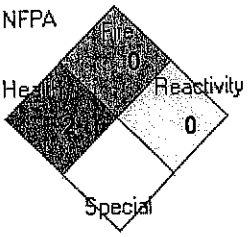
XVI. Other Information:

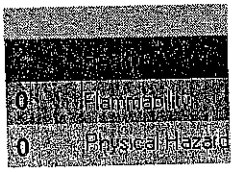
Chemical State: [X] Liquid [ ] Gas [ ] Solid

Chemical Type: [X] Pure [ ] Mixture

Hazard Category:

[X] Acute [X] Chronic [ ] Fire [X] Pressure [ ] Reactive





Additional Manufacturer Warnings:

Do not used in confined area without proper ventilation. Contact lenses may cause further damage in case of splash into eye. KEEP AWAY FROM CHILDREN AND ANIMALS!

N/E: Not Established
N/D: Not Determined
N/A: Not Applicable
N/AV: Not Available

Additional Product Information:

While Radiator Specialty Company believes this data is accurate as of the revision date, we make no warranty with respect to the data and we expressly disclaim all liability for reliance thereon. The data is offered solely for information, investigation, and verification. Various government agencies may have specific regulations regarding the transportation, handling, storage, use, or disposal of this product which may not be covered by this MSDS. The user is responsible for full compliance.

3-25-14

Material Safety Data Sheet

Section 1 – Product and Company Identification

Product Name: Brake Parts Cleaner
Product Synonym: 5C-4
Product Number: 1420
Product Description: Automotive brake cleaner (aerosol)

Manufacturer: Berryman Products, Inc.
3800 E Randol Mill Rd
Arlington, TX 76011
(800) 433-1704 within USA
(817) 640-2376 outside USA
www.BerrymanProducts.com

Emergency Contact: Infotrac, Inc., (800) 535-5053

Section 2 – Hazards Identification

Emergency Overview: Contents under pressure. Vapor harmful. Eye and skin irritant. Possible carcinogen.

Routes of Exposure: Ingestion, inhalation, eye contact, skin contact

Possible Health Hazards

Eyes: May cause moderate to severe irritation and result in conjunctivitis, blurred vision, and corneal injury.

Skin: May cause mild to moderate irritation of the skin. Prolonged or repeated contact may dry the skin and result in severe irritation, dermatitis, and effects similar to those of chronic overexposure by way of inhalation.

Inhalation: Acute overexposure may rapidly result in respiratory tract irritation, headache, dizziness, nausea, vomiting, unconsciousness, irregular heartbeat, and death. Chronic overexposure or intentional abuse may adversely affect the liver, kidneys, lungs, blood, central nervous system, and hearing and result in death. May aggravate asthma, emphysema, and bronchitis and cause cancer.

Ingestion: Accidental ingestion and subsequent aspiration of even small quantities may cause severe lung damage, aspiration pneumonitis, cyanosis, and death. Ingestion of larger amounts may also include gastrointestinal effects, such as abdominal discomfort, pain, nausea, and vomiting.

Supplemental Information: See "Section 11 – Toxicological Information" for additional information.

Section 3 – Composition / Information on Ingredients

Ingredient	CAS Number	Weight
Dichloromethane	75-09-2	60-70%
Tetrachloroethylene	127-18-4	5-15%
Toluene	108-88-3	20-30%

Section 4 – First Aid Measures

Eye Contact: Immediately flush eyes with water for at least 15 minutes, holding the eyelids apart at regular intervals to ensure complete irrigation. Dispose of contaminated contact lenses. Seek medical attention immediately.

Skin Contact: Remove contaminated clothing, and wash affected areas of body thoroughly with soap and water. Allow clothing to air dry, and launder before reuse. Seek medical attention if irritation persists.

Inhalation: If breathing difficulties occur, immediately remove source of exposure or move victim to fresh air and administer oxygen, if necessary. Do *not* administer epinephrine (or "epipen"), if possible. If symptoms persist, seek immediate medical attention. If breathing stops, give artificial respiration and seek immediate medical attention.

Ingestion: Do *not* induce vomiting unless otherwise directed by a medical professional. Dilute stomach contents by drinking 1-2 cups of milk or water. Seek medical attention immediately.

Section 5 – Firefighting Measures

Flash Point and Method: none by Setaflash closed-cup tester
Flammability Limits (composite): Lower – N/A Upper – N/A

Suitable Extinguishing Media: Water fog, foam, dry chemical, and carbon dioxide
Unsuitable Extinguishing Media: Use water spray with caution as product is substantially insoluble.

Protective Equipment: Employ SBCA and full protective gear, including shield, as product is self-pressurized and may vent, rupture, or explode violently at elevated temperatures.
Specific Procedures: Product is self-pressurized and may present explosion hazards at elevated temperatures. Remove product from area if possible without risk of injury. Use water spray to cool containers.

Section 6 – Accidental Release Measures

General Remediation Overview: Vapor dangerous and intoxicating! Thoroughly ventilate area!

Personal Precautions: Avoid unnecessary contact with product. See "Section 8" for recommended protective equipment.
Environmental Precautions: Prevent further loss of product if safely possible.

Methods for Containment: Use booms or other barriers as necessary to prevent further loss.
Methods for Cleaning Up: Clean-up *must* be in compliance with §29 CFR 1910.1026 and 1052. For small spills, quickly mop up or absorb with inert material, such as corn cob, cellulose, or vermiculite. For large spills, ensure thorough ventilation of the local area to prevent the accumulation of dangerous and intoxicating vapors. Pump or transfer material into containers for recovery and use absorbent material for collection of unrecoverable product.

Section 7 – Handling and Storage

Handling: Avoid contact with skin and eyes. Wash hands thoroughly after use.
Storage: Store in cool, dry location. Do not leave in direct sunlight inside vehicle. Do not store in aluminum containers.

Section 8 – Exposure Controls / Personal Protection

Ingredient	Exposure Limit	Source
Dichloromethane	25 ppm	OSHA
Tetrachloroethylene	25 ppm	ACGIH
Toluene	20 ppm	ACGIH

Engineering Controls: This product contains methylene chloride ("dichloromethane") and *must* be used in accordance with §29 CFR 1910.1052. If possible, use outside with positive cross-ventilation in order to reduce accumulation of vapor and minimize exposure.
Respiratory Protection: If necessary, use respiratory protection sufficient to reduce exposure to permissible limits.
Eye Protection: Use of safety glasses with wrap-around lens or goggles is recommended.
Skin Protection: Employment of impermeable gloves is recommended.
Other Protection: For industrial settings, combination safety shower with eye wash station is recommended.

Section 9 – Physical and Chemical Properties

Physical State: Liquid
Appearance: Clear, colorless liquid
Odor: Moderate, sweet, aromatic

Freezing Point: <10°F (approximate)
Boiling Range: 104-250°F (approximate)
Specific Gravity: 1.20-1.22 at 68°F
pH: N/A, as supplied
Solubility in Water: Negligible
Volatile Content: 100%
Evaporation Rate: Faster than water

Vapor Density: Heavier than air
Vapor Pressure: 80-100 PSI at 68°F
VOC Content: 22% by weight (260 g/L) (by EPA Method 24)
VOC Composite Partial Pressure, PP_c: 8 mm Hg at 68°F (as calculated by SCAQMD Rule 1171(B)(57))

Section 10 – Stability and Reactivity

Chemical Stability: Stable under normal conditions
Incompatible Materials: Strong acids, oxidizers, and powered zinc, aluminum, magnesium, and sodium
Hazardous Decomposition Products: None under normal conditions of use. Thermal decomposition may yield hydrocarbons, oxides of carbon and chlorine, organic oxygenates, chlorine, hydrogen chloride, and phosgene.
Possibility of Hazardous Reactions: Low if kept from "Incompatible Materials"

Section 11 – Toxicological Information

General Information: This formulated product has not been evaluated for toxicological properties. Used responsibly, acute and chronic toxicity are expected to be low to moderate, but intentional abuse may cause cancer or be fatal.

Acute Toxicity: No specific data available on blend **Chronic Toxicity:** No specific data available on blend

Carcinogenicity: Dichloromethane increases the incidence of tumors in rodents. However, it has not demonstrated tumorgenic responses in other animals or human epidemiological studies.
Teratogenicity: Case studies suggest maternal abuse of toluene may increase the chances of birth defects.
Mutagenicity: N/A

Supplemental Information: See "Section 2 – Hazards Identification" of this MSDS for additional information.

Section 12 – Ecological Information

Ecotoxicity: This product is not anticipated to be ecologically significant in small amounts.
Persistence and Degradability: Not readily biodegradable. May be environmentally persistent.
Bioaccumulation Potential: Minimal

Section 13 – Disposal Considerations

Disposal Instructions: None specific. Dispose of waste in accordance with applicable regulations.

Section 14 – Transportation Information

US Department of Transportation (DOT): When shipped by ground, this product is eligible for a "Limited Quantity" exception per §49 CFR 173.306. Otherwise, it should bear the following shipping description:

UN1950, Aerosols, 2.2, 6.1

International Air Transportation Association (IATA): When shipped by air, this product may be eligible for a "Limited Quantity" exception. Otherwise, it should bear the following shipping description:

UN1950, Aerosols, 2.2, 6.1

International Maritime Dangerous Goods (IMDG): Contains the following marine pollutant: Tetrachloroethylene

Section 15 – Regulatory Information

FEDERAL CONSIDERATIONS

SARA Title III, Section 302 – Extremely Hazardous Substances: Neither this product nor any of its components appear on the list of extremely hazardous substances (EHS) found in §40 CFR 355 Appendices A and B and are not subject to the emergency planning (EPCRA) requirements of §40 CFR 355.30 or the reportable quantity (RQ) and threshold planning quantity (TPQ) requirements of §40 CFR 355 Appendices A and B.

SARA Title III, Section 304 – Hazardous Substances: This product contains the following components found in the list of hazardous substances of §40 CFR Table 302.4: Dichloromethane (CAS # 75-09-2); Tetrachloroethylene (CAS # 127-18-4); Toluene (CAS # 108-88-3)

SARA Title III, Sections 311/312 – Hazard Classes: This product contains one or more ingredients that are classified into the following hazard categories outlined in §40 CFR 370.40: sudden release of pressure; immediate (acute) health; delayed (chronic) health

SARA Title III, Section 313 – Toxic Chemicals: This product contains the following chemicals listed in the table of §40 CFR 372.65 exceeding the *de minimis* concentration reporting requirements of §40 CFR 372.38: Dichloromethane (CAS # 75-09-2); Tetrachloroethylene (CAS # 127-18-4); Toluene (CAS # 108-88-3)

Section 15 – Regulatory Information (continued)

FEDERAL CONSIDERATIONS (continued)

Clean Air Act, Section 183(e) – Consumer and Commercial Products: This product complies with the National Volatile Organic Compound Emission Standards for Consumer Products regulations found in §70 FR 69759.

Toxic Substances Control Act (TSCA): All chemicals known to be present in this product are either listed on the TSCA inventory or are not required to be per §15 USC 2601 et seq.

Occupation Safety and Health Administration (OSHA): This material safety data sheet is provided for compliance with applicable regulations of the Hazard Communication Standard (HCS) found in §29 CFR 1910.1200(g). Federal law requires persons receiving this document to study it carefully and become aware of the hazards of this product. Notify all employees, visitors, agents, and contractors of the information on this sheet.

Consumer Product Safety Commission (CPSC): This product is regulated under the Federal Hazardous Substances Act, is subject to the labeling requirements of 16 CFR 1500, and must include the following cautionary statements: Danger! Harmful or fatal if swallowed. Vapor Harmful. Contents under pressure. Possible cancer agent based on test with laboratory animals. Keep out of the reach of children.

REGIONAL CONSIDERATIONS

Lake Michigan Air Directors Consortium (LADCO): Complies with category VOC requirement
Ozone Transport Commission (OTC): Complies with category VOC requirement

STATE CONSIDERATIONS

California: This product is *not* compliant with the category VOC requirements of §94509 of Subchapter 8.5 Article 2 of the Air Resource Board's "Regulation for Reducing Emissions from Consumer Products" and is not suitable for sale as a *consumer product*.

This product is subject to the labeling requirements of "Proposition 65 – Safe Drinking Water and Toxic Enforcement Act of 1986" ("Prop 65") and must product bear the cautionary statement "WARNING: This product contains chemicals known to the state of California to cause cancer and birth defects or other reproductive harm."

New Jersey: This product is *not* compliant for sale per NJAC 7:27-24.4(r).

Section 16 – Other Information

Hazardous Materials Identification System (HMIS)

HMIS Hazard Rating		HMIS Hazard Index	
Health	2	Least	- 0
Flammability	0	Slight	- 1
Reactivity	0	Moderate	- 2
Protective Equipment	X	High	- 3
		Extreme	- 4

Index of Abbreviations

ACGIH – American Council of Governmental and Industrial Hygienists
N/A – not applicable
NE – not established
NIOSH – National Institute for Occupational Safety and Health
PEL – Permissible Exposure Limit (as required by OSHA)
SCBA – Self-Contained Breathing Apparatus
TLV – Threshold Limit Value (as recommended by ACGIH)

Date of Issuance: 9-7-2012
Date of Previous Revision: 7-23-2012
Primary Revision Change(s): updated "Section 8 – Exposure Controls / Personal Protection"; "Section 14 – Transportation Information"; and "Section 15 – Regulatory Information"
Applicability: This document only applies to part number 1420 manufactured on or after March 7, 2011.

Prepared By: Dan Nowlan

Legal Disclaimer: The information contained in this document is, to the best of Berryman Products, Inc.'s knowledge, complete and accurate but is not warranted. All materials may present unknown hazards and should be used with caution. It is the responsibility of the user to evaluate the information in a prudent manner and to use it in a manner consistent with its intended purpose. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.

3-26-14

LLCOLMONOY
EMP BRAZING ALLOYS

NICROBRAZ® LM
Brazing Filler Metals

Section 1: Identification

Product Name:	**Nicrobraz® LM**
MSDS Issue Date:	October 24, 2013 (supersedes all previous issues)
Synonyms:	AWS A5.8 BNi-2, AMS 4777, Nicrobraz LM-665, LMP, AMS 4777-1S
CAS Number(s):	See section 3.
Product Usage:	Brazing Filler Metal Powder

Manufacturer: **Wall Colmonoy Corporation**
101 W. Girard
Madison Heights, MI 48071-1880

Phone: 800-521-2412
Fax: 248-585-7960
E-Mail: wcc@wallcolmonoy.com
Web Site: www.wallcolmonoy.com

Transportation Emergency Number: CHEMTREC 800-424-9300
International 703-527-3887

Section 2: Hazard(s) Identification

Health – Environmental – Physical		
Respiratory and Skin Sensitization	GHS Category 1	
Target Organ Systemic Toxicity (single exposure)	GHS Category 1 (respiratory apparatus, kidney)	
Target Organ Systemic Toxicity (repeated exposure)	GHS Category 1 (respiratory apparatus)	
Carcinogenicity	GHS Category 2 (suspected of causing cancer)	**Danger**
Aquatic Toxicity (chronic)	Category 4 (may cause long lasting harmful effects to aquatic life)	

This product is intended for industrial use by trained individuals. Keep away from children.

Section 3: Composition / Information on Ingredients

Components of mixture*	CAS Number	Weight percentage**
Nickel	7440-02-0	60 – 100
Chromium	7440-47-3	5 – 10
Boron	7440-42-8	1 – 5
Iron	7439-89-6	1 – 5
Silicon	7440-21-3	3 – 7

* This material is a homogenous metallic alloy of the components listed above.
** This is a general reporting range and is not a product specification.

Exposure limits: See Section 8.

Material Safety Data Sheet © 2013 Wall Colmonoy Corp. (USA)
Wall Colmonoy | Web www.wallcolmonoy.com | Email wcc@wallcolmonoy.com

Section 4: First Aid Measures

Exposure Route	Acute	Chronic (delayed)
Eye contact	Eye irritation. Flush with water for 15 minutes or until all particles are removed.	If irritation persists seek medical attention.
Skin contact	Itching, irritation or rash. Remove contaminated clothing. Wash skin with mild soap and water.	If irritation or rash persists seek medical attention.
Inhalation	Difficulty breathing, coughing, metal fume fever. Remove exposed person to fresh air. If not breathing administer CPR.	If symptoms persist seek medical attention.
Ingestion	Rinse mouth. If large amount, induce vomiting. Seek medical advice.	Seek medical attention.

Never give anything by mouth to an unconscious person. Treat symptomatically and supportively.

Section 5: Firefighting Measures

Suitable Extinguishing Media: Material is not readily combustible. Do not use water on metal fires, use dry chemical, dry sand or carbon dioxide to smother fire.

Specific Hazards during a Fire: Material may break down in fire and may produce toxic decomposition products associated with ingredients. Extreme oxidizing conditions may cause formation of metal oxides. These oxides may be carcinogens.

Protective Equipment: SCBA and full protective gear is recommended for fire fighting.

Section 6: Accidental Release Measures

- Stay out of spill, floor may be slippery.
- Do not create airborne dust.
- Do not allow spill to enter floor drains or storm drains.
- Wear PPE: Respirator and Safety Goggles.
- Take up with damp sweeping compound or vacuum. Vacuum should be equipped with HEPA filter on exhaust. Transfer into disposal container(s). Dispose by recycling.
- A spill of greater than 100 lbs (Nickel RQ 100 lbs, <106µm) which enters the environment requires reporting per OSHA CFR Title 40 Part 372 paragraph 372.4 CERCLA hazardous substance release.

Section 7: Handling and Storage

- General and/or point ventilation system with dust collection is recommended to ensure exposure do airborne dust is maintained below allowable exposure limits.
- Wear PPE such as work gloves (or vinyl/latex gloves), safety glasses/goggles. Respiratory protection is recommended, but is required only when exposure limits are be exceeded.
- Wash hands after use before eating or smoking.
- Do not eat or smoke in area where material is being used.
- Store in tightly closed container. For best results, keep product above the ambient dew point temperature.
- Not a shelf life limited material.

NICROBRAZ® LM
Brazing Filler Metals

Section 8: Exposure Controls / Personal Protection

Exposure Limits:

Components of mixture	CAS Number	OSHA PEL	ACGIH TLV
Nickel	7440-02-0	1.0 mg/m³	1.5 mg/m³
Chromium	7440-47-3	1.0 mg/m³	0.5 mg/m³
Boron	7440-42-8	15 mg/m³ (5 mg/m³ respirable)	10 mg/m³ as boron oxide
Iron	7439-89-6	10 mg/m³ as oxide fume	5 mg/m³ as respirable oxide
Silicon	7440-21-3	15 mg/m³ (5 mg/m³ respirable)	Not listed

Engineering Controls:

- Local exhaust ventilation may be necessary to control air contaminants to their exposure limits.
- Provide mechanical ventilation for confined spaces or if method of use warrants.

Personal Protective Equipment:

- Gloves – work gloves or non-permeable gloves such as vinyl or latex.
- Eyes – safety glasses/goggles or face shield.
- Clothing – Cover-all, lab coat or normal work clothing.
- Respirator – NIOSH N-95 or N-100 filtering face-piece (dust mask) or equivalent alternative is recommended for up to 10 times the exposure limits.

Section 9: Physical and Chemical Properties

Physical State	Finely divided powder
Odor	None
Odor Threshold	Not available
PH	Not applicable
Melting Point / Freezing Point	>1500°F (>815°C)
Boiling Point	>3000°F (>1648°C)
Flash Point	None
Evaporation Rate (butyl acetate =1)	None
Flammability	Not applicable
LFL (LEL) lower flammability (explosive) limit	Not applicable
UFL (UEL) upper flammability (explosive) limit	Not applicable
Vapor Pressure	Not applicable
Vapor Density	Not applicable
Specific Gravity (Bulk Density)	~4 g/cc
Solubility	Not water soluble
Partition Coefficient (n-octanol/water)	Not available
Autoignition Temperature	Not available
Decomposition Temperature	Not available
% VOC's	0%

Section 10: Stability and Reactivity

- **Chemical Stability:** This material is stable.
- **Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.
- **Conditions to Avoid:** None
- **Incompatible Materials:** Strong acids and/or oxidizers.
- **Hazardous Decomposition Products:** Intense heat may produce carbon monoxide and/or carbon dioxide and oxidizing conditions may produce oxides of the ingredients shown in Section 3. Oxides of these ingredients may be carcinogenic.

Section 11: Toxicological Information

Likely Routes of Exposure: Skin contact, inhalation of dust.

Skin Contact: May cause sensitivity, dermatitis or allergic reaction.
Contact toxicity data not available. GHS Category 1

Inhalation of Dust: Prolonged inhalation of dust may cause pulmonary irritation, asthma, coughing, shortness of breath.

Ingestion of Dust or powder: Ingestion of dust or powder is an unlikely route of exposure.

Ingredient Name	Oral Toxicity (LD50)	Inhalation Toxicity (LC50)
Nickel (metallic)	Oral rat LDLo 5,000 mg/kg	*
Chromium (metallic)	*	*
Boron	Oral rat 650 mg/kg	*
Iron	Oral rat 30,000 mg/kg	*
Silicon	Oral rat 3,160 mg/kg	*

Carcinogenicity: GHS Category 2

Ingredient Name	NTP Status		IARC Category	OSHA	CA Prop. 65*
	Known	Anticipated			
Nickel (metallic)	No	Yes	2B	No	Yes
Chromium (metallic)	No	No	3	No	No
Boron	No	No	None	No	No
Iron	No	No	None	No	No
Silicon	No	No	None	No	No

*This product contains a chemical known to the State of California to cause cancer.

Section 12: Ecological Information

- **Aquatic Toxicity:** Acute - None, Chronic - GHS Category 4

Section 13: Disposal Consideration

- Material should be recycled to reclaim scrap metal value.
- If recycling is not possible dispose of in accordance with local, state, and federal regulations for industrial wastes of this form.

Section 14: Transport Information

DOT Classification	Not regulated unless greater than 100 lbs per inner container.
UN Identification Number	Not regulated unless greater than 100 lbs per inner container.
DOT Shipping Description	Not applicable unless greater than 100 lbs per inner container.

Section 15: Regulatory Information

Toxic Substances Control Act (TSCA)	All ingredients are listed on the TSCA inventory of chemical substances.
Superfund Amendments & Reauthorization Act (SARA)	This product contains Nickel and Chromium.
Resource Conservation & Recovery Act (RCRA)	This material is not a hazardous waste. It is Recyclable.
RoHS & REACH	None

Hazard Codification & Labeling Requirements
H317 – May cause an allergic skin reaction (nickel).
H351 – Suspected of causing cancer (nickel, chromium).
H370 - Target organ (acute), respiratory apparatus, kidney.
H372 – Target organ (chronic), respiratory apparatus.

Section 16: Other Information

NFPA Numbers (estimated)	Health: 2	Flammability: 0	Reactivity: 0

WHMIS Category: Class D, Division 2: Nickel and Chromium

The information supplied herein follows the guidelines of WHMIS, GHS and OSHA Hazard Communication Standard 29 CFR 1910.1200, and to the best of our knowledge, is accurate and complete. The recommended hygiene and handling practices are believed to be appropriate for the use of this material. However, it is up to the end user to review this information and establish their own procedures and guidelines, based upon their particular application(s). Wall Colmonoy Corporation assumes no responsibility for damage or injury resulting from the end use of this product.

5-17-12

Material Safety Data Sheet

Section 1 - Product and Company Identification

BRIGHT COPPER CATALYST

Product Identification: BRIGHT COPPER CATALYST
Date of MSDS: 01/03/2011

Manufacturer's Information

==========

Product Identification: BRIGHT COPPER CATALYST
Manufacturer's Name: P&A SALES Plating Sales
Manufacturer's Address1: 2420 Holly Neck Blvd
Manufacturer's Address2: Baltimore, MD 21221
Manufacturer's Country:
General Information Telephone: 631-236-9691
Emergency Telephone: 1-800-424-9300
Proprietary: Y
CAGE: 6GW56

==========

Section 2 - Compositon/Information on Ingredients

==========

Name: SULFURIC ACID SOLUTION
Fraction by Wt: 85%
OSHA PEL: 0.5 MG/M3
ACGIH TLV: 0.5 MG
EPA Rpt Qty:5000 LBS
DOT Rpt Qty:5000 LBS

Ingred Name:CUPRIC SULFATE (SARA III)
CAS:7758-98-7
Fraction by Wt: 3%
OSHA PEL: 4 MG/M3
ACGIH TLV:4 MG/CUM
EPA Rpt Qty:5000 LBS
DOT Rpt Qty:5000 LBS

Name: Proprietary 3%
Other REC Limits: NA
OSHA PEL: NA
ACGIH TLV: NA
ACGIH STEL: NA

Name: WATER Balance
Other REC Limits: NA
OSHA PEL: NA
ACGIH TLV: NA
ACGIH STEL: NA

Section 3 - Hazards Identification, Including Emergency Overview

Health Hazards Acute & Chronic: MAY BE FATAL IF SWALLOWED.MAY CAUSE PERMANENT EYE INJURY (CORNEAL DAMAGE/DESTRUCTION).MAY CAUSE ECZEMATOUS DERMATITIS.CHRONIC EXPOS:EROSION OF TEETH,JAW NECROSIS,CHRONIC COUGH,BRONCHIAL IRRIT/PNEUMONI A,GI DISTURB,PAINLESS ULCERATION,BLEEDING,NASAL SEPTUM PERFORATION,CONJUNCT,LACRIMATION,ACUTE HEPATITIS WITH JAUNDICE.

Signs & Symptoms of Overexposure:
EYES:PAIN,TEARING,PHOTOPHOBIA,CONJUNCTIVAL EDEMA,CORNEAL DMG.SKIN:SEV PAIN.BROWNISH/YELLOWISH STAINS,BURNS,EDEMA,ULCERATIONS THAT HEAL SLOWLY WITH SCARRING.INGESTION:SEVERE BURNING PAIN IN MOUTH,PHARY NX,ABDOM;VOMIT/DIARRHEA OF DARK,PRECIPITATED BLOOD,FOLLOWED BY ASPHYXIA,DELAYED ESOPHAGEAL/GASTRIC PERFORATION.(SEE SUP)

Carcenogenicity Indicators NTP: NO IARC: NO OSHA: NO
Carcinogenicity Explanation: N/A

Section 4 - First Aid Measures

First Aid: EYES:IMMED FLUSH W/ LOTS H*2O FOR AT LEAST 15 MIN W/ LIDS APART.CALL MD.CONSULT OPHTHALMOLOGIST.SKIN:IMMED FLUSH W/ LOTS H*2O FOR AT LEAST 15 MIN WHILE REMOVING CONTAM CLTHG/SHOES.GET MD.INGEST:DO NOT INDUCE VOMIT.IF CONSCIOUS,IMMED GIVE LOTS H*2O/MILK.IF VOMITING PERSISTENT,GIVE FLUIDS REPEATEDLY.CALL MD.INHAL:MOVE TO FRESH AIR.IF NOT BRTHG,GIVE ARTIF RESP;IF BRTHG DIFFICULT,GIVE WATER;CALL MD.

Section 5 - Fire Fighting Measures

Fire Fighting Procedures: USE NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N).
Unusual Fire or Explosion Hazard: EXCESSIVE HEAT MAY CAUSE CONTRS TO BURST.CONTACT W/ COMMON METALS MAY GENERATE EXPLOSIVE HYDROGEN GAS.HAZARDOUS DECOMPOSITION PRODUCTS:OXYGEN,SO*X,CR*2O*3.
Extinguishing Media: ALL
Flash Point: Flash Point Text: NONE
Autoignition Temperature: NONE

Section 6 - Accidental Release Measures

Spill Release Procedures: CAREFULLY MOP UP OR VACUUM SPILL AND RINSE WATER INTO SUITABLE PLASTIC CONTAINER.SEND TO LOCAL TREATMENT/DISPOSAL FACILITY.FLUSH SPILL AREA WITH PLENTY OF WATER.

Section 7 - Exposure Controls & Personal Protection

Repiratory Protection: NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN (FP N).
Ventilation:
LOCAL AND GENERAL VENTILATION NECESSARY TO KEEP AIR CONCENTRATION BELOW TLV (FP N/ORNL).
Protective Gloves: NEOPRENE VINYL
Eye Protection: CHEM WORK GOGGLES (FP N).FACESHIELD
Other Protective Equipment: IMPERVIOUS BOOTS,APRON. HAVE EYE FOUNTAIN,SAFETY SHOWER,WASHING FACILITIES NEARBY.
Work Practices: WASH THOROUGHLY AFTER HANDLING.
Supplemental Health & Safety Information: EFFECTS OF OVEREXP:CAN CAUSE INTENSE THIRST,SHOCK,OLIGURIA,ANURIA,UREMIA.INHALATION:BRONCHIAL IRRIT,COUGHING,CHOKING,HEADACHE,DIZZ,WEAK,TIGHT CHEST

Section 8 - Physical & Chemical Properties

Boiling Point: Boiling Point : 242F
Melting/Freezing Point: Melting/Freezing: 10F
Specific Gravity: 1:81
pH: 0-1
Evaporation Weight and Reference: >1 (ETHER=1)
Solubility in Water: COMPLETE
Appearance and Odor: PALE COLORED LIQUID WITH NO ODOR.

Section 9 - Stability & Reactivity Data

Stability Indicator: YES
Materials to Avoid: METALS,STRONG BASES,OXIDIZERS,NITRATES,PERMANGANATES,PEROXIDES,ORGANIC COMPOUNDS.THIS IS A POWERFUL ACIDIC OXIDIZER.
Hazardous Decomposition Products: SULFUR &,OXYGEN.
Hazardous Polymerization Indicator: NO

Section 10 - Disposal Considerations

Waste Disposal Methods: DISPOSAL MUST BE IN ACCORDANCE WITH FEDERAL,STATE AND LOCAL REGULATIONS (FP N).SEND TO LOCAL TREATMENT/DISPOSAL PLANT.

Section 11 - MSDS Transport Information

DOT Proper Shipping Name: CORROSIVE LIQUID, ACIDIC
DOT PSN Modifier: INORGANIC, N.O.S.
Hazard Class: 8
UN ID Number: UN3264
DOT Packaging Group: II
Label: CORROSIVE

HAZCOM Label Information

Product Identification: BRIGHT COPPER CATALYST
Manufacturer's Name: P&A SALES
Manufacturer's Address1: 2420 Holly Neck Blvd
Manufacturer's Address2: Baltimore, MD 21221
General Information Telephone: 631-236-9691
Emergency Telephone: 1-800-424-9300

5-17-12

Material Safety Data Sheet

BRIGHT COPPER MAKE UP

========== Product Identification ==========
Product ID:BRIGHT COPPER MAKE UP
MSDS Date:09/12/2010

=== Responsible Party ===
Company Name:P & A SALES
Address:2420 HOLLY NECK BLVD
Box:City:BALTIMORE
State:MD
ZIP:21221
Country:US
Phone: 631-236-9691
Emergency Phone Num:800-424-9300 (CHEMTREC)
CAGE:6GW56

=== Contractor Identification ===
Company Name:P & A SALES
Address:2420 HOLLY NECK BLVD
Box:City:BALTIMORE
State:MD
ZIP:21221
Country:US

========== Composition/Information on Ingredients ==========
Ingred Name:COPPER SULFATE
CAS:7758-99-8
RTECS #:GL8900000
Fraction by Wt: 98%
ACGIH TLV:10 MG/CUM (CU)
EPA Rpt Qty:NA
DOT Rpt Qty:NA

Ingred Name:SULFURIC ACID
CAS:7664-93-9
RTECS #:WS5600000
Fraction by Wt: <1%
ACGIH TLV:0.5 MG/CUM (CU)
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS

Ingredient Name: Proprietary 1%
Ingredient CAS Number: NA
RTECS Number: NA
ACGIH TLV:NA
EPA Rpt Qty:NA
DOT Rpt Qty:NA

========== Hazards Identification ==========
LD50 LC50 Mixture:ORAL LD50(RAT): 300 MG/KG
Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:EYES: IRRITATION OF THE TISSUE. SKIN:

MAY CAUSE MILD IRRITATION. INGESTION: HARMFUL/FATAL,
MAY CAUSE MILD GI IRRITATION. INHALATION: IRRITATION OF THE NOSE &
THROAT. ULCERATION OF THE NASAL SEP TUM. MAY CAUSE SENSITIZATION
REACTIONS IN CERTAIN INDIVIDUALS.
Explanation of Carcinogenicity: NONE
Effects of Overexposure: IRRITATION, METALLIC TASTE, VOMITING.
Medical Cond Aggravated by Exposure: WILSON'S DISEASE.

========== First Aid Measures ==========
First Aid: EYES: FLUSH W/WATER FOR 20 MINS. SKIN: FLUSH W/WATER FOR 20
MINS. INGESTION: IF CONSCIOUS, GIVE LARGE AMOUNTS OF WATER. INDUCE
VOMITING. INHALATION: REMOVE TO FRESH AIR. OBTAIN MEDICAL ATTENTION
IN AL L CASES. OBTAIN MEDICAL ATTENTION IN ALL CASES.

========== Fire Fighting Measures ==========
Extinguishing Media: USE METHODS FOR THE SURROUNDING FIRE.
Fire Fighting Procedures: WEAR FULL PROTECTIVE CLOTHING.
Unusual Fire/Explosion Hazard: MATERIAL WILL NOT BURN. COMBUSTION MAY
PRODUCE IRRITATING COPPER FUMES & TOXIC GASEOUS OXIDES (SULFUR
OXIDES).

========== Accidental Release Measures ==========
Spill Release Procedures: STOP/REDUCE LEAK SAFELY. PREVENT MATERIAL FROM
ENTERING SEWERS & WATERWAYS. PUT MATERIAL IN SUITABLE, COVERED,
LABELLED CONTAINERS. KEEP UNNECCESSARY PERSONNEL AWAY. CLOSE OFF
AREA. WEAR ADEQUATE PERS ONAL PROTECTIVE EQUIPMENT. VENTILATE AREA.

========== Handling and Storage ==========
Handling and Storage Precautions: KEEP CONTAINERS CLOSED & DRY. STORE IN
A COOL, DRY PLACE. STORE IN A SUITABLE LABELED CONTAINER.
Other Precautions: AVOID INHALATION OF DUSTS. USE IN DESIGNATED AREAS
W/ADEQUATE VENTILATION. PRODUCT IS TOXIC TO FISH & MARINE ORGANISMS
WHEN APPLIED TO STREAMS, RIVERS, PONDS/LAKES FOR ALGAE CONTROL.
DON'T CONTAMINATE WATER BY CLEANING EQUIPMENT/DISPOSAL.

========== Exposure Controls/Personal Protection ==========
Respiratory Protection: USE GENERAL MECHANICAL VENTILATION. LOCAL
EXHAUST IS SUGGESTED FOR USE, WHERE POSSIBLE, IN ENCLOSED/CONFINED
SPACES.
Ventilation: GENERAL/LOCAL EXHAUST TO MEET TLV REQUIREMENTS.
Protective Gloves: IMPERVIOUS
Eye Protection: SAFETY GLASSES W/SIDE SHIELDS
Other Protective Equipment: CHEMICAL GOGGLES, COVERALLS, BOOTS,
PROTECTIVE CLOTHING, SAFETY SHOWER & EYE WASH FOUNTAIN.
Work Hygienic Practices: DECONTAMINATE CLOTHING, SHOES & LEATHER GOODS
BEFORE REUSE/DISCARD THEM. USE PROPER HYGIENE PRACTICES WHEN
HANDLING.

========== Physical/Chemical Properties ==========
Melt/Freeze Pt:M.P/F.P Text:1207.4F
Spec Gravity:2.28
pH:4
Solubility in Water:>10%
Appearance and Odor: SOLID BLUE CRYSTALS; ODORLESS

========== Stability and Reactivity Data ==========
Stability Indicator/Materials to Avoid: YES
INCOMPATIBLE W/ACETYLENE, COPPER SALTS, ACETYLIDES, HYDROXYLAMINE, REDUCING AGENTS.
Stability Condition to Avoid: HEAT
Hazardous Decomposition Products: SULFUR OXIDES

========== Disposal Considerations ==========
Waste Disposal Methods:DISPOSE BY SECURE LANDFILL MAY BE ACCEPTABLE, IAW/FEDERAL, STATE & LOCAL REGULATIONS. UN/NA 3077.

========== Transportation Data: ==========
TRANSPORTATION PER MFR'S MSDS: **NOT D.O.T. CONTROLLED MATERIAL**

5-17-12

Material Safety Data Sheet

BRIGHT NICKEL SOLUTION

========== Product Identification ==========

Product ID:BRIGHT NICKEL SOLUTION
MSDS Date:02/01/2011
=== Responsible Party ===
Company Name:P & A SALES
Address:2420 HOLLY NECK BLVD
Box:City:BALTIMORE
State:MD
ZIP:21221
Country:US
Phone:631-236-9691
Emergency Phone Num:800-424-9300 (CHEMTREC)
CAGE:6GW56
=== Contractor Identification ===
Company Name:P & A SALES
Address:2420 HOLLY NECK BLVD
Box:City:BALTIMORE
State:MD
ZIP:21221
Country:US

========== Composition/Information on Ingredients ==========

Ingred Name: NICKEL (II) SULFAMATE
CAS:13770-89-3
RTECS #:QR9275000
Fraction by Wt: 40%
OSHA PEL:5 MG/M3 (MFR)
ACGIH TLV:5 MG/M3 (MFR)

Ingred Name: NICKEL (II) CHLORIDE (1:2)
CAS:7718-54-9
RTECS #:QR6475000
Fraction by Wt: 15%
OSHA PEL:5 MG (NI)/M3
ACGIH TLV:5 MG(NI)/M3

Ingred Name: PROPRIETARY
Fraction by Wt: 2%
OSHA PEL:N/K
ACGIH TLV:N/K

Ingredient Name: DI Water
Fraction by Wt: Balance
Ingredient CAS Number: NA
RTECS Number: NA
RTECS Code: NA

========== Hazards Identification ==========

Routes of Entry: Inhalation:YES Skin:NO Ingestion:NO
Reports of Carcinogenicity: NTP:YES IARC:YES OSHA:NO
Health Hazards Acute and Chronic: THIS SOLUTION IS IRRITATING & HARMFUL WHEN SWALLOWED. IT CAN CAUSE INTESTINAL DISORDER. CONT W/EYES & SKIN CAN CAUSE IRRITATION. IT MAY PRODUCE ALLERGIC SENSITIZATION, INHAL MAY CAUSE IRRITATION OF NASAL CAVITY & PARANASAL SINUSES. ACUTE:EYES:SLIGHTLY IRRITATION SKIN: PROLONGED OR REPEATED CONTACT
Explanation of Carcinogenicity: NICKEL CMPDS:IARC MONO, ON THE EVAL OF CARCIN RISK OF CHEMS TO MAN, VOL 49, PG 257, 1990:GROUP 2B. NTP 6TH
Effects of Overexposure: HEALTH HAZARD: INHALATION:MODERATELY IRRITATION TO NASAL CAVITY. INGEST: CAN CAUSE SLIGHT INTESTINAL DISORDER.

========== First Aid Measures ==========

First Aid: EYE:FLUSH THORO W/ RUNNING WATER FOR @ LEAST 15 MINS, INCLUDING UNDER EYELIDS. CONTACT PHYSICIAN IMMEDIATELY. SKIN:FLUSH AFFECTED AREA W/PLENTY OF WATER. REMOVE CONTAMINATED CLOTHING UNDER SHOWER. INHAL:REMOVE TO FRESH AIR. CONTACT PHYSICIAN IMMEDIATELY. INGEST:GIVE VICTIM 2/3 GLASSES OF WATER TO DRINK. DO NOT INDUCE VOMIT. CONTACT PHYSICIAN IMMEDIATELY.

========== Fire Fighting Measures ==========

Flash Point: NOT FLAMMABLE
Extinguishing Media: MEDIA SUITABLE FOR SURROUNDING FIRE .
Fire Fighting Procedures: USE NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT .

========== Accidental Release Measures ==========

Spill Release Procedures: ABSORB THE SPILL W/ SORBENT SUCH AS FLYASH, CEMENT POWDER, CLAY OR VERMICULITE. GATHER IN A POLYLINED DRUM.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

========== Handling and Storage ==========

Handling and Storage Precautions: BEFORE MOVING DRUM, BE SURE CLOSURES ARE SECURELY FASTENED. KEEP AWAY FROM CYANIDES, WATER REACTIVE MATLS, WATER SOURCES & SEWERS.

========== Exposure Controls/Personal Protection ==========

Respiratory Protection: NIOSH/MSHA APPROVED CHEMICAL RESPIRATOR.
Ventilation: LOCAL EXHAUST SHOULD BE USED. MAINTAIN A MINIMUM AIR FLOW OF 100 LPM.
Protective Gloves: RUBBER, NEOPRENE, OR PVC.
Eye Protection: ANSI APPRVD CHEM WORKER GOGGLES .
Other Protective Equipment: NEOPRENE OR PVC APRON, RUBBER BOOTS.
Work Hygienic Practices: KEEP CLOSED AT ALL TIMES WHEN NOT IN USE.
Supplemental Safety and Health
EXPLAN OF CARCIN: ANNUAL RPT ON CARCINOGENS, 1991 ANTIC TO BE CARCINOGEN. HUMAN: LUNGS, NASAL CAVITIES.

========== Physical/Chemical Properties ==========

Boiling Pt:: 222F
Spec Gravity: 1.20
Solubility in Water: COMPLETE
Appearance and Odor: GREEN LIQUID WITH VERY SLIGHT ODOR

========== Stability and Reactivity Data ==========

Stability Indicator/Materials to Avoid: YES CYANIDES, WATER REACTIVE MATERIALS.
Stability Condition to Avoid: EXCESS HEAT.
Hazardous Decomposition Products: THERMAL DECOMPOSTION WILL FORM OXIDES OF NICKEL AND SULFUR.

========== Disposal Considerations ==========

Waste Disposal Methods: FOLLOW FEDERAL, STATE AND LOCAL REGULATIONS FOR DISPOSAL.

========== Transportation Data: ==========
TRANSPORTATION PER MFR'S MSDS:

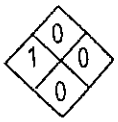
NOT D.O.T. CONTROLLED MATERIAL NICKEL PLATING SOLUTION, NOI

========== HAZCOM Label Information ==========
Product Identification: BRIGHT NICKEL SOLUTION
Company Name: P & A SALES
Emergency Phone Num: 800-424-9300 (CHEMTREC)

3-28-12
4-3-14

STANDARD ABRASIVES

MATERIAL SAFETY DATA SHEET



SECTION I – NAME AND PRODUCT			
MANUFACTURER'S NAME:	Standard Abrasives		
STREET ADDRESS, CITY, STATE, AND ZIP:	4201 Guardian Street, Simi Valley, CA 93063-3372		
EMERGENCY TELEPHONE NUMBER:	(805) 520-5800	CONTACT: Matt King	DATE: 01/01/07
TRADE NAME, COMMON NAME, OR SPECIFICATION:	BriteRite® Surface Conditioning Products		
CHEMICAL FAMILY OR PRODUCT TYPE:	RC and FE Surface Conditioning Belts; Buff & Blend® Discs and Rolls; RC, GP & FE Surface Conditioning Discs; Surface Conditioning Flap Discs; Surface Conditioning BriteBands, BriteStrip, and BriteStrip Plus; Hand Pads, Buff & Blend Specialties, Convolute Wheels, Buff & Blend Wheels, Unitized Wheels and Discs, Mounted Points, Flap Brushes and Combi Wheels.		

SECTION II – COMPOSITION

CHEMICAL NAME	%	REG* Y/N	CAS NO.	OSHA EXPOSURE LIMIT	ACGIH TLV	CARCINOGEN Y/N
Aluminum Oxide, Non-Fibrous	0-75	Y	1344.28.1**	15mg/m^3	10mg/m^3	N
Silicon Carbide	0-75	Y	409.21.2	15mg/m^3	10mg/m^3	N
Nylon Fibers	5-30	N	--	15mg/m^3	10mg/m^3	N
Cured Adhesive Resins	10-50	N	--	15mg/m^3	10mg/m^3	N

* Materials are regulated by OSHA 29CFR1910.1200, Hazard Communication Standard.

Note: Standard Abrasives regards these products as "articles" as defined in the Federal Occupational Safety and Health Administration Hazard Communication Standard, 29CFR1910.1200. The use of approved respirators, ventilation equipment, face and hand protection is recommended for the safe use of these products.

Definition of "Article" per 29CFR1910.1200 7/1/88 edition: "Article" means manufactured item: (i) Which is formed to a specific shape or design during manufacture; (ii) Which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) Which does not release, or otherwise result in exposure to a hazardous chemical, under normal conditions of use.

** The EPA has designated that non-fibrous forms of aluminum oxide are not a toxic chemical under Section 313 of SARA.

SECTION III – PHYSICAL AND CHEMICAL DATA

BOILING POINT:	N/A	MELTING POINT:	N/A	SPECIFIC GRAVITY:	N/A
VAPOR PRESSURE:	N/A	PERCENT VOLATILE BY VOLUME:	N/A	VAPOR DENSITY:	N/A
EVAPORATION RATE:	N/A	SOLUBILITY IN WATER:	N/A	SOLUBILITY IN ALCOHOL:	N/A
SOLUBILITY IN OTHER SOLVENT:	N/A	APPEARANCE/ODOR: Disc, roll or wheel impregnated with abrasive material.			

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:	N/A		METHOD USED:	N/A
FLAMMABLE LIMITS:	LEL:	N/A	UEL:	N/A
EXTINGUISHING MEDIA:	N/A			
SPECIAL FIRE FIGHTING PROCEDURES:	Backings and resin binder will burn or decompose, use respiratory protection.			
EXPLOSION POTENTIAL:	N/A			

SECTION V – HEALTH, FIRST AID, AND MEDICAL DATA

PRIMARY ROUTE(S) OF ENTRY	ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE	FIRST AID AND MEDICAL INFORMATION
INHALATION (DURING USE)	Acute: May cause coughing (dust), shortness of breath. Chronic: May affect breathing capacity.	Remove to fresh air. Apply artificial respiration as needed. Obtain first aid or medial assistance, if needed.
INGESTION	(Dust) No known adverse effects, but ingestion not recommended.	Obtain first aid or medical assistance, if needed.
SKIN CONTACT & ABSORPTION	Not absorbed through skin. May cause abrasions.	Obtain first aid or medical assistance, if needed.
EYE	Dust may irritate eyes.	Wash with large amount of water. Obtain medical assistance, if needed.
OTHER POTENTIAL HEALTH RISKS	During use on some materials, elevated sound levels may be created which affect hearing.	Obtain medical assistance, if needed.

SECTION VI – CORROSIVITY AND REACTIVITY DATA

STABILITY:	■ Stable	☐ Unstable
POLYMERIZATION:	☐ May Occur	■ Will Not Occur
INCOMPATIBILITY (MATERIALS TO AVOID):	Not applicable.	
DECOMPOSITION PRODUCTS:	In-use dust and decomposing resin system fumes are generated. In most cases, the material removed from the work piece will be significantly greater than the coated abrasive product's components.	
CONDITIONS TO BE AVOIDED:	Not applicable.	

SECTION VII – STORAGE, HANDLING AND USE PROCEDURES

NORMAL STORAGE AND HANDLING:	Handle with adequate ventilation. See OSHA 29CFR1910.94, (Ventilation), and OSHA 29CFR1910.1000, (Air Contaminants).
NORMAL USE:	Handle with adequate ventilation. See OSHA 29CFR1910.94, (Ventilation), OSHA 29CFR1910.1000, (Air Contaminants), and OSHA CFR1910.213(P), (Sanding Machines).
STEPS TO BE TAKEN IN CASE OF LEAKS OR SPILLS:	Normal clean up procedures.
WASTE DISPOSAL METHOD:	Standard landfill methods consistent with applicable federal, state, and local laws.

SECTION VIII – PERSONAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE):		As needed, approved dust respirator. See OSHA 24CFR1910.134
VENTILATION:	LOCAL: MECHANICAL: OTHER:	Recommended. Recommended. No applicable information found.
PROTECTIVE GLOVES:		As desired by user.
EYE PROTECTION:		Recommended. See OSHA 29CFR1910.133, (Face & Eye Protection).
OTHER EQUIPMENT:		As needed, hearing protection. See OSHA 29CFR1910.215, (Hearing Protection).
MEASURES TO BE TAKEN DURING REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT THAT HAS BEEN IN CONTACT WITH THIS MATERIAL:		See Sections VI, VII, and VIII.

SECTION IX – SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:	Not applicable.
OTHER PRECAUTIONS:	Not applicable.

The information and recommendations set forth herein are taken from sources believed to be accurate as of the date hereof; however, Standard Abrasives makes no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assumes no liability to any user thereof.

1-7-09
2-11-11
3-28-12
3-26-14

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupation Safety and Health Administration
(Non-Mandatory Form)
Form Approved OMB No. 1218-0072

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available; the space must be marked to indicate that.

IDENTITY
BVK-94 TOTAL WEED KILLER (280300)

Section I

Manufactured for:
Beaver Research Company

Address (Number, Street, City, State, and ZIP Code)
3700 E. Kilgore Road, Portage, MI 49002

Emergency Telephone Number
1-800-255-3924 (Chem-Tel)

Telephone Number For Information
1-800-544-0133

Date Prepared
02/07/03

Signature of Preparer (optional)

NFPA/HMIS RATINGS:
0=Minimal 3=Serious
1=Slight 4=Severe
2=Moderate

Health:	2/2
Flammability	2/2
Reactivity:	0/0
Personal Protection:	B/B

Section II – Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	CAS No.	OSHA PEL (ppm)	ACGIH TLV (ppm)	Carcinogen Ref. Source**	SARA III LIST
Petroleum Distillate	68476-30-2	500	500	d	No
2-Butoxyethanol (glycol ether)	111-76-2	25 (skin)	25 (skin)	d	Yes
2,4-D Isooctyl Ester	1928-43-4	10mg/m3	10mg/m3	e	Yes
5-Bromo-3-Sec-Butyl Methyluracil	314-40-9	10mg/m3	10mg/m3	e	Yes

Section III – Physical/Chemical Characteristics

Boiling Point	Initial 430°F	Specific Gravity (H_2O = 1)	0.90
Vapor Pressure (mm Hg and Temperature)	0.3	Water Reactive	Negligible
Vapor Density (AIR = 1)	Greater than 1	Evaporation Rate (BUAC = 1)	0.07

Solubility in Water
Insoluble

Appearance and Odor
Amber to red fluid with aromatic odor.

Section IV – Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
Approximately 140°F TCC (may vary due to variation in petroleum)		1.0	6.0

Extinguishing Media
Carbon dioxide, sand, dry chemical, water fog

Special Fire Fighting Procedures
Do not enter confined space without full bunker gear including positive pressure NIOSH approved self-contained breathing apparatus. Cool fire exposed containers with water.

Unusual Fire and Explosion Hazards
Oxidation & thermal decomposition can liberate noxious & toxic fumes.

Section V – Reactivity Data

Stability			Conditions to Avoid
	Unstable		N/A
	Stable	X	

Incompatibility (Materials to Avoid)
Strong oxidizing agents.

Hazardous Decomposition or Byproducts
Oxides of carbon & nitrogen, hydrogen chloride, hydrogen bromide, unidentified organics.

Hazardous Polymerization			Conditions to Avoid
	May Occur		Excessive heat, sparks, open flame
	Will Not Occur	X	

Section VI – Health Hazard Data

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	Yes	Yes	No

Health Hazards (Acute and Chronic)

Acute Effects: CNS symptoms: giddiness, headache, dizziness, nausea, unconsciousness.

Inhalation: High vapor or spray mist concentrations may produce nose, throat & respiratory irritation & may cause CNS depression (see symptoms above).

Eye Contact: Liquid is slightly irritating. High vapor concentrations may be irritating.

Skin Contact: Prolonged or repeated contact can result in defatting of skin, irritation and dermatitis.

Ingestion: Not highly toxic but may result in vomiting. Aspiration of vomitus may result in pneumonitis.

Chronic Effects: None known.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	No	No	No

Signs and Symptoms of Exposure

See above "Health Hazards".

Medical Conditions Generally Aggravated by Exposure

Pre-existing eye, skin and respiratory disorders.

Emergency and First Aid Procedure

Eye Contact: Flush with water for 15 minutes while holding lids open. Get medical attention.

Skin Contact: Remove contaminated clothing. Wipe excess from skin. Wash with soap and water. If irritation persists, get medical attention.

Inhalation: Remove to fresh air. If CNS symptoms occur, get medical attention.

Ingestion: **DO NOT INDUCE VOMITING**. Drink 3 to 4 glasses of water. Get immediate medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.

Section VII – Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled

Contain spill. Do not contaminate sewers, ground water or surface waters. Soak up in inert absorbent material & place into properly labeled & sealed non-leaking containers for disposal in authorized manner as hazardous waste.

Waste Disposal Method

Dispose of in accordance with all local, state and federal regulations.

Precautions to be Taken in Handling and Storage

Store in original shipping containers. Keep closed when not in use. Keep away from sources of heat, sparks or open flame.

Other Precautions

KEEP OUT OF REACH OF CHILDREN. Read & follow label directions. Do not cut or weld on full, part full or empty drums because explosive mixtures of air & vapor may be present.

Section VIII – Control Measures

Respiratory Protection (Specify Type)

Avoid prolonged or repeated breathing of vapors or spray mist. Respirator not required with adequate ventilation.

Ventilation				
For large spills, use explosion-proof ventilation to control vapor concentration.	Local Exhaust	Adequate	Special	N/A
	Mechanical (General)	N/A	Other	N/A

Protective Gloves	Eye Protection
Chemical resistant.	Safety glasses or goggles as appropriate.

Other Protective Clothing or Equipment

Eyewash stations & safety showers. Chemical resistant clothing as needed to minimize contact.

Work/Hygienic Practices

Do not eat, drink or smoke in work area. Wash hands after handling. Launder contaminated clothing before reuse.

N/A=Not Applicable

We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind

**Chemical Listed as Carcinogen or Potential Carcinogen. [a] NTP [b] IARC Monograph [c] OSHA [d] Not Listed [e] Animal Data Only

Material Safety Data Sheet

4-3-14

oduct and company identification

t name	Clearedge 6519
#	458315
c MSDS #:	03047 458315-US03
ct use	Metalworking fluid - soluble. For specific application advice see appropriate Technical Data Sheet or consult our company representative.
facturer	Castrol Industrial North America, Inc. 150 W. Warrenville Road Naperville, IL 60563
ier	Castrol Industrial North America, Inc. 150 W. Warrenville Road Naperville, IL 60563 Product Information: +1-877-641-1600
RGENCY SPILL RMATION:	1 (800) 424-9300 CHEMTREC (USA)

Hazards identification

sical state	Liquid.
or	Yellow./Amber.
ergency overview	WARNING ! CAUSES EYE AND SKIN IRRITATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis. In accordance with good industrial hygiene and safety work practices, airborne exposures should be controlled to the lowest extent practicable. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
utes of entry	Dermal contact. Eye contact. Inhalation.
otential health effects	
Eyes	Causes eye irritation.
Skin	Causes skin irritation. Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis.
Inhalation	May cause respiratory tract irritation.
Ingestion	Ingestion may cause gastrointestinal irritation and diarrhea.

See toxicological information (Section 11)

3. Composition/information on ingredients

ngredient name	CAS #	%
Base oil - highly refined	Varies	30 - 35
alcohols, C16-18 and C18-unsatd., ethoxylated	68920-66-1	1 - 5
Amine neutralised phosphoric acid esters	Not available.	1 - 5
Amine neutralized carboxylic acids	Not available.	1 - 5
Triethanolamine	102-71-6	1 - 5

rst aid measures

tact	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
ntact	Immediately wash exposed skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention.
ion	If inhaled, remove to fresh air. Get medical attention if symptoms occur.
on	Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If potentially dangerous quantities of this material have been swallowed, call a physician immediately. Get medical attention if symptoms occur.

ire-fighting measures

point	Closed cup: >100°C (>212°F) [Estimated. Water content interferes with flash point determination.]
xplosion hazards	In a fire or if heated, a pressure increase will occur and the container may burst.
guishing media	
table	Use an extinguishing agent suitable for the surrounding fire.
t suitable	Do not use water jet.
fighting procedures	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
ardous combustion ducts	Combustion products may include the following: phosphorus oxides metal oxide/oxides carbon oxides (CO, CO_2) (carbon monoxide, carbon dioxide) sulfur oxides (SO, SO_2 etc.) nitrogen oxides (NO, NO_2 etc.)
tective clothing (fire)	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Accidental release measures

rsonal precautions	No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. In accordance with good industrial hygiene and safety work practices, airborne exposures should be controlled to the lowest extent practicable. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
nvironmental recautions	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
ethods for cleaning up	
Large spill	Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.
Small spill	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

andling and storage

ng	Put on appropriate personal protective equipment (see Section 8). Workers should wash hands and face before eating, drinking and smoking. Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate.
ge	Store in accordance with local regulations. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.
information	DO NOT ADD NITRITES TO THIS FLUID.

Exposure controls/personal protection

pational exposure limits

edient name	Occupational exposure limits
oil - highly refined	**ACGIH TLV (United States).** TWA: 5 mg/m³ 8 hours. Issued/Revised: 11/2009 Form: Inhalable fraction **NIOSH REL (United States).** TWA: 5 mg/m³ 10 hours. Issued/Revised: 6/1994 Form: Mist STEL: 10 mg/m³ 15 minutes. Issued/Revised: 6/1994 Form: Mist **OSHA PEL (United States).** TWA: 5 mg/m³ 8 hours. Issued/Revised: 6/1993
thanolamine	**ACGIH TLV (United States).** TWA: 5 mg/m³ 8 hours. Issued/Revised: 9/1994

ile specific OELs for certain components may be shown in this section, other components may be present in any mist, vapor or t produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

me states may enforce more stringent exposure limits.

ntrol Measures	Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
giene measures	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.
ersonal protection	
Eyes	Avoid contact with eyes. Safety glasses with side shields or chemical goggles.
Skin and body	Do not get on skin or clothing. Wear suitable protective clothing.
Respiratory	Use adequate ventilation. In accordance with good industrial hygiene and safety work practices, airborne exposures should be controlled to the lowest extent practicable.
Hands	The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

9. Physical and chemical properties

Physical state	Liquid.
Color	Yellow./Amber.
Odor	Mild.
Flash point	Closed cup: >100°C (>212°F) [Estimated. Water content interferes with flash point determination.]
sity	996 kg/m³ (0.996 g/cm³) at 15.6°C
pH	9.4 [Conc. (% w/w): 5%]

soluble in water.

tability and reactivity

y and reactivity	The product is stable.
ility of hazardous ns	Under normal conditions of storage and use, hazardous reactions will not occur.
ions to avoid	Avoid excessive heat.
patibility with s substances	Reactive or incompatible with the following materials: oxidizing materials and acids.
dous decomposition cts	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
rdous polymerization	Under normal conditions of storage and use, hazardous polymerization will not occur.

Toxicological information

sification

uct/ingredient name	IARC	NTP	OSHA
hanolamine	3	-	-

C :
Not classifiable as a human carcinogen.

er Toxicity Data

Reproduction/Developmental: Animal ingestion studies in several species, at high doses, indicate that boric acid and certain inorganic borates can cause reproductive and developmental effects. A human study of occupational exposure to borate dust showed no adverse effect on reproduction.

Target organs due to borates: No target organ has been identified in humans. High Dose animal ingestion studies indicate the testes are the target organ in male animals.

These industrial products are not intended for ingestion.

This product is not considered to pose a reproduction/developmental risk to humans.

This information is provided in keeping with best product stewardship practice and in accordance with hazard communication requirements.

Contains material that may cause target organ damage, based on animal data.
Target Organs: liver and kidneys.

ther information

Alkanolamine: This product contains an alkanolamine. In all metalworking fluids containing amines, there is a potential for forming nitrosamines which are animal carcinogens. Therefore, no nitrites or related nitrosating agents should be added to such compositions.

otential chronic health effects

Carcinogenicity: No known significant effects or critical hazards.

12. Ecological information

Ecotoxicity

No testing has been performed by the manufacturer.

Persistence/degradability: Expected to be biodegradable.

Mobility: Liquid. Soluble in water.

isposal considerations

information

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

E: The generator of waste has the responsibility for proper waste identification (based on characteristic(s) or listing), portation and disposal

Transport information

classified as hazardous for transport (DOT, TDG, IMO/IMDG, IATA/ICAO)

Regulatory information

Federal Regulations

United States inventory (TSCA 8b)

All components are listed or exempted.

SARA 302/304: No products were found.
SARA 311/312 Hazards identification: Immediate (acute) health hazard, Delayed (chronic) health hazard

SARA 313

orm R - Reporting requirements

This product does not contain any hazardous ingredients at or above regulated thresholds.

Supplier notification

This product does not contain any hazardous ingredients at or above regulated thresholds.

CERCLA Sections 102a/103 Hazardous Substances (40 CFR Part 302.4):

CERCLA: Hazardous substances.: Propylene oxide: 100 lbs. (45.4 kg); 1,4-dioxane: 100 lbs. (45.4 kg); Ethylene oxide: 10 lbs. (4.54 kg); Diethanolamine; 2,2'-Iminodiethanol: 100 lbs. (45.4 kg); Amyl acetates: 5000 lbs. (2270 kg); Isoamyl Acetate: 5000 lbs. (2270 kg); Acetophenone: 5000 lbs. (2270 kg);

State regulations

Massachusetts Substances

The following components are listed: TRIETHANOLAMINE

New Jersey Hazardous Substances

The following components are listed: TRIETHANOLAMINE; ETHANOL, 2,2',2"-NITRILOTRIS-

Pennsylvania RTK Hazardous Substances

The following components are listed: ETHANOL, 2,2',2"-NITRILOTRIS-

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer. Diethanolamine; 2,2'-Iminodiethanol; Propylene oxide; 1,4-dioxane

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.
Ethylene oxide

Other regulations

Canada inventory

All components are listed or exempted.

REACH Status

The company, as identified in Section 1, sells this product in the EU in compliance with the current requirements of REACH.

\ustralia inventory (AICS)

All components are listed or exempted.

China inventory (IECSC)

All components are listed or exempted.

ea inventory (KECI)	At least one component is not listed.
lippines inventory CCS)	At least one component is not listed.

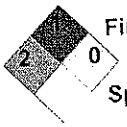
ther information

requirements	WARNING ! CAUSES EYE AND SKIN IRRITATION. MAY CAUSE RESPIRATORY TRACT IRRITATION.

® Rating :

Health	* 2
Flammability	1
Physical Hazard	0
Personal protection	B

National Fire Protection Association (U.S.A.)



ory

of issue	01/03/2014.
of previous issue	12/10/2013.
pared by	Product Stewardship

ndicates information that has changed from previously issued version.

ice to reader

easonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information tained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the curacy or completeness of the data and information in this data sheet.

e data and advice given apply when the product is sold for the stated application or applications. You should not use the product r than for the stated application or applications without seeking advice from BP Group.

s the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP oup shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from y failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for pply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the oduct is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of ny hazards described in this sheet and of any precautions that should be taken. You can contact the BP Group to ensure that this ocument is the most current available. Alteration of this document is strictly prohibited.

4-3-14

Material Safety Data Sheet
Clearslip #2 Silicone Lubricant

Data Prepared: February 15th, 2012

SECTION I: IDENTIFICATION OF THE SUBSTANCE & COMPANY

Product Name: **Clearslip#2 Silicone Lubricant**
Product Code: **CS#2**

Made by: **CLEARCO PRODUCTS CO. INC.,**
3430 G. Progress Drive
Bensalem, PA 19020 U.S.A.

Telephone No: 001 215 639-2640
Fax No: 001 215 639-2919
E-mail: info@clearcoproducts.com
Website: www.clearcoproducts.com

Emergency Telephone: **CHEM TEL: 1-800-255-3924 (DOMESTIC)**
+01-813-248-0585 (INTERNATIONAL)

General Description: Silicone Fluid, Polydimethylsiloxane dispersed in an isoparaffinic solvent
Physical Form: Liquid
Color: Colorless
Odor: Characteristic Odor

HMIS Ratings:
FLAMMABILITY 2 REACTIVITY HEALTH 1

SECTION II HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Potential Health Hazards:

EYE CONTACT: Slightly irritating but does not injure eye tissue.

SKIN CONTACT: Low order of toxicity
Frequent or prolonged contact may irritate and cause dermatitis.
Skin contact may aggravate an existing dermatitis condition.

INHALATION: High vapor/aerosol concentrations are irritating to the eyes and the respiratory tract. May cause headaches, dizziness, anesthesia, drowsiness, unconsciousness, and other central nervous system effects, including death.

INGESTION: Small amounts of this product aspirated into the respiratory system during ingestion or vomiting may cause mild to severe pulmonary injury, possibly progressing to death.
Minimal toxicity.

SECTION III COMPOSITION OF INGREDIENTS

INGREDIENTS COMPONENTS	CAS NUMBER	Percentage
Paraffin solvent	64742-48-9	85 to 95%
Polydimethylsiloxane	63148-62-9	5 to 15%

SECTION IV FIRST AID MEASURES

FIRST AID MEASURES
Medical Conditions Aggravated: Skin contact may aggravate existing dermatitis.

Primary Routes of Entry: Inhalation, Eye, Skin contact & Ingestion

Health Hazards: Health studies have shown petroleum solvents to have variable risks among individuals. Therefore exposure to liquids, vapors, mist and fumes should be minimized.

First aid procedures

Skin contact: Flush with cool water. Wash with soap and water. Obtain medical attention if irritation persists.

Eye contact: Flush with cool water for at least 15 minutes with eyelids open. Remove contact lenses, if applicable, and continue flushing. Obtain medical attention if irritation persists.

Inhalation: Remove to fresh air. Get medical attention if ill effects persist.

Ingestion: Do Not induce vomiting. Contact a physician immediately

Medical Conditions Generally Aggravated by Exposure: Not Determined

SECTION V FIRE FIGHTING MEASURES

Flash Point: (Method Used) Closed Cup 131°F
Flammable Limits: LEL: 0.7 UEL: 5.3 @ 77°F

General Hazard
Combustible liquid can form combustible mixtures at temperatures at or above the flashpoint. Static Discharge, material can accumulated static charges, which can cause an incendiary electrical discharge. "Empty" containers retain product residue (liquid and/or vapor) and can be dangerous. DO NOT Pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Empty Drums should be completely drained, properly bunged, and promptly returned to a drum reconditioner, or properly disposed of.
Fire Fighting
Use water spray to cool fire exposed surfaces and to protect personnel. Isolate "fuel" supply from fire. Use foam, dry chemical or water spray to extinguish fire. Avoid spraying water directly into storage container due to danger of boilover. This liquid is volatile and gives off invisible vapors. Either the liquid or the vapor may settle in low areas or travel some distance along the ground or surface to inanition sources where they may ignite or explode.

Decomposition Products Under Fire Conditions
No Unusual

Special Fire Fighting Procedures: Avoid hard water streams

SECTION VI ACCIDENTAL RELEASE MEASURES

Spill Response: Contain spill immediately - Scoop up excess if possible. Use absorbent clay or sand for remaining material. Ventilate area if indoors.

CERCLA: If this product is accidentally spilled, it is not subject to any special reporting under the requirements of the Comprehensive Response, Compensation, and Liability Act (CERCLA). We recommend you contact local authorities to determine if there may be other local reporting requirements.

SARA TITLE III: Under the provisions of Title III, Sections 311/312 of the Superfund Amendments and Reauthorization Act, this product is classified into the following hazard categories: Delayed Health, Fire.

SECTION VII HANDLING & STORAGE

Use with adequate ventilation. Avoid eye contact.
Use reasonable care and store away from heated surfaces or ignition sources.

Keep container closed. Handle and open containers with care. Store in a cool, well-ventilated place away from incompatible materials. Materials will accumulate static charges, which may cause an electrical spark (ignition source). Use proper bonding and/or grounding procedures. DO NOT pressurize, cut, heat, or weld containers. Empty product containers may contain product residue. DO NOT Reuse empty containers without commercial cleaning or reconditioning.

Other Precautions: Avoid breathing vapors. Avoid prolonged and repeated contact with skin

OSHA HAZARD: COMBUSTIBLE

SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation: Local Exhaust - Preferred with face velocity 60 ppm
Special: Use with adequate ventilation
Other: Avoid sparks or open flames in area of use
Respiratory Protection: Hot vapors in a confined area - wear hydrocarbon vapor canister breathing mask.
Protective Gloves: Use vinyl or rubber gloves when handling product.
Eye Protection: Goggles.
Other Protective Equipment: Normally not needed.
Work Practices and Controls: Normal Precautions.

SECTION IX PHYSICAL & CHEMICAL PROPERTIES

Boiling Point	Initial 350°F
Specific Gravity (H2O=1)	0.76
Vapor Pressure (mm Hg) @ 25°C	33
Vapor Density (Air = 1):	5.4
Evaporation Rate (Butyl Acetate = 1)	<0.1
Melting Point	Less Than 0°F
Solubility in Water % by Wt.	Negligible
Appearance & Odor:	Clear colorless liquid with a mild hydrocarbon odor
Viscosity @ 25°C	1.9cSt

SECTION X STABILITY & REACTIVITY

Stability:	Stable
Conditions to Avoid:	NONE
Hazard Polymerization:	Will Not Occur
Incompatibilities:	Strong Oxidizing Materials
Hazardous Decomposition:	NONE

SECTION XI TOXICOLOGICAL INFORMATION

Special Hazard information on components: No known applicable information.

SECTION XII ECOLOGICAL INFORMATION

Environmental effects	Not available
Aquatic toxicity	Not available
Persistency/degradability	Not available
Bioaccumulation/accumulation	Not available
Partition coefficient	Not available
Mobility in environmental media	Not available
Chemical fate information	Not available

SECTION XIII DISPOSAL CONSIDERATIONS

Waste codes	Not available
Disposal instructions	Review federal, provincial, and local government requirements prior to disposal
Waste from residues/unused products	Not available
Contaminated packaging	Not available

SECTION XIV TRANSPORTATION INFORMATION

DOT:
DOT PROPER SHIPPING NAME: COMBUSTIBLE LIQUID n.o.s. CLASS Comb Liquid, NA1993, III
Note: In containers of 119 gallons capacity or less, this product is not regulated by DOT.

IATA:

IATA Identification Number:	UN 1993
IATA Proper Shipping Name:	Flammable Liquid N.O.S.
IATA Hazard Classification:	3
IATA Identification Number:	UN 1993
IATA Packing Group:	III
Technical Name:	(Naphtha, Solvent)

IMDG:

IMDG Identification Number:	UN 1993
IMDG Proper Shipping Name:	Flammable Liquid N.O.S.
IMDG Hazard Classification:	3
IMDG Identification Number:	UN 1993
IMDG Packing Group:	III
Technical Name:	(Naphtha, Solvent)

SECTION XV REGULATORY INFORMATION

CERCLA: If this product is accidentally spilled, it is not subject to any special reporting under the requirements of the Comprehensive Response, Compensation, and Liability Act (CERCLA). We recommend you contact local authorities to determine if there may be other local reporting requirements.

EPA SARA TITLE III: Under the provisions of Title III, Sections 311/312 of the Superfund Amendments and Reauthorization Act, this product is classified into the following hazard categories: Delayed Health, Fire

SECTION XVI OTHER INFORMATION

Information presented herein has been compiled from information provided to us by our suppliers and other sources considered to be dependable and are accurate and reliable to the best of our knowledge and belief but are not guaranteed to be so. We make no warranty as to the results to be obtained in using any material and since conditions of use are not under our control, we must necessarily disclaim all liability with respect to the use of any material supplied by us.

4-4-14

The Clorox Company
1221 Broadway
Oakland, CA 94612
Tel. (510) 271-7000

Material Safety Data Sheet

Product: CLOROX® BLEACH WIPES

Description: WHITE, NON-WOVEN WIPES MOISTENED WITH A CLEAR, THIN LIQUID WITH A FRUITY, FLORAL BLEACH ODOR

Other Designations	Distributor	Emergency Telephone Nos.
EPA Reg. No. 67619-12-5813	Clorox Sales Company 1221 Broadway Oakland, CA 94612	For Medical Emergencies call: (800) 446-1014 For Transportation Emergencies, call Chemtrec: (800) 424-9300

II Health Hazard Data

Liquid causes moderate eye irritation.

No medical conditions are known to be aggravated by exposure to this product.

FIRST AID:

EYE CONTACT: Rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. If irritation persists, call a doctor.

SKIN CONTACT: Rinse with plenty of water. If irritation persists, call a doctor.

INHALATION: Remove to fresh air. If breathing problems develop, call a doctor.

INGESTION: Drink a glassful of water. Call a doctor or poison control center.

III Hazardous Ingredients

Ingredient	Concentration	Worker Exposure Limit
Sodium hypochlorite CAS # 7681-52-9	0.1 - 1%	Not established.

None of the ingredients in this product are on the IARC, OSHA, or NTP carcinogen lists.

IV Special Protection and Precautions

No special protection or precautions have been identified for using this product under directed consumer use conditions.

The following recommendations are given for production facilities and for other conditions and situations where there is increased potential for accidental, large scale or prolonged exposure.

Hygienic Practices: Wash thoroughly with soap and water after handling. Do not wear product-contaminated clothing for prolonged periods.

Engineering Controls: Use general ventilation to minimize exposure to product vapor.

Personal Protective Equipment: Wear safety glasses. Wear rubber or neoprene gloves if there is the potential for repeated or prolonged skin contact.

V Transportation and Regulatory Data

DOT/IATA/IMDG: Not restricted.

EPA - SARA Title III/CERCLA: This product is regulated under Sections 311/312. This product contains no chemicals regulated under Section 313 and contains sodium hydroxide (CAS # 1310-73-2, <0.2%) and sodium hypochlorite which are regulated under Section 304/CERCLA.

TSCA: All components of this product are either on the TSCA 8(b) inventory or otherwise exempt from listing.

TSCA 12(b): This product is not subject to TSCA 12(b) reporting requirements.

VI Spill Procedures/Waste Disposal

Spill Procedures: Containerize. Wash residual down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material.

Waste Disposal: Dispose of in accordance with all applicable federal, state, and local regulations.

VII Reactivity Data

Stable under normal use and storage conditions.

This product contains a strong oxidizing agent. Reacts with other household chemicals such as toilet bowl cleaners, rust removers, acids, or ammonia-containing products to produce hazardous gases, such as chlorine and other chlorinated compounds.

VIII Fire and Explosion Data

Not flammable or explosive.

IX Physical Data

pH	~12
Specific gravity (liquid)	~1.0
Solubility in water (liquid)	Appreciable

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DATA SUPPLIED IS FOR USE ONLY IN CONNECTION WITH OCCUPATIONAL SAFETY AND HEALTH

DATE PREPARED 6/16/2010

2-24-1
3-29-1
3-28-1
4-3-1

CROBALT®

DIVISION OF ILLINOIS CARBIDE TOOL CO., INC
1322 BELVIDERE STREET
WAUKEGAN, IL 60085
PHONE: 800-323-2414
FAX: 847-249-0693
EMAIL: illinoiscarbide@sbcglobal.net
WEBSITE: www.crobaltusa.com

MATERIAL SAFETY DATA SHEET

I GENERAL INFORMATION

Identity: Cobalt Alloy
Synonyms: Crobalt®™
Family: Inorganic Compounds
(Crobalt®™ a proprietary trademark of Illinois Carbide Tool Company, Inc.)

Date: September 2009
MSDS: #002
Revision: 2

Manufacturer's Name:	Illinois Carbide Tool Company Inc. Crobalt®™ Division
Manufacturer's Address:	1322 Belvidere Street Waukegan, Illinois 60085
Information Telephone Number:	847-244-1118
Prepared by:	Michael Mini
Emergency Telephone Number:	847-244-1118
Fax Telephone Number:	847-249-0693

II INGREDIENTS

Ingredients	CAS #	% wt.		Exposure Limits OSHA PEL mg/M3	ACGIH TLV mg/M3
Iron	1309-37-1	.05-2.5	PEL as Iron Oxide Fume	10	5
Carbon	7440-44-0	1.0-3.0	PEL as Nuisance Dust	15	10
@ Manganese	7439-96-5	1.0-2.5	PEL as Manganese Dust	5(c)	5
			as Manganese Fume	5(c)	1
Phosphorous	7723-14-0	.001-.02	PEL as Nuisance Dust	15	10
Sulfur	7704-34-9	.01-0.08	PEL as Nuisance Dust	15	10
Silicon	7440-21-3	.05-.50	PEL as Nuisance Dust	15	10
@ Chromium	7440-47-3	25.0 -30.0	PEL as Chromium Metal	1	.5
			as Chromium (VI)	.1	.05
@ Nickel	7440-02-0	1. 0-5.0	PEL as Nickel	1	1
Molybdenum	7439-98-7	.01-.25	PEL Insoluble Compounds	15	10
@ Cobalt	7440-48-4	42.0-48.0	PEL as Cobalt Fume & Dust	.1	.05
Tungsten	7440-33-7	14.0 -20.0	PEL as Nuisance Dust	151	10

@ Denotes this product contains a toxic chemical or chemicals subject to the reporting requirements of section 313 of Title III of the Supervened Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

The above chemistries are provided for industrial hygiene and environmental purposes and are not intended to represent product specifications. This information has been complied from data believed to be reliable. Elements such as aluminum, arsenic, boron, calcium, cadmium, copper, lead, tin, titanium and zirconium may be present in trace amounts. Steel products as shipped do not present an exposure hazard.

III PHYSICAL AND CHEMICAL CHARACTERISTICS

Boiling Point:	N/A	Melting Point:	2200-2500 F
Vapor Pressure: (mm Hg)	N/A	Specific Gravity:	(H20=1) 7.5 to 8.5
Vapor Density: (Air=1)	N/A		
Solubility in Water:	Insoluble	Appearance and Odor:	Solid Gray, odorless, metal

IV PHYSICAL AND CHEMICAL HAZARDS

Flash Point:	Not Flammable	LEL: N/A
Extinguishing Media:	N/A	UEL: N/A
Special Fire Fighting Procedures:	N/A	
Unusual Fire and Explosion Hazards:	N/A	

V REACTIVITY DATA

Stability:	Stable	Conditions to avoid: N/A
Incompatibility:	N/A	
Hazardous decomposition or byproducts:	None	
Polymerization:	Will not occur.	

VI HEALTH HAZARD DATA

Routes of Entry:	Inhalation:	Yes
	Skin:	No
	Ingestion:	No
	Eye Contact:	No

Health Hazards:

Iron Oxide

Prolonged or repeated exposures to high concentrations may cause lung changes considered to be a benign pneumoconiosis (siderosis). Inhalation of iron oxide may cause irritation of eyes, nose and throat, and metal fume fever.

Manganese

Exposure may cause irritation of eyes, nose, and throat, metallic taste in mouth and metal fume fever. Advanced exposure symptoms may include weakness, sleepiness, nervousness, lack of coordination, uncontrollable laughter, mental confusion, speech disturbances, and aggressiveness. Manganese may cause bronchitis, pneumonitis and central nervous system disturbances.

Chromium and/or Nickel

Certain forms of chromium and nickel have been associated with cancer of the lungs and nasal passages. Elemental, divalent and trivalent chromium compounds, i.e. as in steel, have not been found to cause cancer in humans. Nickel and chromium have been found to cause adverse skin and respiratory reactions including dermatitis, bronchitis, ulceration and perforation of the nasal septum, coughing, wheezing, and dypsnea. Skin contact generally under high temperature and humidity has been associated with a dermatitis known as "Nickel Itch".

Molybdenum

Slight irritation of eyes, nose and throat. Animal studies suggest the possibility of digestive disturbances such as: colic, diarrhea, weight loss, and the development of pneumoconiosis, anemia and gout.

Cobalt

Mildly irritating to eyes and skin. Inhalation of dust may cause an asthma like disease with cough and dypsnea which may progress to pneumonia with marked fibrosis. Cobalt chromium alloys have been found to induce cancer in animals and are listed by IARC as potential carcinogens.

CARCINOGENIC REFERENCES:
Certain substances in steel products such as arsenic, chromium, nickel and cobalt-chromium alloys have been identified by the International Agency for Research on Cancer (IARC) and/or the National Toxicology Program (NTP) as potential cancer causing agents.

VII PRECAUTIONS FOR SAFE HANDLING AND USE

Product is a solid material as shipped. No potential for spill or leak.

VII CONTROL MEASURES

Ventilation:
If your operation generates particulates when processing this product, local and general ventilation may be necessary to control employee exposures to within applicable limits.

Respiratory protection:
If the exposure limits indicated are exceeded, NIOSH approved respirators for protection against dust and/or fume should be worn in accordance with 29 CFR 1910.134.

Protective equipment:
Appropriate protective equipment should be worn when burning or welding this product. Gloves should be considered when handling material to prevent cuts and skin irritation. Approved eye protection is recommended for operations involving burning, grinding, brazing, welding or machining.

IX NATIONAL FIRE PROTECTION ASSOCIATION RATINGS

Health: 1 Flammability: 0 Reactivity: 0 Special Hazard: N/A

(End of Document)

2-15-11
3-29-12
4-3-14

MATERIAL SAFETY DATA SHEET

SECTION I NAME AND PRODUCT

Supplier: Eagle International
P.O. Box 5639
276 Aviation Dr.
Statesville, NC 28677
Tel: 704-878-9583
Fax: 704-878-9585

TRADE NAME, COMMON NAME OR SPECIFICATION

DIAMOND OR CUBIC BORON NITRIDE GRINDING WHEELS

NFPA HAZARD SIGNAL

Health: 1 Flammability: 0 Reactivity: 0

CHEMICAL FAMILY OR PRODUCT TYPE

ANY GRADE

SECTION II COMPOSITION PER 29CFR 1910.1200 (G) (4)

CHEMICAL NAME	MAX %	COMMON NAME	REG* (Y/N)	CAS #	OSHA PERMISSIVE EXPOSURE LIMIT	ACGIH TLV	CAR OG (Y/N)
Silver****	85	Silver	Y	7440-22-4	.01 mg/m^3	.1mg/m^3	N
Cobalt****	60	Cobalt	Y	7440-48-4	.1mg/m^3	.1mg/m^3	N
Copper****	85	Copper	Y	7440-50-8	1mg/m^3	1mg/m^3	N
Tin	25	Tin	Y	7440-31-5	2mg/m^3	2mg/m^3	N
Graphite	5	Graphite	Y	7782-42-5	15MPPCF	5mg/m^3 (Respirable Dust)	N
Silicon Carbide	73	Crystolon	Y	409-21-2	10 mg/m^3 (Total Dust)	10 mg/m^3 (Total Dust)	N
Nickel****	82	Nickel	Y	7440-02-0	1mg/m^3	1mg/m^3	Y
Phosphorus****	1	Phosphorus	Y	7723-14-0	0.1mg/m^3	0.1mg/m^3	N
Manganese	3	Manganese	Y	7439-96-5	5mg/m^3	5mg/m^3	N
Molybdenum	1	Molybdenum	Y	7439-98-7	15mg/m^3	10mg/m^3	N
Silicon Powder	5	Silicon Powder	Y	7440-21-3	**NAIF	10mg/m^3	N
Silicon Powder	<1	Crystalline Silica	Y	14808-60-7	0.1mg/m^3	0.1mg/m^3	Y

*Materials are regulated by OSHA 29 CFR 1910.1200, Hazard Communication Standard, and/or the Massachusetts General Law Chapter 111F, Right to Know Regulations. *Listed by NTP as a Carcinogen. Other studies are not in agreement with IRAC that nickel is a probably human carcinogen.

SECTION III PHYSICAL AND CHEMICAL DATA

Boiling Point **NAIF	Melting Point >220^{0}C	Specific Gravity 2-4
Vapor Pressure **NAIF	Percent Volatile by VOL **NAIF	Vapor Density **NAIF
Evaporation Rate **NAIF	Solubility in Water Slight	Solubility in Alcohol **NAIF
Solubility in other solvent: **NAIF	Appearance and Odor Solid Product: may give off odor in use	

SECTION IV SPECIAL PRECAUTIONS

Precautions to be taken in handling and storage: None
Other precautions: **NAIF

SECTION V CORROSIVITY AND REACTIVITY DATA

Stability: Stable

Polymerization: Will not occur

Incompatibility (materials to avoid): **NAIF

Decomposition Products: In use, dust and decomposing odors are generated. In most cases, the material removed from the workpiece will be significantly greater than the grinding wheel components. Coolants may produce other decomposition products.

Conditions to be avoided: **NAIF

SECTION VI HEALTH, FIRST AID AND MEDICAL DATA

Primary Routes of Entry	**Acute and Chronic Health Effects and Effect of Overexposure**	**First Aid and Medical Information**
Inhalation (during grinding)	Acute: coughing, shortness of breath Chronic: may effect breathing capacity	Remove to fresh air Artificial respirations as needed Obtain medical assistance
Ingestion (during grinding)	No known adverse effects, but ingestion not recommended	Obtain medical assistance
Skin (during grinding) Contact and Absorption	Some may experience skin irritation form dust	Wash affected areas with soap and water. Obtain medical assistance
Eye (during grinding)	Dusts may irritate eyes	Wash with large amounts of water. Obtain first aid and medical assistance, if needed
Other potential health risks (during grinding)	Grinding may create elevated sound levels which may affect hearing and may aggravate preexisting respiratory conditions	Obtain medical assistance. There is limited information that crystalline silica is a carcinogen

SECTION VII STORAGE, HANDLING AND USE PROCEDURES

Normal storage and handling: see ANSI Standard B7.1

Normal use: Handle with adequate ventilation. See OSHA 29CFR 1910.94 (ventilation) and 29CFR1910.1000 (air contaminants)

Steps to be taken in case of leaks or spills: normal cleanup procedures

Waste disposal methods: Standard landfill methods consistent with applicable federal, state, and local laws.

SECTION VIII PERSONAL PROTECTION INFORMATION

Respiratory protection (specify type) as needed. For approved dust respirators, see OSHA 29CFR 1910.134

Ventilation	Local	Recommended
	Mechanical (general)	Recommended
	Other	**NAIF
Protective gloves		As desired by user
Eye protection		Recommended - see OSHA 29CFR 1910.133
Other equipment		As needed hearing protection. See OSHA 29CFR 1910.95 (hearing protection)

Measures to be taken during repair and maintenance of contaminated equipment that has been in contact with this material.

See Section VII & VIII

SECTION VIX FIRE AND EXPLOSION HAZARD DATA

Flash Point: **NAIF	Method used: ***N/A	Flammable limits: LEL: N/A UEL ***N/A
Extinguishing media	Use water	
Special fire fighting procedures		None
Explosion potential		**NAIF

For Company Use

The information and recommendations set forth herein are taken from sources believed to be accurate as of the date hereof; however, Company makes no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assumes no liability any user thereof.

4-3-14

DARACLEAN®

MATERIAL SAFETY DATA SHEET

Daraclean 282 GF

1. **IDENTIFICATION**

Company:	MAGNAFLUX
Address:	3624 West Lake Avenue, Glenview, Illinois 60025
Telephone No.:	(847) 657-5300 (Off-Hour Emergency Number - CHEMTREC - 1-800-424-9300).
Product Use:	Aqueous alkaline cleaner
Packages:	5 gallon pail, 55 gallon drum
NFPA Rating:	Health 2, Flammability 0, Reactivity 0
PIN:	None
Revision Date:	May 22, 2012

2. **INGREDIENTS**

	CAS Number	% by Weight	OSHA PEL*	ACGIH TLV**
Hazardous Ingredients				
Potassium Hydroxide	1310-58-3	1 – 5	Not available	Not available

This product contains no hazardous chemical substances at 1.0% or more listed in 29 CFR 1910 Subpart Z, or ACGIH Threshold limit Values. Also this product contains no carcinogens at 0.1% or more listed in NTP Annual Report on Carcinogens, IARC Monographs, or 29 CFR 1910 Subpart Z.

3. **HAZARDS IDENTIFICATION**

EMERGENCY OVERVIEW

Bland, nonflammable, thin liquid which may irritate the skin and eyes.

Signs & Symptoms of Acute Exposure

Inhalation:	Irritation may occur if material becomes airborne.
Eyes:	Irritation upon direct contact.
Skin:	Irritation upon direct contact.
Ingestion:	None known.

4. **FIRST AID**

Skin Contact:	Wash off with soap and water. Use soothing lotion.
Eyes:	Rinse carefully under upper and lower eyelids using plenty of water.
Inhalation:	Remove to fresh air.
Ingestion:	If conscious, dilute by giving 2 glasses of water. Call physician or local poison control center immediately.

NOTE: In all severe cases, contact physician immediately. Local telephone operators can furnish number of regional poison control center.

5. **FIRE HAZARD**

Conditions of flammability:	None
Flash point:	None to boiling
Flammable limits in air:	None
Extinguishing media:	Carbon Dioxide, dry chemical, foam. Avoid water if possible. *Special fire fighting procedures:* None
Hazardous combustion products:	Combustion will result in the release of the usual decomposition products including oxides of carbon and nitrogen.
Unusual fire hazards:	None

6. **ACCIDENTAL RELEASE MEASURES**

For Small Spills:	Wipe up, or absorb with sand or other absorbent material. Collect waste in sealed containers.
For Large Spills:	Dike area to prevent spreading. Shovel or pump to drum or salvage tank. Absorb residual material with sand, or other absorbent material. Wash area with soapy water and rinse. Area will be slippery until cleaned.

Dispose of all product wastes and water rinses in accordance with current local, state, and Federal regulations.

7. **HANDLING AND STORAGE**

-Does not normally become airborne; in operations where it does, if general ventilation or local exhaust is inadequate, persons exposed to mists should wear approved breathing devices.
-Wear neoprene gloves if direct contact likely; wear eye protection.
-Store product at 40-100°F in a well-ventilated area.
-Do not mix with nitrites or nitrite containing compounds (49 FR 24658, 6/14/84).

MAGNAFLUX
A Division of Illinois Tool Works Inc.
3624 WEST LAKE AVENUE ■ GLENVIEW, ILLINOIS 60026
TEL 847.657.5300 ■ FAX 847.657.5388
www.magnaflux.com

8. **EXPOSURE CONTROLS/PERSONAL PROTECTION**

Respiratory protection:	None
Ventilation:	Mechanical (general) sufficient
Protective gloves:	Recommended (rubber)
Eye protection:	Recommended
Work/Hygienic practices:	Avoid breathing spray mist

9. **PHYSICAL PROPERTIES**

Initial boiling point (bulk):	212°F approx	*Vapor pressure:*	18 mmHg @ 20 °C
Percent volatile:	Not Established	*Vapor density:*	None established
Density/sp. gravity:	1.0 appro.	*Evaporation rate:*	1.0 (water = 1.0)
Water solubility:	100%	*Appearance:*	Clear yellow liquid
pH of concentrate:	12.5		

10. **STABILITY AND REACTIVITY**

Stability:	Stable
Incompatibility:	None
Hazardous decomposition products:	None
Reactivity:	None

11. **TOXICOLOGICAL INFORMATION**

Carcinogenicity:	Contains no known or suspected carcinogens listed with OSHA, IARC, NTP, or ACGIH.
Threshold limit value:	Not established.
WHMIS information (Canada):	According to available information, the ingredients have not been found to show reproductive toxicity, teratogenicity, mutagenicity, skin sensitization, or synergistic toxic effects with other materials.

12. **ECOLOGICAL INFORMATION**

No data is available. It dissolves into water and is biodegradable. Its low vapor pressure may exempt it from VOC restrictions.

13. **DISPOSAL**

Dispose according to Federal, State and Local laws and 40 CFR.
All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.

14. **TRANSPORTATION**

U.S. DOT: 49 CFR 172.101 Hazardous Materials Table

	Non-Aerosol
Proper shipping name:	Not regulated
Hazard class or division:	None
Identification No.:	None
Packing Group:	None

15. **REGULATORY INFORMATION**

TSCA:	All ingredients are listed in TSCA inventory.
CERCLA:	Not reportable.
SARA TITLE III, Section 313:	Contains nothing on this list.
California Proposition 65:	Warning: This material may contain trace amounts of chemicals known to the state of California to cause cancer and/or birth defects and/or reproductive harm.
WHMIS Class (Canada):	Class D2B and Class E Corrosive

Note: This MSDS has been prepared to meet WHMIS (Canada) requirements with the exception of using 16 headings.

16. **OTHER INFORMATION**

Revision Statement:	15
Supersedes:	January 25, 2012

MAGNAFLUX
A Division of Illinois Tool Works Inc.
3624 WEST LAKE AVENUE ■ GLENVIEW, ILLINOIS 60026
TEL 8476575300 ■ FAX 8476575388
www.magnaflux.com

2-15-11
3-29-12
4-3-14

MATERIAL SAFETY DATA SHEET

BIRCHWOOD CASEY®
DRI-TOUCH® PLUS IRP3 RUST PREVENTIVE

DATE REVISED: 6/1/10
REVISION MSDS NO. 8105-05

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **DRI-TOUCH® PLUS IRP3 RUST PREVENTIVE**

PRODUCT PART NUMBERS: 810550,810551,810551PLAS, 810558, 810558PLAS, 810558OPEN, 810558FLAM

MANUFACTURED BY: BIRCHWOOD LABORATORIES, INCORPORATED
7900 Fuller Road
Eden Prairie, MN 55344 USA
Product Information Telephone Number: (952) 937-7900 (8:00-4:00pm CST)
Fax Number: (952) 937-7979
www.birchwoodcasey.com

24 HOUR TRANSPORTATION EMERGENCY NUMBER: CHEMTREC 800-424-9300 U.S. & CANADA
703-527-3887 INTERNATIONAL (Collect)

24 HOUR POISON CONTROL EMERGENCY NUMBER: 866-291-7152 U.S. & CANADA

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: **DANGER! Harmful or fatal if swallowed or inhaled.** Irritating to eyes, skin, upper respiratory tract. **Combustible liquid and vapor.** Keep away from sparks and open flames.

APPEARANCE/ODOR: Opaque light brown liquid, kerosene-like odor

EYE CONTACT: Irritation upon direct contact.

SKIN CONTACT: Irritation and possible dermatitis.

INGESTION: Irritation to the gastrointestinal tract. Aspiration of mineral oil into the lungs can cause chemical pneumonia.

INHALATION: Inhalation of high vapor concentrations may cause central nervous system effects, and symptoms such as headache, dizziness, disorientation.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Description	CAS #	Weight %	OSHA PEL* TWA	OSHA PEL STEL/C	ACGIH TLV TWA	ACGIH TLV STEL/C
Severely Hydrotreated Heavy Naphthenic Distillate	64742-47-8/ 64742-53-6/ 64742-52-5	71	NE	NE	NE	NE
Heavy Petroleum Oxygenates, Calcium/ Barium neutralized	61790-48-5/ 165-61789-4	22	NE	NE	NE	NE
Petrolatum	8009-03-8	3	NE	NE	NE	NE
Propylene Glycol Monomethyl Ether	107-98-2	4	100 mg/m$^{3(skin)}$	NE	100 mg/m^3	150 mg/m$^{3\text{-STEL}}$

TWA – Time-weighted Average **STEL** – Short-term exposure limit **C** – Ceiling
(skin) – skin designation means that harmful amounts may be absorbed through the skin
* Certain States enforce PELs that were in place in 1989, but were later removed by the U.S. Supreme Court. Check with your State OSHA to determine which PEL is enforced in your State.
NE = not established **NA** = not applicable **NDA** = no data available

4. FIRST AID MEASURES

EYE CONTACT: Flush immediately with clean water. Continue for at least 15 minutes. Seek medical attention if necessary.

SKIN CONTACT: Remove contaminated clothing to avoid prolonged contact. Wash affected areas with water. Seek medical attention if irritation develops.

INGESTION: Call Poison Control Center immediately. Do not induce vomiting.

INHALATION: Remove from exposure. Seek medical attention if necessary if breathing is difficult.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASHPOINT: 117° F METHOD USED: Closed Cup

FLAMMABLE LIMITS (%): LFL: 1.0 UFL: 6.0

EXTINGUISHING MEDIA: Water spray, carbon dioxide, dry chemical, foam.

FIRE & EXPLOSION HAZARDS: Do not flood with water.

SPECIAL FIRE FIGHTING PROCEDURES: Firefighters should wear approved SCBA and full turn-out gear.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Spilled material may present slipping hazard. Wear recommended protective equipment. Eliminate ignition sources. Ventilate area. Absorb material on dry sorbent. Scoop up for disposal using non-sparking tools only. DO NOT flush to sewers.

Review current local, state and federal laws, codes, statutes, and regulations to determine appropriate agencies to be notified, and the conditions under which they are to be notified. (See Section 13 for waste disposal comments).

7. HANDLING AND STORAGE

HANDLING: Avoid breathing mists or vapor. Avoid eye and skin contact. Prohibit smoking in the area and exclude sources of spark or open flame. Avoid static discharge. Wear protective equipment when handling product. Empty containers may still have product residue and combustible vapors. Keep out of the reach of children.

STORAGE: Store liquid in closed containers. Store in clean, fire-resistant storage area with good ventilation and not subject to high temperatures.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

RESPIRATORY PROTECTION: Use a NIOSH approved respirator (Full or half-face organic vapor/P95 cartridge type) if any of the occupational exposure limits in Section 3 may be exceeded.

EYE PROTECTION: safety glasses with side shields, goggles

PROTECTIVE GLOVES: neoprene or polyvinyl alcohol

BODY PROTECTION: NDA

VENTILATION: Use general/dilution or local exhaust ventilation as needed to ensure that occupational exposure limits are not exceeded.

OTHER PROTECTIVE EQUIPMENT: Eyewash

NOTE: All PPE should be selected on the basis of an exposure assessment performed by a competent person.

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: > 300°F
VAPOR PRESSURE: NDA
VAPOR DENSITY: (Air = 1): >1
SOLUBILITY IN WATER: Immiscible
APPEARANCE: Brown liquid

SPECIFIC GRAVITY: (Water = 1): 0.805
VOLATILE BY VOLUME: > 70%
EVAPORATION RATE: (Ethyl Ether = 1): < 1
pH: NA
ODOR: kerosene-like odor

10. STABILITY AND REACTIVITY

STABILITY: Stable.

CONDITIONS TO AVOID: Avoid high temperatures and ignition sources.

INCOMPATIBILITY (materials to avoid): Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may produce caRB1n monoxide, caRB1n dioxide, sulfur oxides, various hydrocaRB1ns.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

There is no product based toxicological information for this product. Toxicology information is provided based on individual ingredients.

LD_{50s}, oral, rat: 5660 mg/kg (Propylene Glycol Monomethyl Ether)

TARGET ORGANS: Eyes, skin, lungs (irritant), CNS. Prolonged or repeated skin exposure may cause dermatitis.

Medical conditions that may be aggravated by exposure: Pre-existing skin, eye, respiratory, CNS disorders.

Carcinogenicity: IARC: None NTP: None OSHA: None

12. ECOLOGICAL INFORMATION

ECOTOXICITY: NDA

ENVIRONMENTAL FATE: NDA

13. DISPOSAL CONSIDERATIONS

Waste concentrate is assigned the EPA Hazardous Waste Number D001 (Ignitability). Review current local, state and federal laws, codes, statutes and regulations to determine current status and appropriate disposal method for the ingredients listed in Section 2. Any disposal practice must be in compliance with local, state, and federal laws and regulations. Contact the appropriate agency for specific information. Treatment, transport, storage and disposal of hazardous waste must be dealt with by a licensed facility or waste hauler. Note: If incinerated, the resulting ash will contain extractable barium. A waste with extractable barium of 100 ppm or greater is assigned EPA Hazardous Waste Number D005 (Toxicity Characteristic – Barium).

14. TRANSPORT INFORMATION

D.O.T. HAZARDOUS MATERIALS DESCRIPTION AND PROPER SHIPPING NAME:

Flammable Liquid, N.O.S. (Naphtha, Petroleum) 3 / UN1993 / P.G. III Exceptions may apply: 49CFR 173.150

15. REGULATORY INFORMATION

TSCA (TOXIC SUBSTANCES CONTROL ACT): the materials in this product are listed on the TSCA Inventory.

CERCLA (Comprehensive Response compensation and Liability Act, 40 CFR 117, 302: Reportable Quantity - NDA

SARA TITLE III (Superfund Amendments and Authorization Act):

Section 311/312:
Immediate Health Effects: Yes
Delayed Health Effects: No
Fire Hazard: Yes
Sudden Release of Pressure Hazard: No
Reactivity Hazard: No
Section 313 Reportable Ingredients: Propylene Glycol Monomethyl Ether, Barium compounds in heavy petroleum oxygenates (Barium < 1%).

STATE "RIGHT-TO-KNOW": This product may contain components cited on certain state lists. Consult with your individual State regarding this product's components.

16. OTHER INFORMATION

National Fire Protection Association (NFPA): Health: 1 Flammability: 2 Reactivity: 0

The data here is for hazard communication to our employees, our customers and their employees, and authorized regulatory agencies. For the intended purpose, this MSDS (Material Safety data Sheet) may be duplicated or the data transcribed to an alternative form. NOTE: The information contained herein is provided in good faith and is believed to be correct as of the date hereof. However, Birchwood Laboratories, Inc. makes no representation as to the comprehensiveness or accuracy of the information. It is expected that individuals receiving the information will exercise their independent judgment in determining its appropriateness for a particular period. Accordingly, Birchwood Laboratories, Inc. will not be responsible for damages of any kind resulting from the use of or reliance upon such information. NO REPRESENTATIONS, OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER NATURE ARE MADE HEREUNDER TO WHICH THE INFORMATION REFERS. The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment.

FOR ASSISTANCE WITH PLACING ORDERS:

- Product Pricing / Payment Terms
- Shipping and Tracing of Shipments
- Sales Rep Locations

Call our Sales Department (952) 937-7931

Or 1-800-328-6156 or Fax (952) 937-7979

FOR PRODUCT USAGE ASSISTANCE

- Questions on Operation of Products
- Solving Finishing Problems
- Operator Safety and Pollution Control

Call our Customer Service Desk (952) 937-7931

Or 1-800-328-6156 or Fax (952) 937-7979

S-17-12

Material Safety Data Sheet

ELECTROSCRUB

========== Product Identification ==========

Product ID:ELECTROSCRUB
MSDS Date:04/14/2010

=== Responsible Party ===
Company Name:P & A SALES
Address:2420 HOLLY NECK BLVD
Box:City:BALTIMORE
State:MD
ZIP:21221
Country:US
Phone: 631-236-9691
Emergency Phone Num:800-424-9300 (CHEMTREC)
CAGE:6GW56

========== Composition/Information on Ingredients ==========

Ingred Name: SODIUM METABISULFITE
CAS:7681-57-4
RTECS #:UX8225000
Fraction by Wt: 54%
OSHA PEL: NA
ACGIH TLV: NA

Ingred Name:TETRASODIUM SALT; (TETRASODIUM PYROPHOSPHATE)
CAS:7722-88-5
RTECS #:UX7350000
Fraction by Wt: 18%
OSHA PEL:15 MG/M3
ACGIH TLV:15 MG/M3

Ingred Name:SODIUM HYDROXIDE, CAUSTIC SODA, LYE * 96-3 *
CAS:1310-73-2
RTECS #:WB4900000
Fraction by Wt: 17%
Other REC Limits:2MG/M3 CEILING NIOSH
OSHA PEL:2 MG/CUM
ACGIH TLV:2 MG/CUM CEILING

Ingred Name:SILICIC ACID, DISODIUM SALT; (SODIUM SILICATE)
CAS:6834-92-0
RTECS #:VV9275000
Fraction by Wt: 11%
OSHA PEL:15 MG/M3 (MFR)
ACGIH TLV:15 MG/M3 (MFR)

========== Hazards Identification ==========

Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES
Reports of Carcinogenicity: NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:INHALATION: DUST MAY DAMAGE UPPER RESPIRATORY TRACT & LUNG TISSUE WHICH MAY CAUSE CHEMICAL PNEUMONIA DEPENDING UPON SEVERITY OF EXPOSURE. INGESTION: CAN CAUSE SEVERE BURNS TO MOUTH, ESOPHAGUS & STOMAC H. SKIN: SEVERE BURNS. EYES: SEVERE BURNS W/DAMAGE TO EYE & POSSIBLE BLINDNESS.
Explanation of Carcinogenicity: NONE
Effects of Overexposure: BURNS
Medical Cond Aggravated by Exposure: MAY LEAD TO INCREASED SUSCEPTIBILITY TO RESPIRATORY ILLNESS.

========== First Aid Measures ==========

First Aid: INHALATION: REMOVE FROM CONTAMINATED AREA. IF BREATHING HAS STOPPED, RESUSCITATE & ADMINISTER OXYGEN IF AVAILABLE. INGESTION: NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. IF VOMITING OCCURS SPONTANEOUSLY, KEEP AIRWAY CLEAR. IF SWALLOWED DON'T INDUCE VOMITING, GIVE LARGE AMOUNTS OF WATER. SKIN: WASH W/PLENTY OF WATER FOR 15 MINS. EYES: FLUSH W/PLENTY OF WATER FOR 15 MINS. (SEE SUPP)

========== Fire Fighting Measures ==========

Extinguishing Media: WATER FOG/SPRAY, FOAM
Fire Fighting Procedures: WEAR SCUBA & COMPLETE PERSONAL PROTECTIVE EQUIPMENT WHEN POTENTIAL FOR EXPOSURE TO VAPORS/PRODUCTS OF COMBUSTION EXISTS.
Unusual Fire/Explosion Hazard: IN THE PRESENCE OF WATER MATERIAL MAY REACT W/AMPHOTERIC METALS SUCH AS ALUMINUM, ZINC/TIN, GENERATING HYDROGEN GAS WHICH WILL BURN/EXPLODE IF IGNITED.

========== Accidental Release Measures ==========

Spill Release Procedures: AVOID CNTACT W/SKIN, EYES & CLOTHING. WEAR PROTECTIVE EQUIPMENT. SWEEP/SHOVEL INTO CLEAN STEEL DRUM & COVER. FLUSH AREA W/COPIOUS AMOUNTS OF WATER & NEUTRALIZE RESIDUAL TRACES.

========== Handling and Storage ==========

Handling and Storage Precautions: STORE IN A COOL, DRY PLACE. KEEP AWAY FROM ACIDS & ORGANIC COMPOUNDS. LOOSEN COVER CAUTIOUSLY WHEN OPENING. WASH THOROUGHLY AFTER HANDLING.

========== Exposure Controls/Personal Protection ==========

Respiratory Protection: USE NIOSH APPROVED RESPIRATOR WHEN AIR CONCENTRATION IS GREATER THAN THE TLV/PEL. USE CARTRIDGE FILTER FOR CAUSTIC DUST.
Ventilation: LOCAL EXHAUST RECOMMENDED.
Protective Gloves: NEOPRENE, NATURAL RUBBER
Eye Protection: CHEMICAL SAFETY GOGGLES/FACE SHIELD
Other Protective Equipment: CHEMICALLY RESISTANT COVERALLS, HAT & SHOES/BOOTS, EMERGENCY EYE WASH & SAFETY SHOWER.
Work Hygienic Practices: REMOVE/LAUNDER CONTAMINATED CLOTHING/SHOES BEFORE REUSE.
Supplemental Safety and Health: FIRST AID & OBTAIN MEDICAL ATTENTION IN ALL CASES.

========== Physical/Chemical Properties ==========

Solubility in Water: COMPLETE
Appearance and Odor: LIGHT YELLOW POWDER W/ SLIGHT ODOR

========== Stability and Reactivity Data ==========

Stability Indicator/Materials to Avoid: YES
ACIDS, AMPHOTERIC METALS, ALUMINUM, ZINC, ORGANIC COMPOUNDS
Hazardous Decomposition Products: TRACES OF CARBON & SULFUR OXIDES

========== Disposal Considerations ==========

Waste Disposal Methods: DISPOSE OF LOCAL, STATE & FEDERAL REGULATIONS.

========== Transportation Data: ==========

TRANSPORTATION PER MFR'S MSDS:
NOT D.O.T. CONTROLLED MATERIAL

========== Haz Com Label ==========

Product Name: ELECTROSCRUB
Company Name:P & A SALES
Address:2420 HOLLY NECK BLVD
Box:City:BALTIMORE
State:MD
ZIP:21221
Country:US

5-17-16

Material Safety Data Sheet

ELECTRO-STRIP

==========

MSDS Safety Information

==========

Product ID: ELECTRO-STRIP
MSDS Date: 01/06/2011
Cage: 6GW56
Name: P & A SALES
Address: 2420 HOLLY NECK BLVD
City: BALTIMORE, MD 21221
Info Phone Number: 631-236-9691
Emergency Phone Number: 1-800-424-9300 (CHEMTREC)

==========

Ingredients

==========

Name: SULFURIC ACID
CAS: 7664-93-9
Percent by Wt: 95 %
OSHA PEL: 1 MG/M3
ACGIH TLV: 1 MG/M3
ACGIH STEL: 3 MG/M3
EPA Rpt Qty: 1000 LBS
DOT Rpt Qty: 1000 LBS

Ingred Name:COPPER SULFATE, LIQUID
CAS: 7758-98-7
RTECS #:GL8800000
Percent by Wt: 1%
OSHA PEL: 10 MG/M3
ACGIH TLV: 10 MG/M3
ACGIH STEL: 20 MG/M3
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS

Ingred Name: Proprietary
Percent by Wt: Balance
OSHA PEL: NA
ACGIH TLV: NA
EPA Rpt Qty: NA
DOT Rpt Qty: NA

==========

Health Hazards Data

==========

Route Of Entry - Inhalation: YES Skin: YES Ingestion: YES
Effects of Exposure: TARGET ORGANS: EYES, SKIN, RESPIRATORY SYSTEM, TEETH. EYE CONTACT: "DANGER" CORROSIVE. SKIN CONTACT: "DANGER" CORROSIVE. INHALATION: HARMFUL IF INHALED. INGESTION: HARMFUL IF SWALLOWED. EFFECTS OF OVEREXPOSURE: CAUSES SEVERE EYE AND SKIN IRRITATION OR BURNS. HARMFUL IF SWALLOWED.
First Aid: EYES: IMMEDIATELY FLUSH EYES WITH PLENTY OF CLEAN RUNNING WATER FOR AT LEAST 15 MINUTES, LIFTING THE UPPER AND LOWER LIDS OCCASIONALLY. CALL A PHYSICIAN IMMEDIATELY. EXTERNAL: IN CASE OF CONTACT, IMMEDIATELY FLUSH SKIN WITH PLENTY OF

CLEAN RUNNING WATER FOR AT LEAST 15 MINUTES, WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. IF BURNS OR IRRITATION OCCURS, CALL A PHYSICIAN. INTERNAL: IF SWALLOWED, DO NOT INDUCE VOMITING. IMMEDIATELY DRINK A LARGE QUANTITY OF MILK OR WATER AND CALL A PHYSICIAN. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

==========

Handling and Disposal

==========

Spill Release Procedures: CONTAIN SPILL (UNLESS SMALL SPILL). WEARING RECOMMENDED PROTECTIVE EQUIPMENT, CAREFULLY ADD LIME OR SODIUM CARBONATE TO NEUTRALIZE ACID. PICK UP AND CONTAINERIZE RESIDUES FOR DISPOSAL. FLUSH SPILL ARE A WITH WATER; COLLECT RINSATES FOR DISPOSAL OR SEWER, AS APPROPRIATE. DISPOSE OF NEUTRALIZED ACID IN AN APPROVED LANDFILL IN ACCORDANCE WITH LOCAL AND STATE REGULATIONS.

Neutralizing Agent: LIME OR SODIUM CARBONATE

Waste Disposal Methods: THIS PRODUCT, IF DISPOSED AS SHIPPED, MEETS EPA CRITERIA OF A HAZARDOUS WASTE AS SPECIFIED IN 40 CFR 261 ON THE BASIS OF ITS CORROSIVITY. DISPOSE OF PRODUCT IN A LICENSED HAZARDOUS WASTE DISPOSAL FACILITY IN ACCORDANCE WITH ALL APPLICABLE LAWS. WHEN EMPTY, THOROUGHLY RINSE CONTAINER WITH WATER BEFOR E DISPOSAL OR RETURN TO MANUFACTURER.

Handling And Storage Precautions: STORE IN A COOL, DRY, WELL-VENTILATED AREA. DO NOT ADD (SULFURIC ACID, 68 BE) TO HYPOCHLORITE BLEACHES, CHLORINE SANITIZERS/CHLORINATED CLEANERS AS THIS LIBERATES TOXIC, CORROSIVE CHLORINE GAS. ADD SULFURIC ACID SLOWLY TO COOL WATER WITH ADEQUATE AGITATION TO PREVENT BOILING AND VIOLENT SPATTERING.

Other Precautions: FOR INDUSTRIAL USE ONLY. KEEP OUT OF REACH OF CHILDREN. DO NOT GET PRODUCT IN EYES, ON SKIN OR ON CLOTHING. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. WASH THOROUGHLY AFTER HANDLING.

==========

Fire and Explosion Hazard Information

==========

Extinguishing Media: WATER, FOAM, CARBON DIOXIDE AND DRY CHEMICALS.

Fire Fighting Procedures: WHEN FIRE FIGHTING, WEAR FULL PROTECTIVE EQUIPMENT, INCLUDING SELF- CONTAINED BREATHING APPARATUS.

Unusual Fire/Explosion Hazard: MAY PRODUCE HAZARDOUS FUMES OR HAZARDOUS DECOMPOSITION PRODUCTS. WATER SOLUTIONS ARE CORROSIVE. READILY ATTACKS SOME METALS (I.E. ALUMINUM, MAGNESIUM AND ZINC) TO LIBERATE FLAMMABLE/EXPLOSIVE HYDROGEN GAS. DILUTION WITH WATER LIBERATES LARGE AMOUNTS OF HEAT AND MAY CAUSE VIOLENT BOILING AND SPATTERING.

==========

Control Measures

==========

Respiratory Protection: IF AN OSHA-PEL IS EXCEEDED, THEN A NIOSH-APPROVED RESPIRATOR WITH AN ACID GAS CARTRIDGE OR SUPPLIED AIR IS REQUIRED.

Ventilation: LOCAL EXHAUST; PREFERABLE. MECHANICAL; OK

Protective Gloves: RUBBER OR SYNTHETIC RUBBER

Eye Protection: CHEMICAL GOGGLES AND FULL FACE SHIELD

Other Protective Equipment: RUBBER APRON, RUBBER BOOTS, EYEWASH, SAFETY SHOWER.

Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.

==========

Physical/Chemical Properties

==========

Boiling Point: = 380F

Spec Gravity: 1.835 @ 20C

PH: <0.5

Solubility in Water: COMPLETE

Appearance and Odor: CLEAR, PALE YELLOW LIQUID WITH A SLIGHT ACIDIC ODOR.

==========

Reactivity Data

==========

Stability Indicator: YES
Stability Condition To Avoid: NONE.
Materials To Avoid: CAUSTIC, ALKALI, ORGANIC MATERIALS, ALUMINUM, MAGNESIUM AND ZINC.
Hazardous Decomposition Products: WHEN HEATED TO DECOMPOSITION, IT EMITS TOXIC OXIDES OF SULFUR FUMES.

==========

Transportation Information

==========

Transport Information: DOT, IATA, ICAO, IMO DESCRIPTION:
CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (SULFURIC ACID) HAZARD CLASS: 8. UN 3264.
PACKAGING GROUP II. LABEL REQUIREMENTS: 8, CORROSIVE,
UNIT CONTAINER: 4L HDPE BOTTLE, 5 GAL HDPE PAIL, 55 GAL HDPE DRUM
PACKAGING: MEETS PERFORMANCE ORIENTED PACKAGING REQUIREMENTS.

==========

HAZCOM Label

==========

Product ID: ELECTRO-STRIP
Name: P & A SALES
Address: 2420 HOLLY NECK BLVD
City: BALTIMORE, MD 21221
Info Phone Number: 631-236-9691
Emergency Phone Number: 1-800-424-9300 (CHEMTREC)

4-4-14

ITW Permatex
10 Columbus Blvd.
Hartford, CT 06106 USA
Telephone: 1-87-Permatex
(877) 376-2839
Emergency: 800-255-3924 (ChemTel)
International Emergency: 00+ 1+ 813-248-0585

Material Safety Data Sheet

1. PRODUCT IDENTIFICATION

Product Name: FAST ORANGE SMOOTH LOTION 1 GAL
Item No: 23218
Product Type: Waterless hand cleaner

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	Weight%	ACGIH; TLV-TWA	OSHA PEL
WATER 7732-18-5	>80	Not listed	Not listed
POLYMER EMULSION (PROPRIETARY)	<3	Not listed	Not listed
ETHOXYLATED C11-C16 ALCOHOL 127036-24-2	<3	Not listed	Not listed
D-LIMONENE 5989-27-5	0.1-1.0	Not listed	Not listed

3. HAZARDS IDENTIFICATION

Toxicity: May irritate the eyes. May cause skin sensitization.
Primary Routes of Entry: Eye and skin contact, ingestion, inhalation
Signs and Symptoms of Exposure: None under normal conditons of use.

Component	Weight%	NTP	ACGIH Carcinogens	IARC Carcinogen
D-LIMONENE 5989-27-5	0.1-1.0	male rat-clear evidence; female rat-no evidence; male mice-no evidence; female mice-no evidence		Group 3 Monograph 73, 1999

Aggravated Medical Condition: None known.

4. FIRST AID MEASURES

Ingestion: If swallowed, do not induce vomiting - seek medical advice.
Inhalation: Immediate medical attention is not required.
Skin Contact: Flush with water.
Eye Contact: Flush with water. If eye irritation persists, get medical attention.

5. FIRE FIGHTING MEASURES

Flash Point °F(C°): >200°F
Recommended Extinguishing Media: Water, Carbon dioxide, Dry chemical, Foam
Special Fire-Fighting Procedures: No special procedures.
Hazardous Products of Combustion: None anticipated
Unusual Fire/Explosion Hazards: None.

Lower Explosive Limit: n/d
Upper Explosive Limit: n/d

6. ACCIDENTAL RELEASE MEASURES

Spill Procedures: Rinse away with water or wipe up with a towel.

7. HANDLING AND STORAGE

Storage:	Hand cleaner should be stored at temperatures between 40 degrees F. and 100 degrees F.
Handling:	Follow all general safety precautions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eyes:	Not required.
Skin:	Not required.
Ventilation:	Not required under normal use.
Respiratory Protection:	Not required under normal use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White viscous lotion
Odor:	Orange
Boiling Point:	>200°F
pH:	6.0-8.0
Solubility in Water:	Soluble
Specific Gravity:	0.96
VOC(Wt.%):	<1%
Vapor Pressure:	n/d
Vapor Density (Air=1):	>1
Evaporation Rate:	<1 (butyl acetate = 1)

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable at normal conditions
Hazardous Polymerization:	Will not occur
Incompatabilities:	None known
Conditions to Avoid:	Freezing
Hazardous Products of Combustion:	None anticipated

11. TOXICOLOGICAL INFORMATION

See Section 3

12. ECOLOGICAL INFORMATION

No data available

13. DISPOSAL CONSIDERATIONS

Recommended Method of Disposal: Dispose of uncontaminated material through sewer system with permission of the authority responsible for that system.

US EPA Waste Number: NH - Not a RCRA Hazardous Waste Material

14. TRANSPORTATION INFORMATION

DOT (49CFR 172)

U.S. Department of Transportation - DOT - 49 CFR (Ground)

DOT Shipping Name:	Not regulated
Hazard Class:	None
UN/ID Number:	None

IATA (Air)

Proper Shipping Name:	Not regulated
Class or Division:	None
UN/ID Number:	None

IMDG (Vessel)

Proper Shipping Name:	Not regulated
Hazard Class:	None
UN Number:	None
Marine Pollutant:	None

15. REGULATORY INFORMATION

SARA 313 Chemicals: The following component(s) is listed as a SARA Section 313 Toxic Chemical.

None

California Proposition 65: No California Prop 65 chemicals are known to be present

TSCA Inventory Status: All components of this product are listed (or exempt) on the EPA TSCA inventory.

16. OTHER INFORMATION

Estimated NFPA Rating: HEALTH 1, FLAMMABILITY 1 , REACTIVITY 0.
Estimated HMIS Classification: HEALTH 1, FLAMMABILITY 1, PHYSICAL HAZARD 0
(NFPA is a registered trademark of the National Fire Protection Association)
(HMIS is a registered trademark of the National Paint and Coatings Association)

Prepared By: Denise Boyd, Manager-Environmental, Health & Safety
Company: ITW Permatex 10 Columbus Blvd. Hartford, CT USA 06106
Telephone No.: 1-87-Permatex (877) 376-2839

Revision Date: May 16, 2013
Revision Number: 1

Updated on line 10-18-07
1-7-09
2-11-11
3-28-12
4-4-14

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard 29 CFR 1910.1200. Standard must be consulted for specific requirements

U.S. Department of Labor
Occupation Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

IDENTITY
57 A DEGREASER (210110)

D.O.T. Hazard Class: Combustible liquid (regulated in bulk only)

Section I

Manufacturer's Name
Beaver Research Company

Emergency Telephone Number
1-800-255-3924 (Chem-Tel)

Address (Number, Street, City, State, and ZIP Code)
3700 E. Kilgore Road, Portage, MI 49002

Telephone Number For Information
1-800-544-0133

NFPA 4=Extreme, 3= Serious, 2=Moderate, 1=Slight, 0=Insign.
Toxicity-0 Fire-1
Reactivity-2 Special-0

HMIS Ratings: 4=Extreme, 3=Serious 2=Moderate, 1=Slight, 0=Minimal
Health-1 Flammability-2 Reactivity-0

Date Prepared
12/23/99

Signature of Preparer (optional)

Section II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	CAS No.	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Diethanolamine	111-42-2	N/A	0.46ppm (skin)	NIOSH REL= 3ppm TWA	
(D-60) Solvent Naphtha, Medium Aliphatic	64742-88-7	N/A	N/A	manufacturer recommends 200ppm total hydrocarbon as occupational exposure limit	

This product does not contain any toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR Part 372.

Section III - Physical/Chemical Characteristics

Boiling Point	360°-410°F	Specific Gravity (H2O = 1)	0.79
Vapor Pressure (mm Hg)	30 @ R.T.	% Volatile by Volume	94.5
Vapor Density (AIR = 1)	5.0	Evaporation Rate (Butyl Acetate = 1)	<1

Solubility in Water
Negligible

Appearance and Odor
Dark liquid, mild hydrocarbon odor.

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits Volume % in Air	LEL	UEL
145°F (TCC)		0.9	7.0

Extinguishing Media
CO_2, dry chemical, alcohol foam, water mist (fog).

Special Fire Fighting Procedures
Use SCBA, wear protective equipment.

Unusual Fire and Explosion Hazards
None

Section V - Reactivity Data

Stability	Unstable		Conditions to Avoid	Heat, sparks, open flame.
	Stable	X		

Incompatibility (Materials to Avoid)
Strong oxidizers

Hazardous Decomposition or Byproducts
CO and CO_2

Hazardous Polymerization	May Occur		Conditions to Avoid	None
	Will Not Occur	X		

Section VI - Health Hazard Data

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	Yes	Yes	Yes

Health Hazards (Acute and Chronic)

Dizziness, nausea, headaches, vomiting, dryness of the skin, irritation to the eyes and skin.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
N/A	N/A	N/A	N/A

Signs and Symptoms of Exposure

See Health Hazards above.

Medical Conditions Generally Aggravated by Exposure

N/A

Emergency and First Aid Procedure

Do not induce vomiting, move to fresh air, resusitate if necessary, wash thoroughly, flush eyes for 15 minutes.

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled

Contain spill; provide adequate ventilation; keep people away; extinguish all ignition sources; keep material out of public waters; use dry absorbent on small spills.

Waste Disposal Method

Incinerate according to all federal, state, and local regulations.

Precautions to be Taken in Handling and Storage

Store in dry, cool area; keep containers closed; use adequate ventilation; wash thoroughly after handling; use protective clothing; no ignition sources present.

Other Precautions

Can ignite when ignition source is present.

Section VIII - Control Measures

Respiratory Protection (Specify Type)

NIOSH approved organic vapor cartridge.

Ventilation				
	Local Exhaust	preferred	Special	N/A
	Mechanical(General)	acceptable	Other	N/A

Protective Gloves	Eye Protection
Rubber or neoprene	Safety glasses or goggles

Other Protective Clothing or Equipment

Rubber apron and boots; eye bath, safety shower.

Work/Hygienic Practices

N/A

All information contained in this data sheet is believed to be true and accurate at this time. However, there is no guarantee expresed or implied.
Forms by WindowChem Software (707)864-0845

4-4-14

Safety Data Sheet

Material Name: Gasoline All Grades **SDS No. 9950**
US GHS

Synonyms: Hess Conventional (Oxygenated and Non-oxygenated) Gasoline; Reformulated Gasoline (RFG); Reformulated Gasoline Blendstock for Oxygenate Blending (RBOB); Unleaded Motor or Automotive Gasoline

* * * Section 1 - Product and Company Identification * * *

Manufacturer Information

Hess Corporation
1 Hess Plaza
Woodbridge, NJ 07095-0961

Phone: 732-750-6000 Corporate EHS
Emergency # 800-424-9300 CHEMTREC
www.hess.com (Environment, Health, Safety Internet Website)

* * * Section 2 - Hazards Identification * * *

GHS Classification:

Flammable Liquid - Category 2
Skin Corrosion/Irritation - Category 2
Germ Cell Mutagenicity - Category 1B
Carcinogenicity - Category 1B
Toxic to Reproduction - Category 1A
Specific Target Organ Toxicity (Single Exposure) - Category 3 (respiratory irritation, narcosis)
Specific Target Organ Toxicity (Repeat Exposure) - Category 1 (liver, kidneys, bladder, blood, bone marrow, nervous system)
Aspiration Hazard - Category 1
Hazardous to the Aquatic Environment – Acute Hazard - Category 3

GHS LABEL ELEMENTS

Symbol(s)

Signal Word

DANGER

Hazard Statements

Highly flammable liquid and vapour.
Causes skin irritation.
May cause genetic defects.
May cause cancer.
May damage fertility or the unborn child.
May cause respiratory irritation.
May cause drowsiness or dizziness.
Causes damage to organs (liver, kidneys, bladder, blood, bone marrow, nervous system) through prolonged or repeated exposure.
May be fatal if swallowed and enters airways.
Harmful to aquatic life.

Precautionary Statements

Prevention

Keep away from heat/sparks/open flames/hot surfaces. No smoking
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Wear protective gloves/protective clothing/eye protection/face protection.
Wash hands and forearms thoroughly after handling.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe mist/vapours/spray.
Use only outdoors or in well-ventilated area.
Do not eat, drink or smoke when using this product.
Avoid release to the environment.

Response

In case of fire: Use water spray, fog, dry chemical fire extinguishers or hand held fire extinguisher.
IF ON SKIN (or hair): Wash with plenty of soap and water. Remove/Take off immediately all contaminated clothing and wash before reuse. If skin irritation occurs, get medical advice/attention.
IF exposed or concerned: Get medical advice/attention.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.
Get medical advice/attention if you feel unwell.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do not induce vomiting.

Storage

Store in a well-ventilated place.
Keep cool. Keep container tightly closed.
Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

*** Section 3 - Composition / Information on Ingredients ***

CAS #	Component	Percent
86290-81-5	Gasoline, motor fuel	100
108-88-3	Toluene	1-25
106-97-8	Butane	<10
1330-20-7	Xylenes (o-, m-, p- isomers)	1-15
95-63-6	Benzene, 1,2,4-trimethyl-	<6
64-17-5	Ethyl alcohol	0-10
100-41-4	Ethylbenzene	<3
71-43-2	Benzene	0.1-4.9

110-54-3	Hexane	0.5-4

A complex blend of petroleum-derived normal and branched-chain alkane, cycloalkane, alkene, and aromatic hydrocarbons. May contain antioxidant and multifunctional additives. Non-oxygenated Conventional Gasoline and RBOB do not have oxygenates (Ethanol). Oxygenated Conventional and Reformulated Gasoline will have oxygenates for octane enhancement or as legally required.

*** Section 4 - First Aid Measures ***

First Aid: Eyes

In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention.

First Aid: Skin

Remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or with waterless hand cleanser. Obtain medical attention if irritation or redness develops.

First Aid: Ingestion

DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Monitor for breathing difficulties. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.

First Aid: Inhalation

Remove person to fresh air. If person is not breathing, provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

*** Section 5 - Fire Fighting Measures ***

General Fire Hazards

See Section 9 for Flammability Properties.
Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. Flowing product may be ignited by self-generated static electricity. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

Hazardous Combustion Products

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke). Contact with nitric and sulfuric acids will form nitrocresols that can decompose violently.

Extinguishing Media

SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO2, water spray, fire fighting foam, or gaseous extinguishing agent.
LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

Firefighting foam suitable for polar solvents is recommended for fuel with greater than 10% oxygenate concentration.

Unsuitable Extinguishing Media

None

Fire Fighting Equipment/Instructions

Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other fire fighting equipment. Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing. Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

* * * Section 6 - Accidental Release Measures * * *

Recovery and Neutralization

Carefully contain and stop the source of the spill, if safe to do so.

Materials and Methods for Clean-Up

Take up with sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal. Caution, flammable vapors may accumulate in closed containers.

Emergency Measures

Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas. Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Personal Precautions and Protective Equipment

Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

Environmental Precautions

Protect bodies of water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Prevention of Secondary Hazards

None

* * * Section 7 - Handling and Storage * * *

Handling Procedures

USE ONLY AS A MOTOR FUEL.
DO NOT SIPHON BY MOUTH

Handle as a flammable liquid. Keep away from heat, sparks, and open flame! Electrical equipment should be approved for classified area. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API Publication 2003, "Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents."

Storage Procedures

Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Store in a well-ventilated area. This storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". Avoid storage near incompatible materials. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks".

Incompatibilities

Keep away from strong oxidizers.

* * * Section 8 - Exposure Controls / Personal Protection * * *

Component Exposure Limits

Gasoline, motor fuel (86290-81-5)

ACGIH: 300 ppm TWA
500 ppm STEL

Toluene (108-88-3)

ACGIH: 20 ppm TWA
OSHA: 200 ppm TWA; 375 mg/m3 TWA
150 ppm STEL; 560 mg/m3 STEL
NIOSH: 100 ppm TWA; 375 mg/m3 TWA
150 ppm STEL; 560 mg/m3 STEL

Butane (106-97-8)

ACGIH: 1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4)
OSHA: 800 ppm TWA; 1900 mg/m3 TWA
NIOSH: 800 ppm TWA; 1900 mg/m3 TWA

Xylenes (o-, m-, p- isomers) (1330-20-7)

ACGIH: 100 ppm TWA
150 ppm STEL
OSHA: 100 ppm TWA; 435 mg/m3 TWA
150 ppm STEL; 655 mg/m3 STEL

Benzene, 1,2,4-trimethyl- (95-63-6)

NIOSH: 25 ppm TWA; 125 mg/m3 TWA

Ethyl alcohol (64-17-5)

ACGIH: 1000 ppm STEL
OSHA: 1000 ppm TWA; 1900 mg/m3 TWA
NIOSH: 1000 ppm TWA; 1900 mg/m3 TWA

Ethylbenzene (100-41-4)

ACGIH: 20 ppm TWA
OSHA: 100 ppm TWA; 435 mg/m3 TWA
125 ppm STEL; 545 mg/m3 STEL
NIOSH: 100 ppm TWA; 435 mg/m3 TWA
125 ppm STEL; 545 mg/m3 STEL

Benzene (71-43-2)

ACGIH: 0.5 ppm TWA
2.5 ppm STEL
Skin - potential significant contribution to overall exposure by the cutaneous route
OSHA: 5 ppm STEL (Cancer hazard, Flammable, See 29 CFR 1910.1028, 15 min); 0.5 ppm Action Level; 1 ppm TWA
NIOSH: 0.1 ppm TWA
1 ppm STEL

Hexane (110-54-3)

ACGIH: 50 ppm TWA
Skin - potential significant contribution to overall exposure by the cutaneous route
OSHA: 500 ppm TWA; 1800 mg/m3 TWA
NIOSH: 50 ppm TWA; 180 mg/m3 TWA

Engineering Measures

Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

Personal Protective Equipment: Respiratory

A NIOSH/MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited.

Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.

Personal Protective Equipment: Hands

Gloves constructed of nitrile, neoprene, or PVC are recommended.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes

Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.

Personal Protective Equipment: Skin and Body

Chemical protective clothing such as of E.I. DuPont TyChem®, Saranex® or equivalent recommended based on degree of exposure. Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information.

* * * Section 9 - Physical & Chemical Properties * * *

Appearance:	Translucent, straw-colored or light yellow	**Odor:**	Strong, characteristic aromatic hydrocarbon odor. Sweet-ether like
Physical State:	Liquid	**pH:**	ND
Vapor Pressure:	6.4 - 15 RVP @ 100 °F (38 °C) (275-475 mm Hg @ 68 °F (20 °C)	**Vapor Density:**	AP 3-4
Boiling Point:	85-437 °F (39-200 °C)	**Melting Point:**	ND
Solubility (H2O):	Negligible to Slight	**Specific Gravity:**	0.70-0.78
Evaporation Rate:	10-11	**VOC:**	ND
Percent Volatile:	100%	**Octanol/H2O Coeff.:**	ND
Flash Point:	-45 °F (-43 °C)	**Flash Point Method:**	PMCC
Upper Flammability Limit (UFL):	7.6%	**Lower Flammability Limit (LFL):**	1.4%
Burning Rate:	ND	**Auto Ignition:**	>530°F (>280°C)

* * * Section 10 - Chemical Stability & Reactivity Information * * *

Chemical Stability

This is a stable material.

Hazardous Reaction Potential

Will not occur.

Conditions to Avoid

Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources.

Incompatible Products

Keep away from strong oxidizers.

Hazardous Decomposition Products

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke). Contact with nitric and sulfuric acids will form nitrocresols that can decompose violently.

* * * Section 11 - Toxicological Information * * *

Acute Toxicity

A: General Product Information

Harmful if swallowed.

B: Component Analysis - LD50/LC50

Gasoline, motor fuel (86290-81-5)

Inhalation LC50 Rat >5.2 mg/L 4 h; Oral LD50 Rat 14000 mg/kg; Dermal LD50 Rabbit >2000 mg/kg

Toluene (108-88-3)

Inhalation LC50 Rat 12.5 mg/L 4 h; Inhalation LC50 Rat >26700 ppm 1 h; Oral LD50 Rat 636 mg/kg; Dermal LD50 Rabbit 8390 mg/kg; Dermal LD50 Rat 12124 mg/kg

Butane (106-97-8)

Inhalation LC50 Rat 658 mg/L 4 h

Xylenes (o-, m-, p- isomers) (1330-20-7)
Inhalation LC50 Rat 5000 ppm 4 h; Inhalation LC50 Rat 47635 mg/L 4 h; Oral LD50 Rat 4300 mg/kg; Dermal LD50 Rabbit >1700 mg/kg

Benzene, 1,2,4-trimethyl- (95-63-6)
Inhalation LC50 Rat 18 g/m3 4 h; Oral LD50 Rat 3400 mg/kg; Dermal LD50 Rabbit >3160 mg/kg

Ethyl alcohol (64-17-5)
Oral LD50 Rat 7060 mg/kg; Inhalation LC50 Rat 124.7 mg/L 4 h

Ethylbenzene (100-41-4)
Inhalation LC50 Rat 17.2 mg/L 4 h; Oral LD50 Rat 3500 mg/kg; Dermal LD50 Rabbit 15354 mg/kg

Benzene (71-43-2)
Inhalation LC50 Rat 13050-14380 ppm 4 h; Oral LD50 Rat 1800 mg/kg

Hexane (110-54-3)
Inhalation LC50 Rat 48000 ppm 4 h; Oral LD50 Rat 25 g/kg; Dermal LD50 Rabbit 3000 mg/kg

Potential Health Effects: Skin Corrosion Property/Stimulativeness

Practically non-toxic if absorbed following acute (single) exposure. May cause skin irritation with prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are repeatedly exposed.

Potential Health Effects: Eye Critical Damage/ Stimulativeness

Moderate irritant. Contact with liquid or vapor may cause irritation.

Potential Health Effects: Ingestion

Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

Potential Health Effects: Inhalation

Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

WARNING: the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

Respiratory Organs Sensitization/Skin Sensitization

This product is not reported to have any skin sensitization effects.

Generative Cell Mutagenicity

This product may cause genetic defects.

Carcinogenicity

A: General Product Information

May cause cancer.

IARC has determined that gasoline and gasoline exhaust are possibly carcinogenic in humans. Inhalation exposure to completely vaporized unleaded gasoline caused kidney cancers in male rats and liver tumors in female mice. The U.S. EPA has determined that the male kidney tumors are species-specific and are irrelevant for human health risk assessment. The significance of the tumors seen in female mice is not known. Exposure to light hydrocarbons in the same boiling range as this product has been associated in animal studies with effects to the central and peripheral nervous systems, liver, and kidneys. The significance of these animal models to predict similar human response to gasoline is uncertain.

This product contains benzene. Human health studies indicate that prolonged and/or repeated overexposure to benzene may cause damage to the blood-forming system (particularly bone marrow), and serious blood disorders such as aplastic anemia and leukemia. Benzene is listed as a human carcinogen by the NTP, IARC, OSHA and ACGIH.

B: Component Carcinogenicity

Gasoline, motor fuel (86290-81-5)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

Toluene (108-88-3)

ACGIH: A4 - Not Classifiable as a Human Carcinogen
IARC: Monograph 71 [1999]; Monograph 47 [1989] (Group 3 (not classifiable))

Xylenes (o-, m-, p- isomers) (1330-20-7)

ACGIH: A4 - Not Classifiable as a Human Carcinogen
IARC: Monograph 71 [1999]; Monograph 47 [1989] (Group 3 (not classifiable))

Ethyl alcohol (64-17-5)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans
IARC: Monograph 100E [in preparation] (in alcoholic beverages); Monograph 96 [2010] (in alcoholic beverages) (Group 1 (carcinogenic to humans))

Ethylbenzene (100-41-4)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans
IARC: Monograph 77 [2000] (Group 2B (possibly carcinogenic to humans))

Benzene (71-43-2)

ACGIH: A1 - Confirmed Human Carcinogen
OSHA: 5 ppm STEL (Cancer hazard, Flammable, See 29 CFR 1910.1028, 15 min); 0.5 ppm Action Level; 1 ppm TWA
NIOSH: potential occupational carcinogen
NTP: Known Human Carcinogen (Select Carcinogen)
IARC: Monograph 100F [in preparation]; Supplement 7 [1987]; Monograph 29 [1982] (Group 1 (carcinogenic to humans))

Reproductive Toxicity

This product is suspected of damaging fertility or the unborn child.

Specified Target Organ General Toxicity: Single Exposure

This product may cause drowsiness or dizziness.

Specified Target Organ General Toxicity: Repeated Exposure

This product causes damage to organs through prolonged or repeated exposure.

Aspiration Respiratory Organs Hazard

The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

* * * Section 12 - Ecological Information * * *

Ecotoxicity

A: General Product Information

Very toxic to aquatic life with long lasting effects. Keep out of sewers, drainage areas and waterways. Report spills and releases, as applicable, under Federal and State regulations.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Gasoline, motor fuel (86290-81-5)

Test & Species		Conditions
96 Hr LC50 Alburnus alburnus	119 mg/L [static]	
96 Hr LC50 Cyprinodon variegatus	82 mg/L [static]	
72 Hr EC50 Pseudokirchneriella subcapitata	56 mg/L	
24 Hr EC50 Daphnia magna	170 mg/L	

Toluene (108-88-3)

Test & Species		Conditions
96 Hr LC50 Pimephales promelas	15.22-19.05 mg/L [flow-through]	1 day old
96 Hr LC50 Pimephales promelas	12.6 mg/L [static]	
96 Hr LC50 Oncorhynchus mykiss	5.89-7.81 mg/L [flow-through]	
96 Hr LC50 Oncorhynchus mykiss	14.1-17.16 mg/L [static]	
96 Hr LC50 Oncorhynchus mykiss	5.8 mg/L [semi-static]	
96 Hr LC50 Lepomis macrochirus	11.0-15.0 mg/L [static]	
96 Hr LC50 Oryzias latipes	54 mg/L [static]	
96 Hr LC50 Poecilia reticulata	28.2 mg/L [semi-static]	
96 Hr LC50 Poecilia reticulata	50.87-70.34 mg/L [static]	
96 Hr EC50 Pseudokirchneriella subcapitata	>433 mg/L	
72 Hr EC50 Pseudokirchneriella subcapitata	12.5 mg/L [static]	
48 Hr EC50 Daphnia magna	5.46 - 9.83 mg/L [Static]	
48 Hr EC50 Daphnia magna	11.5 mg/L	

Xylenes (o-, m-, p- isomers) (1330-20-7)

Test & Species		Conditions
96 Hr LC50 Pimephales promelas	13.4 mg/L [flow-through]	

96 Hr LC50 Oncorhynchus mykiss	2.661-4.093 mg/L [static]
96 Hr LC50 Oncorhynchus mykiss	13.5-17.3 mg/L
96 Hr LC50 Lepomis macrochirus	13.1-16.5 mg/L [flow-through]
96 Hr LC50 Lepomis macrochirus	19 mg/L
96 Hr LC50 Lepomis macrochirus	7.711-9.591 mg/L [static]
96 Hr LC50 Pimephales promelas	23.53-29.97 mg/L [static]
96 Hr LC50 Cyprinus carpio	780 mg/L [semi-static]
96 Hr LC50 Cyprinus carpio	>780 mg/L
96 Hr LC50 Poecilia reticulata	30.26-40.75 mg/L [static]
48 Hr EC50 water flea	3.82 mg/L
48 Hr LC50 Gammarus lacustris	0.6 mg/L

Benzene, 1,2,4-trimethyl- (95-63-6)

Test & Species	Conditions
96 Hr LC50 Pimephales promelas	7.19-8.28 mg/L [flow-through]
48 Hr EC50 Daphnia magna	6.14 mg/L

Ethyl alcohol (64-17-5)

Test & Species	Conditions
96 Hr LC50 Oncorhynchus mykiss	12.0 - 16.0 mL/L [static]
96 Hr LC50 Pimephales promelas	>100 mg/L [static]
96 Hr LC50 Pimephales promelas	13400 - 15100 mg/L [flow-through]
48 Hr LC50 Daphnia magna	9268 - 14221 mg/L
24 Hr EC50 Daphnia magna	10800 mg/L
48 Hr EC50 Daphnia magna	2 mg/L [Static]

Ethylbenzene (100-41-4)

Test & Species	Conditions
96 Hr LC50 Oncorhynchus mykiss	11.0-18.0 mg/L [static]
96 Hr LC50 Oncorhynchus mykiss	4.2 mg/L [semi-static]
96 Hr LC50 Pimephales promelas	7.55-11 mg/L [flow-through]
96 Hr LC50 Lepomis macrochirus	32 mg/L [static]
96 Hr LC50 Pimephales promelas	9.1-15.6 mg/L [static]
96 Hr LC50 Poecilia reticulata	9.6 mg/L [static]
72 Hr EC50 Pseudokirchneriella subcapitata	4.6 mg/L
96 Hr EC50 Pseudokirchneriella subcapitata	>438 mg/L
72 Hr EC50 Pseudokirchneriella subcapitata	2.6 - 11.3 mg/L [static]

96 Hr EC50 Pseudokirchneriella subcapitata	1.7 - 7.6 mg/L [static]
48 Hr EC50 Daphnia magna	1.8 - 2.4 mg/L

Benzene (71-43-2)

Test & Species	Conditions
96 Hr LC50 Pimephales promelas	10.7-14.7 mg/L [flow-through]
96 Hr LC50 Oncorhynchus mykiss	5.3 mg/L [flow-through]
96 Hr LC50 Lepomis macrochirus	22.49 mg/L [static]
96 Hr LC50 Poecilia reticulata	28.6 mg/L [static]
96 Hr LC50 Pimephales promelas	22330-41160 µg/L [static]
96 Hr LC50 Lepomis macrochirus	70000-142000 µg/L [static]
72 Hr EC50 Pseudokirchneriella subcapitata	29 mg/L
48 Hr EC50 Daphnia magna	8.76 - 15.6 mg/L [Static]
48 Hr EC50 Daphnia magna	10 mg/L

Hexane (110-54-3)

Test & Species	Conditions
96 Hr LC50 Pimephales promelas	2.1-2.98 mg/L [flow-through]
24 Hr EC50 Daphnia magna	>1000 mg/L

Persistence/Degradability

No information available.

Bioaccumulation

No information available.

Mobility in Soil

No information available.

*** Section 13 - Disposal Considerations ***

Waste Disposal Instructions

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

Disposal of Contaminated Containers or Packaging

Dispose of contents/container in accordance with local/regional/national/international regulations.

* * * Section 14 - Transportation Information * * *

Component Marine Pollutants

This material contains one or more of the following chemicals required by US DOT to be identified as marine pollutants.

Component	CAS #	
Gasoline, motor fuel	86290-81-5	DOT regulated marine pollutant

DOT Information

Shipping Name: Gasoline
UN #: 1203 **Hazard Class:** 3 **Packing Group:** II
Placard:

* * * Section 15 - Regulatory Information * * *

Regulatory Information

A: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Toluene (108-88-3)
SARA 313: 1.0 % de minimis concentration
CERCLA: 1000 lb final RQ; 454 kg final RQ

Xylenes (o-, m-, p- isomers) (1330-20-7)
SARA 313: 1.0 % de minimis concentration
CERCLA: 100 lb final RQ; 45.4 kg final RQ

Benzene, 1,2,4-trimethyl- (95-63-6)
SARA 313: 1.0 % de minimis concentration

Ethylbenzene (100-41-4)
SARA 313: 0.1 % de minimis concentration
CERCLA: 1000 lb final RQ; 454 kg final RQ

Benzene (71-43-2)
SARA 313: 0.1 % de minimis concentration
CERCLA: 10 lb final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule); 4.54 kg final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule)

Hexane (110-54-3)
SARA 313: 1.0 % de minimis concentration
CERCLA: 5000 lb final RQ; 2270 kg final RQ

SARA Section 311/312 – Hazard Classes

Acute Health	Chronic Health	Fire	Sudden Release of Pressure	Reactive
X	X	X	--	--

Component Marine Pollutants

This material contains one or more of the following chemicals required by US DOT to be identified as marine pollutants.

Component	CAS #	
Gasoline, motor fuel	86290-81-5	DOT regulated marine pollutant

State Regulations

Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
Gasoline, motor fuel	86290-81-5	No	No	No	No	Yes	No
Toluene	108-88-3	Yes	Yes	Yes	Yes	Yes	No
Butane	106-97-8	Yes	Yes	Yes	Yes	Yes	No
Xylenes (o-, m-, p- isomers)	1330-20-7	Yes	Yes	Yes	Yes	Yes	No
Benzene, 1,2,4-trimethyl-	95-63-6	No	Yes	Yes	Yes	Yes	No
Ethyl alcohol	64-17-5	Yes	Yes	Yes	Yes	Yes	No
Ethylbenzene	100-41-4	Yes	Yes	Yes	Yes	Yes	No
Benzene	71-43-2	Yes	Yes	Yes	Yes	Yes	No
Hexane	110-54-3	No	Yes	Yes	Yes	Yes	No

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.
WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.

Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Toluene	108-88-3	1 %
Butane	106-97-8	1 %
Benzene, 1,2,4-trimethyl-	95-63-6	0.1 %
Ethyl alcohol	64-17-5	0.1 %
Ethylbenzene	100-41-4	0.1 %
Benzene	71-43-2	0.1 %
Hexane	110-54-3	1 %

Additional Regulatory Information

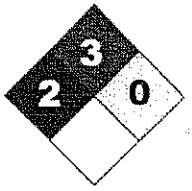
Component Analysis - Inventory

Component	CAS #	TSCA	CAN	EEC
Gasoline, motor fuel	86290-81-5	No	DSL	EINECS
Toluene	108-88-3	Yes	DSL	EINECS
Butane	106-97-8	Yes	DSL	EINECS
Xylenes (o-, m-, p- isomers)	1330-20-7	Yes	DSL	EINECS
Benzene, 1,2,4-trimethyl-	95-63-6	Yes	DSL	EINECS
Ethyl alcohol	64-17-5	Yes	DSL	EINECS
Ethylbenzene	100-41-4	Yes	DSL	EINECS
Benzene	71-43-2	Yes	DSL	EINECS
Hexane	110-54-3	Yes	DSL	EINECS

* * * Section 16 - Other Information * * *

NFPA® Hazard Rating

Health	2
Fire	3
Reactivity	0



HMIS® Hazard Rating

Health	2	Moderate
Fire	3	Serious
Physical	0	Minimal
		*Chronic

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration., NJTSR = New Jersey Trade Secret Registry.

Literature References

None

Other Information

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

End of Sheet

2-16-11
4-11-12

Handy Flux and Handy Flux SLS

Material Safety Data Sheet

1. Product And Company Identification

Suppliers

Lucas Milhaupt, Inc.
5656 South Pennsylvania Avenue
Cudahy, WI 53110 USA

Handy & Harman of Canada, Ltd.
290 Carlingview Drive
Rexdale, ON M9W 5G1 Canada

Suppliers Emergency Contacts & Phone Number

Lucas-Milhaupt, Inc.: 414-769-6000
Handy & Harman of Canada, Ltd.: 416-675-1860

Manufacturer

Lucas-Milhaupt, Inc.
A Handy & Harman Company
5656 South Pennsylvania Avenue
Cudahy, WI 53110 USA
Telephone: 414-769-6000
Fax: 414-769-1093

Manufacturer Emergency Contacts & Phone Number

Chemtrec: 800-424-9300

Issue Date: 06/01/2010
Product Name: Handy Flux and Handy Flux SLS
MSDS Number: 1
Product Codes: 73-100, 73-101, 73-103, 73-104, 73-105, 73-106, 73-107, 73-108, 73-110, 73-111, 73-117, 73-407, 73-408, 82-045, 82-096, and 83-107.

2. Composition/Information On Ingredients

Ingredient Name	CAS Number	%
Boric acid	10043-35-3	15-30
Potassium fluoride	7789-23-3	15-30
Potassium tetraborate tetrahydrate	12045-78-2	15-30

Potassium Tetraborate Tetrahydrate is listed on the USEPA TSCA Inventory and Canadian DSL as its anhydrous form, Potassium Tetraborate, CASRN 1332-77-0.

3. Hazards Identification

Primary Routes(s) Of Entry

Ingestion; inhalation.

Eye Hazards

This product can cause eye irritation, or eye injury upon prolonged contact.

Skin Hazards

This product can produce irritation, particularly on abraded skin. Prolonged exposure may cause dermatitis.

Ingestion Hazards

Some components of this product are potentially toxic if ingested, and may cause one or more of these symptoms and effects: nausea, vomiting, diarrhea, abdominal pain, gastrointestinal irritation, convulsions, tachycardia, cramps, and central nervous system depression.

Inhalation Hazards

Inhalation of the components and decomposition products of this product does not pose a significant risk to health when the product is used in accordance with instructions and appropriate protective measures (see Section #8). The components/decomposition products may cause one or more of the following symptoms and effects if exposure is excessively high and/or prolonged.

Acute exposure: Irritation to the nose, throat, and respiratory tract; cough, nose bleeds, nausea, vomiting, chest tightness, chills, fever, tearing, pneumonitis, and pulmonary edema.

Chronic exposure: Abdominal pain and cramps, liver and kidney damage, impaired pulmonary function, and fluorosis (a disease characterized by mottled teeth, osteosclerosis, and pain and loss of mobility in joints).

4. First Aid Measures

Eye

Flush affected areas with water for at least fifteen minutes. Seek medical assistance if necessary.

Skin

Remove contaminated clothing. Wash affected area with large quantities of water for at least five minutes. Seek medical attention if necessary. Launder or dry-clean clothing before reuse.

Ingestion

If subject is conscious, induce vomiting. Seek immediate medical assistance. Never attempt to give anything by mouth to an unconscious or convulsive person.

Inhalation

If signs and symptoms of toxicity are observed, remove subject from area, administer oxygen, and seek medical attention. Keep the subject warm and at rest. Perform artificial respiration if breathing has stopped.

Note To Physician

Depending upon the dose, the component potassium fluoride may be toxic. Its concentration in the product is <300 gm/kg. Treat fluoride intoxication symptomatically. Intoxication may occur by ingestion and/or inhalation.

No components are absorbed through the skin, although irritation or dermatitis may occur.

5. Fire Fighting Measures

Flash Point: Not Applicable (N/Appl.)
Autoignition Point: N/Appl.
Flammability Class: N/Appl.
Lower Explosive Limit: N/Appl.
Upper Explosive Limit: N/Appl.

Fire And Explosion Hazards

This product is non-flammable and non-explosive. If it is present in a fire or explosion, potential decomposition byproducts may include boron oxide, boron trifluoride, and hydrogen fluoride.

Fire Fighting Instructions

If fighting a fire in which this product is present, wear a self-contained breathing apparatus with full facepiece operated in pressure-demand or other positive pressure mode.

6. Accidental Release Measures

Isolate spilled product and transfer to impervious containers. Avoid contact with skin, eyes, and mucous membranes. Wear appropriate protective equipment (e.g., gloves, chemical goggles) during cleanup and disposal.

7. Handling And Storage

Handling Precautions

Avoid contact with skin and clothing.

Storage Precautions

Store in a cool place away from incompatible materials (see Section #10).

Work/Hygienic Practices

To minimize ingestion, wash hands and face before eating, drinking, applying cosmetics, or using tobacco.

8. Exposure Controls/Personal Protection

Engineering Controls

Use appropriate ventilation (e.g., dilution, local exhaust) adequate to maintain concentrations of all components and their byproducts to within their applicable standards.

Eye/Face Protection

Wear eye protection adequate to prevent eye contact with the product and injury from the hazards of brazing. Plastic-frame spectacles with side

shields and filter lenses (shade #3/#4) are recommended.

Skin Protection

Wear appropriate protective gloves and clothing to prevent skin injuries from the hazards of brazing and/or for prolonged or repeated contact with the product. Avoid flammable fabrics.

Respiratory Protection

If an exposure level exceeds an applicable exposure standard, use a NIOSH-approved respirator having a configuration (type of facepiece, filter media, assigned protection factor, etc.) appropriate to the concentration of the contaminant(s) generated. For guidance on selection and use of respirators, consult American National Standard Z88.2 (ANSI, New York, NY 10036 USA).

Ingredient(s) - Exposure Limits

Boric acid	
ACGIH TLVs: 2 mg/m3 TWA; 6 mg/m3 STEL	No OSHA PEL(s)
Potassium fluoride	
ACGIH TLV: 2.5 mg/m3 TWA (as F-)	OSHA PEL: 2.5 mg/m3 TWA (as F-)
Potassium tetraborate tetrahydrate	
No ACGIH TLV(s)	No OSHA PEL(s)

9. Physical And Chemical Properties

Appearance

Odorless white pastes.

Chemical type: mixture
Physical state: solid
Boiling point: >212F./100C.
Specific gravity: approx. 1.67
pH factor: approx. 8.0
Solubility: soluble

Other commonly-reported physical properties (odor threshold, evaporation rate, vapor pressure, vapor density, freezing point, viscosity, oil-water partition coefficient, percent volatiles, percent VOCs) are not applicable to these products.

10. Stability And Reactivity

Stability: stable
Hazardous Polymerization: will not occur

Conditions To Avoid (Stability)

Some components of the product may decompose at elevated temperatures.

Incompatible Materials

Acetic anhydride; alkali and alkali earth metals; zirconium; platinum; bromine trifluoride.

Hazardous Decomposition Products

Boron oxide, boron trifluoride, and/or hydrogen fluoride.

11. Toxicological Information

Chronic/Carcinogenicity

The product contains no chemicals classified as potential or demonstrated carcinogens by IARC, NTP, or OSHA.

Reproductive Effects

In experimental studies, inorganic borates have been found to cause decreased sperm production and testicular effects in male rats, and developmental effects in fetuses of exposed female mice. No human reproductive effects attributable to borates have been reported.

Mutagenicity (Genetic Effects)

Inorganic fluoride compounds have been demonstrated to induce mutagenic changes in mammalian cell in culture. The significance of these findings to human health risks is unknown.

Conditions Aggravated By Overexposure

Pre-existing pulmonary diseases (e.g., bronchitis, asthma) may be aggravated by inhalation overexposure. Chronic overexposure by ingestion or inhalation may aggravate diseases of the liver, kidneys, and the skeletal, nervous, and gastrointestinal systems.

Ingredient(s) - Toxicological Data

Boric acid	
LD50: 2,660 mg/kg (oral/rat)	LC50: No data available
Potassium fluoride	
LD50: 245 mg/kg (oral/rat)	LC50: No data available
Potassium tetraborate tetrahydrate	
LD50: No data available	LC50: No data available

12. Ecological Information

In their intended manner of use, these products should not be released into the environment, and adverse effects on ecosystems are not anticipated under recommended conditions of use, storage, and disposal.

13. Disposal Considerations

Dispose of unused or unusable product in accordance with applicable Federal, State/Provincial, and local regulations.

14. Transport Information

These products are not Hazardous Substances or Dangerous Goods per USDOT, TDG (Canada), IATA, or IMO regulations.

15. Regulatory Information

TSCA Information

All components of these products are listed in the EPA's TSCA inventory.

SARA Hazard Classes

Acute Health Hazard; Chronic Health Hazard

SARA Section 313 Notification

This product contains no ingredients in concentrations greater than 1% (for carcinogens 0.1%) regulated under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 or 40 CFR 372.

Canadian Regulatory Information

All components of these products are listed on the Domestic Substances List.
WHMIS Class(es) and Division(s): D1B, D2A, D2B
Component(s) on Ingredients Disclosure List:

1. Boric acid (CASRN 10043-35-3)
2. Fluoride compounds, inorganic, n.o.s.

16. Other Information

HMIS Ratings

Health - 3* Flammability - 0 Physical Hazard - 0 PPE - see Note

Note: Lucas-Milhaupt, Inc. and Handy & Harman of Canada, Ltd. recommend use of safety glasses and protective gloves (Personal Protection Index "B") as standard PPE. HMIS recommends that its ratings be used only in conjunction with a fully implemented HMIS program, and that specific PPE codes be created by the user, who is familiar with the actual conditions under which the product is used. We cannot anticipate every condition of the product's use, and it is the user's responsibility to evaluate the hazards pertinent to its specific operations, and to determine the specific PPE required.

NFPA Ratings

Health - 3 Flammability - 0 Reactivity - 0

Revision Information

This MSDS supersedes a previous MSDS dated 07/25/2007.

Disclaimer

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their

particular purpose(s).

Lucas Milhaupt, Inc.

Handy & Harman of Canada, Ltd.

LucasMilhaupt
A Handy & Harman Company
Global Brazing Solutions

Technical Data Sheet

Handy Flux ® B-1

GENERAL DESCRIPTION

Handy Flux B-1 is a boron modified, water based active fluoride/borate-type flux in paste form, which has been specially formulated to give excellent adhesion when dipped or brushed on parts. It is recommended to use with filler metals that flow between 1100°F (600°C) - 1700°F (926°C). The flux provides excellent protection of parts up to 1700°F (926°C).

PRODUCT APPLICATION

Handy Flux B-1 is primarily used as a general purpose brazing flux in brazing applications involving brazing of high chromium stainless steels, tungsten, chromium carbides and molybdenum alloys. It is not recommended to use in aluminum bronze or other aluminum alloy brazing applications. Handy Flux B-1 is suitable for use with most heating methods including torch, induction or furnace. This product exhibits excellent adhesion, less spattering and oxide removal capabilities during brazing process. Handy Flux B-1 may be thinned with water to a smooth uniform consistency for brushing or dipping. The product exhibits excellent shelf life if stored in a dry place between 65°F (18°C) - 75°F (24°C). If stored for a long period of time some separation within the flux may occur. In such case stir the flux up until proper consistency is restored.

POST CLEANING

This product is corrosive and a post braze cleaning or rinsing operation is required. The flux residue is easily dissolved in hot water at temperatures of 120°F (50°C) or higher.

STORAGE & WARRANTY

Lucas-Milhaupt, Inc. warrants the shelf life of their brazing fluxes for a minimum of twelve months from the date of manufacture if stored in the original, unopened container. If opened, storage conditions should be cool 65°F (18°C) - 75°F (24°C), and dry. Flux may require mixing, dilution or warming to regain its normal consistency prior to use. Twelve months should not be taken as a limit on the useful life of the flux unless actual test results indicate unsatisfactory performance for the intended application. Flux beyond the shelf life may be reconstituted to a working consistency by warming in a water bath and or by additions of distilled or deionized warm water.
The flux shall have acceptable fusibility and acceptable application and fluxing characteristics; and shall produce satisfactory brazed joints when used as intended with a silver brazing filler metal. Flux, when placed on a U.S. standard 40 mesh (425 micron) sieve conforming to ASTM E11 and worked lightly with a brush shall pass completely through the sieve. If the flux has partially coagulated in the container, the flux may, before conducting the test, be warmed in a water bath until it has returned to its normal consistency.

SPECIFICATIONS

Handy Flux B-1 conforms to the following specifications:

- American Welding Society (AWS) A5.31 FB3C
- Society of Automotive Engineers (SAE) / AMS 3411

AVAILABLE PACKAGING

Handy Flux B-1 is available in a variety of packaging options including 1/2 lb, 1 lb, 5 lb, 25 lb and 50 lb containers.

WARRANTY CLAUSE

Lucas-Milhaupt, Inc. believes the information contained herein to be reliable. However, the technical information is given by Lucas-Milhaupt, Inc. without charge and the user shall employ such information at its own discretion and risk. Lucas-Milhaupt, Inc. assumes no responsibility for results obtained or damages incurred from the use of such information in whole or in part.

Lucas-Milhaupt, Inc. • 5656 S. Pennsylvania Ave • Cudahy, WI 53110 • Phone: 414.769.6000 • Fax: 414.769.1093 • www.lucasmilhaupt.com

2-15-11
4-11-12

MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF THE PREPARATION AND OF THE COMPANY

PRODUCT

Hard metal blank containing primarily tungsten carbide with cobalt binder

COMPANY

Company: Tigra Hartstoff GmbH
Address: D-86698 Oberndorf
Telephone No: +49 9090 9680 01
Telefax: +49 9090 9680 50
Issued by: Dr. Harald Feld

2. COMPOSITION / INFORMATION OF THE INGREDIENTS

Substance	CAS No	EINECS No	Concentration range (% by weight)	Classification
Cobalt	7440-48-4	231-158-0	3 - 30 %	Xn (Harmful); R42/43
Tungsten carbide	12070-12-1	235 -123-0	> 50 %	-
Chromium carbide	12012-35-0	234-576-1	0 - 6 %	-
Molybdenum carbide	12069-89-5	235-115-7	0 - 6 %	-

3. HAZARDS IDENTIFICATION

Grinding or heating a hard metal blank or a hard metal product will produce dusts or fumes with dangerous ingredients that can be inhaled, swallowed or come in contact with the skin or eyes. The dust is toxic by inhalation. Inhalation may cause irritation and inflammation in the airways. Repeated inhalation of aerosols containing cobalt may cause obstruction in the airways. Long time inhalation of increased concentrations may cause lung fibrosis. Skin contact can cause irritation and rash. Sensitized persons may experience an allergic reaction. Cobalt is a potent skin sensitizer.

4. FIRST AID MEASURES

INHALATION
Remove from exposure.

SKIN CONTACT
Wash with soap and water

EYE CONTACT
If irritation occurs, flush with large amounts of water. If irritation persists, seek medical attention.

INGESTION
If substantial quantities are swallowed, dilute with a large amount of water, induce vomiting and seek medical attention.

5. FIRE-FIGHTING MEASURES

Hard metal blanks or products are no fire hazards. However, dusts produced from grinding may be flammable and may pose a fire hazard if allowed to accumulate. Self-contained breathing apparatus should be used by all fire-fighting personnel. Extinguishing media: Dry chemical, CO_2, foam or water. Prevent the material from entering drain and watercourses.

6. ACCIDENTAL RELEASE MEASURES

Clean up using methods which avoid dust generation. Contain the spill in suitable containers for recovery or disposal. Inform relevant authorities if spillage of hard metal dust has entered watercourse or sewer or has contaminated soil or vegetation.

7. HANDLING AND STORAGE

No special requirements

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ROUTES OF EXPOSURE
Grinding or heating a hard metal blank or a hard metal product will produce dusts or fumes with dangerous ingredients that can be inhaled, swallowed or come in contact with the skin or eyes.

PREVENTIVE MEASURES
Avoid formation and inhalation of dust. Use local exhaust ventilation that is adequate to limit personal exposure well below the nationally authorised limits.

RESPIRATORY PROTECTION
If ventilation is not available or adequate, use respirators nationally approved for the purpose.

EYE PROTECTION
Use safety goggles or glasses with side shields when necessary.

HAND PROTECTION
Avoid repeated skin contact. Wear suitable gloves. Wash skin thoroughly after handling.

SKIN PROTECTION
Use suitable protective clothing. Launder clothing as needed.

PERSONAL HYGIENE
Do not eat, drink or smoke in the working area. Wash skin thoroughly before eating, drinking or smoking.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Solid
Colour:	Varying

10. STABILITY AND REACTIVITY

The product is stabile under normal circumstances. Avoid contact with strong acids.

11. TOXICOLOGICAL INFORMATION

ROUTES OF EXPOSURE
Grinding or heating a hard metal blank or a hard metal product will produce dusts or fumes with dangerous ingredients that can be inhaled, swallowed or come in contact with the skin or eyes.

ACUTE TOXICITY
Inhalation
Inhalation may cause irritation and inflammation in the airways. A significantly higher acute inhalation toxicity has been reported at simultaneous inhalation of cobalt and tungsten carbide compared to inhalation of cobalt alone.
Tungsten carbide and cobalt: LC_{50}, 4h, rat: 0,24 - 0,52 mg/l

Skin contact
Skin contact can cause irritation and rash. Sensitized persons may experience an allergic reaction.

Ingestion
Cobalt: LD_{50} oral, rat: >7000 mg/kg
Tungsten carbide: LD_{50} oral, rat: >2000 mg/kg

Eye contact
Eye contact may cause irritation.

CHRONIC TOXICITY
Inhalation
Repeated inhalation of aerosols containing cobalt may cause obstruction in the airways. Long time inhalation of increased concentrations may cause lung fibrosis.

Skin contact
Cobalt is a potent skin sensitizer. Allergic contact dermatitis due to cobalt has been reported in several studies.

12. ECOLOGICAL INFORMATION

Toxicity
- Aquatic toxicity

  Cobalt: Algae: IC_{50}, 72 h: < 1 mg/l
  Daphnia: EC_{50}, 48 h: > 100 mg/l
  Fish: LC_{50}, 96 h: > 100 mg/l

  Tungsten carbide: Algae: IC_{50}, 72 h: 130 mg/l (growth rate)
  Daphnia: EC_{50}, 48 h: > 1000 mg/l
  Fish: LC_{50}, 96 h: > 1000 mg/l

- Soil organisms: Unknown
- Plants and terrestrial animals: Unknown

13. DISPOSAL CONSIDERATIONS

Waste of hard metal dust or sludge is hazardous waste if the cobalt content is 25 % or more according to directive 91/689/EEC. There may be national exceptions. Solid waste is not hazardous waste.

14. TRANSPORT INFORMATION

Dangerous goods: The material is not dangerous goods.

15. REGULATORY INFORMATION

Classification
T - Toxic

Limit values for exposure at the place of work

Substance	CAS No	EINECS No	UK OEL mg/m^3	OSHA PEL mg/m^3	ACGIH TLV -TWA mg/m^3
Cobalt	7440-48-4	231-158-0	0,1	0,1	0,02
Tungsten carbide	12070-12-1	235 -123-0	5	Not established	5
Chromium carbide	12012-35-0	234-576-1	Not established	0,5	0,5
Molybdenum carbide	12069-89-5	235-115-7	Not established	15	10

Risk phrases
R23; Toxic by inhalation;
R42/43; May cause sensitization by inhalation and skin contact

Safety phrases
S22; Do not breathe dust
S24; Avoid contact with skin
S37; Wear suitable gloves

Other national regulations may be applicable to this preparation.

2-15-11
3-29-12

MATERIAL SAFETY DATA SHEET

BIRCHWOOD CASEY®
OXYPRIME SURFACE CONDITIONER

DATE REVISED: 6/1/10
REVISION MSDS NO. 6100-05

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **OXYPRIME SURFACE CONDITIONER**

PRODUCE PART NUMBERS: 610051, 610058

MANUFACTURED BY: BIRCHWOOD LABORATORIES, INCORPORATED
7900 Fuller Road
Eden Prairie, MN 55344 USA
Product Information Telephone Number: (952) 937-7900 (8:00-4:00pm CST)
Fax Number: (952) 937-7979
www.birchwoodcasey.com

24 HOUR TRANSPORTATION EMERGENCY NUMBER: CHEMTREC 800-424-9300 U.S. & CANADA
703-527-3887 INTERNATIONAL (Collect)

24 HOUR POISON CONTROL EMERGENCY NUMBER: 866-291-7152 U.S. & CANADA

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: **DANGER! Corrosive.** May be harmful if inhaled. May be harmful or fatal if swallowed. Causes severe burns to eyes and skin.

APPEARANCE/ODOR: Clear blue-green liquid, odorless.

EYE CONTACT: Causes burns, severe or permanent eye damage.

SKIN CONTACT: Severe irritation and possible burns.

INGESTION: Severe burns of mouth, throat and stomach. Possible symptoms include nausea, vomiting, abdominal pain. May cause damage to kidneys, resulting in blood in urine.

INHALATION: If sprayed, severe irritation of respiratory tract and mucous membranes; coughing, difficulty breathing.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Description	CAS #	Weight %	OSHA PEL* TWA	OSHA PEL STEL/C	ACGIH TLV TWA	ACGIH TLV STEL/C
Oxalic Acid	144-62-7	15	1 mg/m^3	NE	1 mg/m^3	2 $mg/m^{3\text{-STEL}}$
Water	7332-18-5	85	NE	NE	NE	NE

TWA – Time-weighted Average **STEL** – Short-term exposure limit **C** – Ceiling
(skin) – skin designation means that harmful amounts may be absorbed through the skin
* Certain States enforce PELs that were in place in 1989, but were later removed by the U.S. Supreme Court. Check with your State OSHA to determine which PEL is enforced in your State.
NE = not established **NA** = not applicable **NDA** = no data available

4. FIRST AID MEASURES

EYE CONTACT: Flush immediately with clean water. Continue for at least 15 minutes. Seek immediate medical attention.

SKIN CONTACT: Remove contaminated clothing to avoid prolonged contact. Wash affected areas with water. Seek medical attention if irritation develops.

INGESTION: If victim is conscious, administer 1 or 2 glasses of milk, and contact poison control center or physician immediately. DO NOT induce vomiting.

INHALATION: Remove from exposure. Seek medical attention if necessary if breathing is difficult.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASHPOINT: None METHOD USED: NA

FLAMMABLE LIMITS: LFL: NA UFL: NA

EXTINGUISHING MEDIA: Water spray, dry chemical, alcohol foam, or carbon dioxide.

FIRE & EXPLOSION HAZARDS: NDA

SPECIAL FIRE FIGHTING PROCEDURES: Firefighters should wear approved SCBA and full turn-out gear.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Wear recommended protective equipment. Recover as much free liquid as possible and collect in acid-resistant container. Use absorbent to pick up residue. Avoid discharging liquid directly into a sewer or surface waters.

Review current local, state and federal laws, codes, statutes, and regulations to determine appropriate agencies to be notified, and the conditions under which they are to be notified. (See Section 13 for waste disposal comments).

7. HANDLING AND STORAGE

HANDLING: Avoid breathing mists or spray. Avoid eye and skin contact. Wear protective equipment when handling product. Keep out of the reach of children.

STORAGE: Store in cool, dry area. Store in acid-resistant containers. Keep containers covered when not in use. Avoid storing with incompatible materials (refer to Section 10).

8. EXPOSURE CONTROL / PERSONAL PROTECTION

RESPIRATORY PROTECTION: Use a NIOSH approved respirator (Half or full-face organic vapor/N95 cartridge type) if any of the occupational exposure limits in Section 3 may be exceeded.

EYE PROTECTION: goggles, face shield

PROTECTIVE GLOVES: butyl rubber

BODY PROTECTION: butyl rubber apron, as needed

VENTILATION: Use general/dilution or local exhaust ventilation as needed to ensure that occupational exposure limits are not exceeded.

OTHER PROTECTIVE EQUIPMENT: Eyewash and emergency shower

NOTE: All PPE should be selected on the basis of an exposure assessment performed by a competent person.

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: > 212°F
VAPOR PRESSURE: NDA
VAPOR DENSITY: (Air = 1): NA
SOLUBILITY IN WATER: Complete
APPEARANCE: Clear blue-green liquid

SPECIFIC GRAVITY: (Water = 1): 1.046
VOLATILE BY VOLUME: NA
EVAPORATION RATE: (Ethyl Ether = 1): > 1
pH: < 1
ODOR: odorless

10. STABILITY AND REACTIVITY

STABILITY: Stable.

CONDITIONS TO AVOID: NDA

INCOMPATIBILITY (materials to avoid): Cyanides, strong oxidizers, furfuryl alcohol, most metals, sodium hypochlorite

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may produce oxides of carbon, formic acid

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

There is no product based toxicological information for this product. Toxicology information is provided based on individual ingredients.

LD_{50}, oral, rat: 375 mg/kg

TARGET ORGANS: Eyes, skin, lungs (corrosive), kidneys.

Medical conditions that may be aggravated by exposure: Pre-existing skin, eye, respiratory or kidney disorders.

Carcinogenicity: IARC: None NTP: None OSHA: None

12. ECOLOGICAL INFORMATION

ECOTOXICITY: NDA

ENVIRONMENTAL FATE: NDA

13. DISPOSAL CONSIDERATIONS

This product exhibits the characteristic of corrosivity (EPA Hazardous Waste Number D0002). Review current local, state and federal laws, codes, statutes and regulations to determine current status and appropriate disposal method for the ingredients listed in Section 2. Any disposal practice must be in compliance with local, state, and federal laws and regulations. Contact the appropriate agency for specific information. Treatment, transport, storage and disposal of hazardous waste must be dealt with by a licensed facility or waste hauler.

14. TRANSPORT INFORMATION

D.O.T. HAZARDOUS MATERIALS DESCRIPTION AND PROPER SHIPPING NAME:

Corrosive Liquid, Acidic, Organic, N.O.S. (Oxalic Acid) 8 / UN3265 / P.G. III Exceptions: 49CFR 173.154

15. REGULATORY INFORMATION

TSCA (TOXIC SUBSTANCES CONTROL ACT): the materials in this product are listed on the TSCA Inventory.

CERCLA (Comprehensive Response compensation and Liability Act, 40 CFR 117, 302: Reportable Quantity = 5,000 lb.

SARA TITLE III (Superfund Amendments and Authorization Act):

Section 311/312:
Immediate Health Effects: Yes
Delayed Health Effects: Yes
Fire Hazard: No
Sudden Release of Pressure Hazard: No
Reactivity Hazard: No
Section 313 Reportable Ingredients: None

STATE "RIGHT-TO-KNOW": This product may contain components cited on certain state lists. Consult with your individual State regarding this product's components.

16. OTHER INFORMATION

National Fire Protection Association (NFPA): Health: 3 Flammability: 0 Reactivity: 0

The data here is for hazard communication to our employees, our customers and their employees, and authorized regulatory agencies. For the intended purpose, this MSDS (Material Safety data Sheet) may be duplicated or the data transcribed to an alternative form. NOTE: The information contained herein is provided in good faith and is believed to be correct as of the date hereof. However, Birchwood Laboratories, Inc. makes no representation as to the comprehensiveness or accuracy of the information. It is expected that individuals receiving the information will exercise their independent judgment in determining its appropriateness for a particular period. Accordingly, Birchwood Laboratories, Inc. will not be responsible for damages of any kind resulting from the use of or reliance upon such information. NO REPRESENTATIONS, OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER NATURE ARE MADE HEREUNDER TO WHICH THE INFORMATION REFERS. The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment.

FOR ASSISTANCE WITH PLACING ORDERS:

- Product Pricing / Payment Terms
- Shipping and Tracing of Shipments
- Sales Rep Locations

Call our Sales Department (952) 937-7931

Or 1-800-328-6156 or Fax (952) 937-7979

FOR PRODUCT USAGE ASSISTANCE

- Questions on Operation of Products
- Solving Finishing Problems
- Operator Safety and Pollution Control

Call our Customer Service Desk Department (952) 937-7931

Or 1-800-328-6156 or Fax (952) 937-7979

4-12-12

Diamond Innovations

SASPDCB1
Revision Date: 11-17-2011

Material Safety Data Sheet

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Diamond Innovations
6325 Huntley Road
P.O. Box 568
Worthington, OH 43085

PHONE NUMBERS

Emergency Number/CHEMTREC (24 HOUR)	800-424-9300
Other Emergency Information:	614-438-2000
Non-Emergency Information	614-438-2000

PRODUCT IDENTIFICATION

PRODUCT IDENTIFIER: Polycrystalline Diamond Blanks
PRODUCT USE: Industrial Abrasives

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Components listed below are physical or health hazards as defined in the Hazard Communication Standard. The quantities represent typical or average values for the materials shown. Additional compositional data are provided in Section 15, REGULATORY INFORMATION, subject to supplier notification requirements.

Component Name	%	CAS Number	OSHA PEL	ACGIH TWA
Tungsten carbide (WC)	90 - 99	12070-12-1	No PEL established	No TLV
Cobalt	10 - 30	7440-48-4	0.1 mg/m3 TWA	elemental, as Co: 0.02 mg/m3 TWA

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

- Gray solid of many shapes and sizes
- No odor
- Avoid breathing dust
- Avoid contact with skin and eyes

HMIS Ratings: Health = 0; Flammability = 0; Reactivity = 0

POTENTIAL HEALTH EFFECTS

INGESTION:	No hazard in normal industrial use.
INHALATION:	May cause irritation.
EYE CONTACT:	No hazard in normal industrial use.
SKIN CONTACT:	May cause irritation.

CHRONIC / CARCINOGENICITY NTP:
Not Tested.

OSHA:	Not Regulated.
IARC:	Not Listed.

SECTION 4: FIRST AID MEASURES

EYES	Immediately flush eyes with plenty of water. Get medical attention, if irritation persists. After initial flushing, remove any contact lenses.
SKIN	Wash with soap and water. Get medical attention if irritation develops or persists.
INGESTION	No hazard expected under normal industrial use. If a large quantity is swallowed, seek medical attention. Do not induce vomiting.
INHALATION	If symptoms are experienced remove victim from the source of contamination or move victim to fresh air and obtain medical advice.

SECTION 5: FIRE FIGHTING MEASURES

FIRE FIGHTING:	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Water runoff can cause environmental damage. Dike and collect water used to fight fire.
EXTINGUISHING MEDIA:	Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water may be ineffective but water spray can be used extinguish a fire if swept across the base of the flames. Water can absorb heat and keep exposed material from being damaged by fire.
HAZARDOUS COMBUSTION PRODUCTS:	Cobalt oxides, Tungsten oxides, Carbon monoxide, Carbon dioxide
CONDITIONS OF FLAMMABILITY:	Requires a continuous flame source to ignite.
EXPLOSION DATA:	
IMPACT SENSITIVITY:	Not sensitive to mechanical impact.
STATIC DISCHARGE:	A dust explosion is possible if finely divided material is dispersed in air at a sufficiently high concentration and an ignition source is present.

SECTION 6: ACCIDENTAL RELEASE MEASURES

GENERAL:	Sweep or gather up material and place in proper container for disposal or recovery.

SECTION 7: HANDLING AND STORAGE

HANDLING:	Wear protective gloves. Wear safety glasses with side shields or chemical goggles. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Wash thoroughly after handling
STORAGE:	Store in a secure, dry place with containers closed.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:	Local exhaust ventilation may be necessary to control any air contaminants to within the TLV during the use of this product

PERSONAL PROTECTION

EYE/FACE:	Wear safety glasses with side shields or chemical goggles. An eye wash station should be available where this product is used.
SKIN:	Wear impervious protective clothing, gloves and other appropriate equipment to prevent repeated or prolonged skin contact. Remove contaminated clothing immediately. Wash thoroughly before reuse.
RESPIRATORY:	If ventilation is not sufficient to effectively prevent buildup of vapor/ mist/ fume/ dust, appropriate NIOSH/MSHA respiratory protection should be provided.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Solid
ODOR AND APPEARANCE:	Gray; No odor
MELTING POINT:	Not established
VAPOR PRESSURE (mmHg):	Not applicable
SPECIFIC GRAVITY (WATER = 1):	>5 g/cc
WATER SOLUBILITY:	Insoluble.
% VOLATILES:	Not applicable
EVAPORATION RATE:	Negligible.
COEFFICIENT WATER/OIL:	Not applicable

SECTION 10: STABILITY AND REACTIVITY

STABILITY: Stable under normal conditions.

CONDITIONS TO AVOID: Strong acids

REACTIVITY: Not reactive under recommended conditions of of handling, storage, processing, and use.

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE HEALTH HAZARDS
ACUTE ORAL: Oral LD50 Rat Estimated > g/kg

CARCINOGENIC PROPERTIES
NTP: Not Tested.
OSHA: Not Regulated.
IARC: Not Listed.
SPECIAL STUDIES: Cobalt:
Cobalt affects the respiratory system. Cobalt causes interstitial fibrosis, interstitial pneumonitis and sensitization of the respiratory tract and skin. Anticipated human carcinogen based upon animal studies (IARC Group 2B).

SECTION 12: ECOLOGICAL INFORMATION

GENERAL: This material is not expected to be harmful to the ecology.

SECTION 13: DISPOSAL INFORMATION

WASTE DISPOSAL: Recycling is encouraged. Place in tightly sealed, labeled containers for disposal in accordance with federal, state and local requirements.

POSSIBLE EPA WASTE CODES: Spent or discarded material is not expected to be a hazardous waste.

SECTION 14: TRANSPORTATION INFORMATION

REGULATORY STATUS: Not Regulated.

SECTION 15: REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA): This product is in compliance with all rules and orders of TSCA.

WHMIS PRODUCT CLASSIFICATION: D2

If any components in this product are SARA 313 listed as reportable, they are shown below:

Component	CAS Number	%
Cobalt	7440-48-4	10 - 30

If any components in this product are known to the State of California to cause cancer and/or are reproductive hazards, they are listed below:

Component	Reason Listed	CAS Number	%
Cobalt metal powder	carcinogen - initial date 7/1/92	7440-48-4	10 - 30

SECTION 16: OTHER INFORMATION

Prepared by: Product Stewardship

- Trademark of Diamond Innovations Inc.

DISCLAIMER: This Material Safety Data Sheet [MSDS] information is provided based on the Hazard Communication Regulations for your region or country and for the use of the persons required to receive this information under those regulations. The information is neither designed nor recommended for any other use or for use by any other person, including for compliance with other laws. DI does not warrant the suitability for use of this MSDS for any other material or product not specifically identified herein. DI does not warrant the accuracy or authenticity of this MSDS unless it has been obtained directly from DI, or posted or viewed on a DI website. Modification of this MSDS, unless specifically authorized by DI, is strictly prohibited. This MSDS is based on information which is believed to be reliable, but may be subject to change as new information becomes available. Because it is not possible to anticipate all conditions of use, additional safety precautions may be required. Since the use of this material is not under Diamond Innovations Inc.'s control, each user is responsible for making its own determination as to the safe and proper handling of this material in its own particular use of this material. DIAMOND INNOVATIONS INC. MAKES NO REPRESENTATION OR WARRANTY, EITHER EXPRESS OR IMPLIED, INCLUDING AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Each user should read and understand this information and incorporate it into individual site safety programs as required by applicable hazard communication standards and regulations.

ABBREVIATIONS:

ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service
CFR: Code of Federal Regulations
CPR: Cardiopulmonary Resuscitation
EPA: Environmental Protection Agency
HMIS: Hazardous Material Identification System (National Paint and Coatings Association)
IARC: International Agency for Research on Cancer
OSHA: Occupational Health and Safety Administration (U.S.)
NTP: National Toxicology Program
PEL: Permissible Exposure Limit
PPE: Personal Protective Equipment
SARA 313: Superfund Amendments and Reauthorization Act, Section 313
TLV: Threshold Limit Value
TSCA: Toxic Substance Control Act
WHMIS: Workplace Hazardous Materials Information System (Canada)

Revised online 10.18.07
2-11-11
4-11-12

Material Safety Data Sheet

PROFORCE READY-TO-USE BATH & BOWL CLEANER

Section 1. Chemical product and company identification

Trade name	: PROFORCE READY-TO-USE BATH & BOWL CLEANER
Product use	: Cleaning product
Supplier	: Ecolab Inc. 4050 Corporate Drive, Suite 100 Grapevine, TX 76051-2326 1-888-586-9838 www.ProForceCleaners.com
Code	: 912136
Date of issue	: **26-April-2006**

EMERGENCY HEALTH INFORMATION: 1-866-897-8061
Outside United States and Canada CALL 1-952-852-4656 (in USA)

Section 2. Composition, information on ingredients

Name	CAS number	% by weight
alcohols, c10-14, ethoxylated	66455-15-0	1 - 5

Section 3. Hazards identification

Physical state : Liquid. (Liquid.)

Emergency overview : CAUTION!

MAY CAUSE EYE IRRITATION.
Repeated or prolonged contact with irritants may cause dermatitis.
Avoid contact with eyes. Wash thoroughly after handling.

Potential acute health effects

Eyes : Moderately irritating to eyes.

Skin : Slightly irritating to the skin.

Inhalation : Slightly irritating to the respiratory system.

Ingestion : No known significant effects or critical hazards.

See toxicological information (section 11)

Section 4. First aid measures

Eye contact : In case of contact, immediately flush eyes with cool running water. Remove contact lenses and continue flushing with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

Skin contact : Flush contaminated skin with plenty of water. Wash clothing before reuse.

Inhalation : If inhaled, remove to fresh air.

Ingestion : Do not induce vomiting. Never give anything by mouth to an unconscious person. If irritation persists, get medical attention.

Section 5. Fire fighting measures

Flash point : > 100°C

Fire-fighting media and instructions : Use an extinguishing agent suitable for the surrounding fire.

Dike liquid for later disposal.

No specific hazard.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions : Ventilate area of leak or spill. Do not touch damaged containers or spilled material unless wearing appropriate protective equipment (Section 8). Stop leak if without risk. Do not allow to enter drains or watercourses.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up : If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials), scoop up material and place in a sealable, liquid-proof container for disposal. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

Section 7. Handling and storage

Handling : Avoid contact with eyes. Wash thoroughly after handling.

Storage : Keep out of the reach of children. Keep container tightly closed. Keep container in a cool, well-ventilated area.
Do not store above 50°C

Section 8. Exposure controls, personal protection

Engineering controls : Good general ventilation should be sufficient to control airborne levels.

Personal protection

Eyes : Eye protection recommended.

Hands : No protective equipment is needed under normal use conditions.

Skin : No protective equipment is needed under normal use conditions.

Respiratory : A respirator is not needed under normal and intended conditions of product use.

Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

Physical state : Liquid. (Liquid.)

Color : Green. (Light.)

Odor : Faint odor.

pH : 2.6 (100%)

Boiling/condensation point : 100 °C

Specific gravity : 1 (Water = 1)

Dispersibility properties : Easily dispersed in cold water, hot water.

Solubility : Easily soluble in cold water, hot water.

Section 10. Stability and reactivity

Stability : The product is stable.

Reactivity : Slightly reactive to reactive with alkalis.

Section 11. Toxicological information

Potential acute health effects

Eyes : Moderately irritating to eyes.

Skin : Slightly irritating to the skin.

Inhalation : Slightly irritating to the respiratory system.

Ingestion : No known significant effects or critical hazards.

Potential chronic health effects

Section 12. Ecological information

Products of degradation : These products are carbon oxides (CO, CO_2) and water. Some metallic oxides.

Section 13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Consult your local or regional authorities.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Additional information
DOT Classification	Not regulated.	-	-	-	-

APPLIES ONLY DURING ROAD TRANSPORT

Any variation of the shipping description based on the packaging is not addressed.

Section 15. Regulatory information

HCS Classification : Irritating material

U.S. Federal regulations : SARA 302/304/311/312 extremely hazardous substances: No products were found.

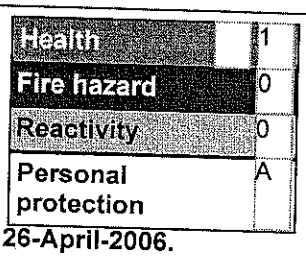
SARA 302/304 emergency planning and notification: No products were found.

TSCA 8(b) inventory : All materials are listed or exempt.

California Prop. 65 : No products were found.

Section 16. Other information

Hazardous Material Information System (U.S.A.) :



Date of issue : 26-April-2006.

Responsible name : Regulatory Affairs

Date of previous issue : 10-February-2006.

Notice to reader

The above information is believed to be correct with respect to the formula used to manufacture the product in the country of origin. As data, standards, and regulations change, and conditions of use and handling are beyond our control, NO WARRANTY, EXPRESS OR IMPLIED, IS MADE AS TO THE COMPLETENESS OR CONTINUING ACCURACY OF THIS INFORMATION.

9-12-10

Material Safety Data Sheet

PROFORCE BATHROOM & TILE CLEANER WITH BLEACH

1. Product and company identification

Trade name of product : PROFORCE BATHROOM & TILE CLEANER WITH BLEACH

Product use :

Product dilution information : Not applicable

Supplier's information : Ecolab Inc.
1801 Riverbend West Drive
Fort Worth TX 76118
1-866-999-7484
www.ProForceCleaners.com

Code : 905194

Date of issue : **03-November-2010**

EMERGENCY HEALTH INFORMATION: 1-866-897-8061
Outside United States and Canada CALL 1-952-852-4656 (in USA)

2. Hazards identification

Product AS SOLD

Physical state : Liquid.

Emergency overview : WARNING !

CAUSES EYE AND SKIN IRRITATION.
MAY CAUSE RESPIRATORY TRACT IRRITATION.

Avoid contact with eyes, skin and clothing. Avoid breathing vapors, spray or mists. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Product AT USE DILUTION
Product is sold ready to use.

Potential acute health effects

Product AS SOLD

Eyes : Irritating to eyes.

Skin : Irritating to skin.

Inhalation : Moderately irritating to the respiratory system.

Ingestion : No known significant effects or critical hazards.

Product AT USE DILUTION
Product is sold ready to use.

See toxicological information (section 11)

3. Composition/information on ingredients

Product AS SOLD

Name	CAS number	% by weight
sodium hypochlorite	7681-52-9	2

Product AT USE DILUTION

Name	CAS number	% by weight
Product is sold ready to use.		

4. First aid measures

Product AS SOLD

Eye contact : In case of contact, immediately flush eyes with plenty of water. Remove contact lenses and flush again. Get medical attention if irritation persists.

Skin contact : In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Inhalation : If inhaled, remove to fresh air.

Ingestion : Get medical attention if symptoms occur.

Product AT USE DILUTION
Product is sold ready to use.

5. Fire-fighting measures

Product AS SOLD

Hazardous thermal decomposition products : Decomposition products may include the following materials:
halogenated compounds
metal oxide/oxides

Fire-fighting media and instructions : Use an extinguishing agent suitable for the surrounding fire.

Dike area of fire to prevent runoff.
In a fire or if heated, a pressure increase will occur and the container may burst.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Product AS SOLD

Personal precautions : Use personal protective equipment as required.

Environmental precautions : Avoid contact of large amounts of spilled material and runoff with soil and surface waterways.

Methods for cleaning up : Use a water rinse for final clean-up.

Product AT USE DILUTION
Product is sold ready to use.

7. Handling and storage

Product AS SOLD

Handling : Avoid contact with eyes, skin and clothing. Avoid breathing vapors, spray or mists. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Storage : Keep out of reach of children. Store in a closed container.
Store between the following temperatures: 0 and 45°C

Product AT USE DILUTION
Product is sold ready to use.

8. Exposure controls/personal protection

8. Exposure controls/personal protection

Product AS SOLD

Engineering measures : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

Eyes : Safety eyewear should be used when there is a likelihood of exposure.

Hands : For prolonged or repeated handling, use the following type of gloves: Impervious gloves.

Skin : No protective equipment is needed under normal use conditions.

Respiratory : Avoid breathing vapors, spray or mists.

Product AT USE DILUTION

Product is sold ready to use.

Product is sold ready to use.

Ingredient	Exposure limits
chlorine	**ACGIH TLV (United States, 2/2010).** STEL: 2.9 mg/m³ 15 minute(s). STEL: 1 ppm 15 minute(s). TWA: 1.5 mg/m³ 8 hour(s). TWA: 0.5 ppm 8 hour(s). **OSHA PEL (United States, 11/2006).** CEIL: 3 mg/m³ CEIL: 1 ppm

9. Physical and chemical properties

Product AS SOLD

Physical state : Liquid.

Flash point : > 100°C
Product does not support combustion.

Color : Clear.

Odor : Fragrance-like.

pH : 12 to 12.8 [Conc. (% w/w): 100%]

Boiling/condensation point : 100°C (212°F)

Relative density : 1.03 to 1.04

Solubility : Easily soluble in the following materials: cold water and hot water.

Product AT USE DILUTION

Product is sold ready to use.

Product is sold ready to use.

10. Stability and reactivity

Product AS SOLD

Stability : The product is stable. Under normal conditions of storage and use, hazardous polymerization will not occur.

Reactivity : Reactive or incompatible with the following materials: metals and acids.
Mixing this product with acid or ammonia releases chlorine gas.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

11. Toxicological information

Potential acute health effects

Product AS SOLD

Eyes : Irritating to eyes.

Skin : Irritating to skin.

Inhalation : Moderately irritating to the respiratory system.

Ingestion : No known significant effects or critical hazards.

Product AT USE DILUTION
Product is sold ready to use.

Product AS SOLD

Other adverse effects

Target organs : Contains material which may cause damage to the following organs: stomach.

12. Ecological information

Ecotoxicity : Not reported

13. Disposal considerations

Product AS SOLD

Waste disposal : Diluted product can be flushed to sanitary sewer. Discard empty container in trash.

RCRA classification : Unused product is D002 (Corrosive)

Product AT USE DILUTION
Product is sold ready to use.

14. Transport information

Certain shipping modes or package sizes may have exceptions from the transport regulations. The classification provided may not reflect those exceptions and may not apply to all shipping modes or package sizes.

Product AS SOLD

DOT Classification **Not regulated.**

For transport in bulk or using IMDG regulations, see shipping documents for specific transportation information.

15. Regulatory information

Product AS SOLD

HCS Classification : Irritating material
Target organ effects

Product AT USE DILUTION
Product is sold ready to use.

Product AS SOLD

U.S. Federal regulations

TSCA 8(b) inventory : All components are listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No listed substance

SARA 302/304 emergency planning and notification: No listed substance

SARA 313	Product name	CAS number	Concentration
Form R - Reporting requirements :	No listed substance		

California Prop. 65 : No listed substance

16. Other information

Product AS SOLD

Hazardous Material Information System (U.S.A.) :

Health	*	2
Flammability		0
Physical hazards		0

National Fire Protection Association (U.S.A.) :

Date of issue : 03-November-2010

Responsible name : Regulatory Affairs
1-800-352-5326

Indicates information that has changed from previously issued version.

Notice to reader

The above information is believed to be correct with respect to the formula used to manufacture the product in the country of origin. As data, standards, and regulations change, and conditions of use and handling are beyond our control, NO WARRANTY, EXPRESS OR IMPLIED, IS MADE AS TO THE COMPLETENESS OR CONTINUING ACCURACY OF THIS INFORMATION.

4/6/2011
4-24-12

said

RESIN BOND

SAFETY CARD

1. Preparation and Company's Identification

NAME : *RESIN BOND*

DESCRIPTION : *WHEEL*
WITH DIAMOND RIM

1.2 COMPANY'S IDENTIFICATION :

SAID S.p.A.

Special Industrial Applications of Diamond
S.S. 46 PASUBIO
36033 Isola Vicentina
Tel. +39444599311 Fax +39444976416

2. Ingredients' composition and information

Following your kind request, for the uses allowed by the Law, we declare that the resin bond wheel C.40 Art. Code 352D4005 is composed in the following way

- *SYNTHETIC DIAMOND/CBN*
- *PHENOLIC RESIN*
- *NICKEL*
- *WOLLASTONITE*

said

3. Dangers' Identification

HAZARDS : *No hazard with an use conform to the normal use conditions*

SPECIAL HAZARDS FOR MAN: *There is a remote chance of inhalation of microparticles which could cause irritations to respiratory track. This all can be avoided by individual protection instruments such as half masks.*

4. First aid methods

In case of:

CONTACT WITH THE SKIN : *it is recommended to rinse under current water*

WITH EYES : *rinse under current water for at least 15 minutes, in case, consult a doctor*

INGESTION: *rinse the oral cavity, drink a big quantity of water consult a doctor*

POWDERS IHNALATION: *Stay in open space. Should irritations occurr, consult a doctor*

5. Anti-fire methods

5.1 Appropriate quenching methods: *not easily inflammable product*
in case use: *carbonic dioxide, nebulized water, sand.*

5.2 Forbidden methods : *unknown*

5.3 Possible hazards due to exposure to the combustion products of gas: *unknown*

said

6. Methods in case of accidental emission

Unknown

7. Handling and storage

No particular precaution should be taken.
For a good conservation, keep dry and cool

8. Exposure control and personal protection

If needed, use proper half mask

9. Physical and chemical properties

ASPECT :	*SOLID BODY AT SIGHT*
COLOUR :	*VARIABLE*
SMELL :	*ODOURLESS*
RELATIVE DENSITY (20°C)	
	STATE CHANGE
POLYMERIZATION POINT	
MELTING POINT	*UNKNOWN*
FLASH POINT	*UNKNOWN*
EXPLOSION HAZARDS:	*NONE*

said

NOTE:	**The productis constituted by a mixture of various raw materials, which physical and chemical features vary.** **Consequently, there are objective problems, not depending on our will, to supply further information**

10. Stability and Reactivity

In normal conditions, the product is stable and doesn't react to contact with water and chemical solvents

11. Toxicological information

INHALATION CHRONIC EXPOSURE EFFECTS

Chronic: May affect breathing capacity

CARCINOGENICITY

LD50/LC50

Values are not appropriate or available

12. Ecologic information

It's recommended to use it, following the good operating ways, avoiding its dispersion in the environment

13. Considerations on disposal

Transport, treatment and stockage should follow the national and the international norms
Dispose of the waste in an authorized dump
Body rest as special waste

14. Information for transport

The product is not dangerous and is not subject to particular norms

said

15. Other informations

The informations given are based on present knowledge and are referred to the product at the moment of supply. They have the aim of describing our product on the safety point of view and they don't guarantee any characteristic.
This certificate is referred to the hereby described product and not to the combined use with other materials. Because the working conditions are out of our control, we don't give any warranty, either expressed or implicit, and we don't take any responsibility on the use of the present informations. Nothing in this document should be taken as a licence to work beyond the recommendations and the norms.

It's recommended to regularly analyse the rejects and please inform us in case of abnormal conditions.

Sure of giving a full answer to your request,
on the occasion we remain with
Best regards

Material Safety Data Sheet — *Date: 7-6-11* — 5-16-12

Section 1 – Product & Company Identification

Product Name: ***Rust Free***
Product ID Number: 890
EPA Reg. Number: N/A
S r Information: PMS Products, Inc.
76 Veterans Dr. #110
Holland, MI 49423
Telephone 800-962-1732

Numbers: 24 hr. Emergency Assistance: Infotrac 1-800-535-5053

Section 2 – Composition/Information on Ingredients

INGREDIENT	CAS #	% by Weight	Exposure Limits	LC_{50}/LD_{50}
Phosphoric Acid	7664-38-2	<30	PEL, TLV.: 1 mg/m3 STEL: 3 mg/m3	Not Established
Isopropyl Alcohol	67-63-0	<10	400 ppm	
Ethoxylated Alcohol	66455-14-9	<10	N/E	

The balance of ingredients are not considered to be hazardous within the meaning of OSHA Hazard Communication Standard
ITEMS MARKED * ARE SARA TITLE III SEC 311/312 REPORTABLES. ALL INGREDIENTS ARE ON TSCA INVENTORY

Section 3 – Hazards Identification

Emergency Overview:

Potential Health Effects:

Acute: Corrosive to eyes & skin. Causes irreversible eye damage and skin burns. Fatal if swallowed. Avoid breathing vapor or mist.
Chronic: None known based on OSHA Criteria.
Carcinogenic Effects: Not classified or listed by IARC, NTP, OSHA, EU and ACGIH.

Section 4 – First Aid Measures

Eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
Skin/Clothing: Take off contaminated clothing. Rinse skin with plenty of water for 15-20 minutes. Call a poison control or doctor for treatment advice.
Inhalation: Move person to fresh air. If person is not breathing, call 911 or an ambulance then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.
Ingestion: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water is able to swallow. Do NOT induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person..
No[illegible] Physician: N/A

Section 5 – Fire Fighting Measures

Hazardous Combustion Products: None known
Extinguishing Media: Water or suitable material for primary source of fire.
Fire Fighting Equipment & Instructions: Use OSHA approved self-contained breathing apparatus and protective clothing when any material is involved in a fire.
Remarks on Explosion Hazard: None expected.

Section 6 – Accidental Release Measures

Spill and Leak Procedures

Spills: Absorb spilled material and sweep up.
Personal Protection for Large Spills: Rubber gloves or other impervious gloves. Chemical anti-splash goggles. Full face shield and rubber footwear.

Section 7 – Handling & Storage

Handling Procedures: Keep container closed when not in use. Avoid contact with eyes. Wash thoroughly after handling.
Storage Procedures: KEEP OUT OF REACH OF CHILDREN. Store in a dry place no lower in temperature than 50° F or higher than 120° F, Store is a tightly secure area naccessible to children.
ncompatibility: Oxidizing agents, alkalis, metal, and heat.

Section 8 – Exposure Controls/Personal Protection

Engineering Controls: Good general ventilation should be sufficient.

Personal Protective Equipment:

Eyes/Face: Chemical anti-splash goggles.
Skin: Rubber gloves or other impervious gloves.
Respiratory: No special equipment needed.
The following ingredients have established exposure guidelines:

INGREDIENT:	EXPOSURE GUIDELINE	GUIDELINE VALUE
ee Section 2		

All TWAs are for an 8-hour period and all STELs are for 15 minutes unless specifically noted as being for another time period.

Section 9 – Physical & Chemical Properties

lash Point: 85° F.
p[illegible] Gravity: 1.16
Freezing Point: N/A
OC Content: Not determined.
vaporation Rate (Butyl acetate = 1): 1
H: 1
olubility: Complete
ammable Limits: Not determined

Explosion Hazards: None known
Appearance and Odor: Clear liquid, mild odor

Section 10: Stability & Reactivity

Chemical Stability: Stable Conditions to avoid: Excessive heat and contamination of any kind.
Incompatibilities: Strong alkalies, bleach.
Hazardous Decomposition: Heating phosphoric acid to decomposition yields toxic phosphorus pentoxide fumes.
Hazardous Polymerization: Will not occur.

S[illegible]on 11 – Toxicological Information

Routes of Entry: Eyes, Skin, Ingestion, Inhalation
Carcinogenicity: No Carcinogenicity data available for this product.
Toxicity to Animals: No data
Acute Effects on Humans:
Primary Skin: Corrosive to skin. Causes skin burns.
Primary Eye: Corrosive to eyes. Causes irreversible eye damage.
Inhalation: Harmful if inhaled
Ingestion: Fatal if swallowed.

CHEMICAL INGREDIENTS LISTED AS POTENTIAL OR KNOWN CARCINOGENS

INGREDIENT	OSHA	NTP	IARC

No ingredients listed in this section.

Section 12 – Ecological Information

Ecotoxicity: No data available for this product.
Environmental Fate: No Data.

Section 13 – Disposal Considerations

Disposal Instructions: Do not reuse container. Triple rinse empty container with water. Plastic containers may be offered for recycling. Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14 – Transportation Information

DOT Hazard Class: 8
DOT Proper Shipping Name: UN1805, Phosphoric Acid, Solution, 8, PGIII
TDG Classification: Ltd. Qty.

Section 15 – Regulatory Information

TSCA Status
All ingredients are listed on the TSCA Chemical Inventory.
DSL/NDSL: All components listed unless noted elsewhere on this MSDS.
CERCLA/SARA
S[illegible] **Title III, Sections 311/312** – This act requires reporting under the Community Right-to-Know provisions due to the inclusion of the following components of this material in o[illegible] more of the five hazard categories listed in the 40 CFR 370: Classification of this product:
SARA Title 313 – This act requires submission of annual reports of releases of the following components of this material if the threshold reporting quantities, as listed in 40 CFR 372, are met or exceeded:

CHEMICAL NAME	CAS NO.	MAXIMUM CONCENTRATION	COMMENT

No ingredients listed in this section.
Reportable Quantities/Threshold Planning Quantities: CERCLA requires notification of the National Response Center (Telephone 1-800-424-8802) in the event of a release of quantities of the following hazardous materials contained in this product, if the release is equal to or greater than the Reportable Quantities (RQs). SARA 302/304 requires emergency planning, including agency notification, for possible release of the following components of this material, based upon the Threshold Planning Quantities (TPQs) and/or release of Reportable Quantities.

CHEMICAL NAME	REPORTABLE QUANTITY (RQ)	THRESHOLD PLANNING QUANTITY (TPQ)
Phosphoric Acid	5, 000 lbs.	

State & Provincial Right to Know & Selected Regulatory Lists
The following ingredients appear on various state right to know lists and/or California's Proposition 65 List

CHEMICAL NAME	STATE LIST
None	None
AZ – Arizona Ambient Air Quality Guidelines	IL – Illinois Toxic Air Contaminant – Carcinogenic
CT – Connecticut Hazardous Air Pollutants	MA – Massachusetts Right to Know List
CA – California Director's List of Hazardous Substances	MN – Minnesota Hazardous Substance List
CA65C – California Prop 65 Carcinogen	NJ – New Jersey Right to Know List
CA65R – California Prop 65 Reproductive Toxin	PA – Pennsylvania Right to Know List
FL – Florida Substances List	RI – Rhode Island Hazardous Substance List
ID – Idaho Non-carcinogen Toxic Air Pollutants	

WHMIS Classification: B, E

Section 16 – Other Information

Hazard Ratings
Hazard Rating Scale:

Hazard Rating Scale:
4 = Extreme
3 = High
2 = Moderate
1 = Slight
0 = Insignificant

HEALTH	2
FLAMMABILITY	2
REACTIVITY	1

The seller makes no warranty expressed or implied concerning the accuracy of any results to be obtained from the use of any information and no warranty expressed or implied concerning the use of the products. The buyer assumes all risks of the use and/or handling.

Specialty Tapes — Material Safety Data Sheet

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name:	S396 (all sizes)
Manufacturer:	Specialty Tapes
Address:	4221 Courtney Road Franksville, WI. 53126
Issue Date:	7/18/2012
Product Use:	Lead foil tape for conformable masking

SECTION 2: INGREDIENTS

Ingredient	C.A.S. Number	% by Weight
Rubber Adhesive	Trade Secret	5 - 10%
Lead Foil	7439-92-1	80 - 90%
Release liner	Trade Secret	5 - 10%

SECTION 3: HAZARDS IDENTIFICATION

3.1 Emergency Overview

Odor, Color, Grade:	Soft metalic foil
General Physical Form:	Solid
Immediate Health, Physical and Environmental hazards:	None known

3.2 Potential Health Effects

Eye Contact:	Foreign body - irritation
Skin Contact:	No significant health effect is expected.
Inhalation:	No significant health effect is expected.
Ingestion:	Heavy metal (lead) poisoning

3.3 Potential Environmental Effects

Lead will slowly leach into water when submerged. Leaching will accelerate as acidity increases.

This material when disposed of separately is classified as RCRA hazardous waste. Please consult applicable Federal, State and local regulations for proper disposal.

SECTION 4: FIRST AID MEASURES

4.1 First Aid Procedures

Eye Contact:	Flush eye with water. Seek medical assistance for removal of foreign bodies from the eye.
Skin Contact:	No need for first aid is anticipated.
Inhalation:	No need for first aid is anticipated.
If Swallowed:	Seek medical attention

SECTION 5: FIRE FIGHTING MEASURES

5.1 Flammable Properties

Autoignition Temperature	NA
Flash Point	NA
Flammable Limits-LEL	NA
Flammable Limits-UEL	NA

5.2 Extinguishing Media

Use extinguishers with class B extinguishing agents (e.g., dry chemcial, carbon dioxide.)

5.3 Protection of Fire Fighters

Special Fire Fighting Procedures:	Fire fighters should wear full bunker gear, including a positive pressure self-contained breathing apparatus.
Unusual Fire and Explosion Hazards:	No unusual fire or explosion hazard are anticipated.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: NA

SECTION 7: HANDLING AND STORAGE

7.1 Handling

This product does not release or otherwise result in exposure to a hazardous chemical under normal use conditions.

7.2 Storage

Store in a cool dry area.

SECTION 8: EXPOSURE CONTROL/PERSONAL PROTECTION

8.1 Engineering Controls NA

8.2 Personal Protective Equipment (PPE)

8.2.1 Eye/Face Protection Avoid eye contact, use of eye protection is good practice.

8.2.2 Skin Protection Avoid prolonged skin contact. Gloves are not required.

8.2.3 Respiratory Protection None required, however adequate ventilation is good practice.

8.2.4 Prevention of Swallowing Not an expected route of exposure.

8.3 Exposure Guidelines None Established

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Odor, Color, Grade:	Soft metalic foil
General Physical Form:	Solid
Autoignition Temperature:	NA
Flash Point:	NA
Flammable Limits LEL:	NA
Flammable Limits UEL:	NA
Boiling Point:	NA
Vapor Density:	NA
Vapor Pressure:	NA
Specific Gravity:	NA
pH	NA
Melting Point:	NA
Solubulity in Water:	Insoluble
Evaporation Rate:	NA
Volatile Organic Compounds:	0%
Percent Volatile:	NA
VOC Less H20 & Exempt Solvent	NA
Viscosity:	NA

SECTION 10: STABILITY AND REACTIVE

Stability:	Stable
Materials and Conditions to Avoid:	None identified
Hazardous Polymerization:	Hazardous polymerization will not occur.

Hazardous Decomposition or By-Product

Substance	Condition
Hydrocarbons	During Combustion
Carbon Monoxide	During Combustion
Carbon Dioxide	During Combustion

SECTION 11: TOXICOLOGICAL INFORMATION

Please contact the address listed on the first page of the MSDS for Toxicological Information on this material and/or its components.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicological Information Not Determined
Chemical Fate Information Not Determined

SECTION 13: DISPOSAL CONSIDERATIONS

Wear protective gloves and/or wash hands after working with tape.

Lead will slowly leach into water when submerged. Leaching will accelerate as acidity increases.

This material when disposed of separately is classified as RCRA hazardous waste. Please consult applicable Federal, State and local regulations for proper disposal.

SECTION 14: TRANSPORT INFORMATION

ID Number(s):

Not regulated per U.S. Dot, IATA or IMO

SECTION 15: REGULATORY INFORMATION

US Federal Regulations

311/312 Hazard Categories:

Fire Hazard-No
Pressure Hazard- No
Reactivity-No
Immediate Hazard-No
Delayed Hazard-No

State Regulations

Contact Specialty Tapes for more information

Chemical Inventories

This product is an article as defined by TSCA regulations, and is exempt from TSCA Inventory listing requirements

International Regulations

Contact Specialty Tapes for more information

This MSDS has been prepared to meet the U.S. Osha Hazard Communication Standard, 29 CFR 1910.1200.

NFPA Hazard Classification

Health: 2 **Flammability:** 1 **Reactivity:** 0 **Special Hazards**: None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

DISCLAIMER: The information in this Material Safety Data Sheet (MSDS) is believed to be correct as of the date issued. Specialty Tapes MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the Specialty Tapes' product is fit for a particular purpose and suitable for user's method of use. Given the variety of factors that can affect the use and application of a Specialty Tapes product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the Specialty Tapes product to determine whether it is suitable for the user's application.

1-16-07
2-17-11
4-11-12

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard 29 CFR 1910.1200. Standard must be consulted for specific requirements

U.S. Department of Labor
Occupation Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY

S-722 (250245)

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufactured by:

Beaver Research Company

Address (Number, Street, City, State, and ZIP Code)

3700 E. Kilgore Road, Portage, MI 49002

Emergency Telephone Number

1-800-255-3924 (Chem-Tel)

Telephone Number For Information

269-382-0133

Date Revised

10/16/07

Signature of Preparer (optional)

HMIS RATINGS:

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

Health:	2
Flammability:	0
Reactivity:	0
Personal Protection:	B

Section II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	CAS No.	ACGIH TWA PPM	ACGIH TWA MG/M³	ACGIH STEL PPM	ACGIH STEL MG/M³	SARA TITLE III	RQ LBS
Ethylene glycol monobutyl ether (a,b)	111-76-2	25	120			Yes	1000
Monoethanolamine	141-43-5	3	8	6	15	No	
Sodium phosphate, tribasic (STPP)(c)	7758-29-4						
Sodium phosphate, tribasic (TSP) (c)	7601-54-9						

(a) A "YES" in the SARA TITLE III column indicates a toxic chemical subject to annual reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372.

(b) Indicates an employee's skin exposure shall be prevented or reduced to the extent necessary in the circumstances through the use of gloves, coveralls, goggles, or other appropriate equipment.

c) Indicates the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) has notification requirements for releases or spills to the environment of the Reportable Quantity (RQ) or greater amounts, according to 40 CFR 302.

Section III - Physical/Chemical Characteristics

Boiling Point	212°F	Specific Gravity (H_2O = 1)	1.017
Vapor Pressure (mm Hg)	17mm@20°C	Melting Point	N/A
Vapor Density (AIR = 1)	<1	Evaporation Rate (Butyl Acetate = 1)	<1

Solubility in Water: Complete

% Volatile (by wt): 91% Total VOC: 5.70%

Appearance and Odor

Light purple liquid, lemon odor.

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used)

Non-flammable

Flammable Limits | LEL: N/A | UEL: N/A

Extinguishing Media

CO_2, water, water fog, dry chemical, chemical foam.

Special Fire Fighting Procedures

Keep drums cool with water spray to prevent drum rupture due to steam buildup; floor will become slippery if material is released.

Unusual Fire and Explosion Hazards

None.

Section V - Reactivity Data

Stability	Unstable		Conditions to Avoid	None
	Stable	X		

Incompatibility (Materials to Avoid)

Strong oxidizers, strong acids.

Hazardous Decomposition or Byproducts

Thermal decomposition may yield CO; CO_2; small amounts of ammonia fume.

Hazardous Polymerization	May Occur		Conditions to Avoid	None.
	Will Not Occur	X		

Section VI - Health Hazard Data

10/16/07

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	Yes	Yes	Yes

Health Hazards (Acute and Chronic)

Acute effects are possible irritation and discomfort; no known chronic effects have been established.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	No	No	No

Signs and Symptoms of Exposure

Inhalation: High concentrations are irritating to the respiratory tract; may cause headache, dizziness, nausea, vomiting and malaise. **Skin**: Brief contact may cause slight irritation; prolonged contact may cause moderate reddening, swelling and possible necrosis. **Eyes**: Contact causes severe irritation and pain associated with redness and swelling of the conjunctiva. **Ingestion**: Moderately toxic; may cause headache, dizziness, diarrhea and general weakness; large doses may result in red blood cell hemolysis.

Medical Conditions Generally Aggravated by Exposure

Pre-existing skin, eye, or respiratory disorders may become aggravated through prolonged exposure.

Emergency and First Aid Procedure

Inhalation: Remove victim to fresh air; provide oxygen if breathing is difficult; administer CPR if victim is not breathing; seek medical attention. **Skin**: Remove contaminated clothing; wash affected area with soap and water; launder contaminated clothing before reuse; if irritation persists, seek medical attention. **Eyes**: Flush eyes with water for 15 minutes while holding eyelids open; seek medical attention. **Ingestion**: Give two glasses of water for dillution; induce vomiting by sticking fingers down throat; never give anything by mouth to an unconscious person; seek medical attention.

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled

Small spills -- wash to sanitary sewer with plenty of water. Large spills -- confine spill, soak up with approved absorbant, shovel product into approved container; for spills in excess of allowable limits (RQ) notify the National Response Center (800) 424-8802; refer to SARA Title III, Section 313 40 CFR 372, and CERCLA 40 CFR 302 for complete regulations concerning reporting requirements.

Waste Disposal Method

Dispose of in accordance with Local, State, and Federal Regulations.

Precautions to be Taken in Handling and Storage

Keep container closed when not in use; protect containers from abuse; protect from extreme temperatures.

Other Precautions

Keep this and other chemicals out of reach of children; minimize body contact with this product as well as all chemicals in general.

Section VIII - Control Measures

Respiratory Protection (Specify Type)

None required while threshold limits (Section II) are kept below maximum allowable concentrations; if TWA exceeds limits, NIOSH approved respirator must be worn.

Ventilation	Local Exhaust	Required	Special	To maintain minimum TWA/STEL levels.
	Mechanical(General)	Yes	Other	Engineering and work controls as required.

Protective Gloves	Eye Protection
Neoprene or rubber.	Goggles with side shields; safety eye bath nearby.

Other Protective Clothing or Equipment

Coveralls, apron, or other equipment should be worn to minimize skin contact.

Work/Hygienic Practices

Practice safe workplace habits. Minimize body contact with this, as well as all chemicals in general.

The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

MATERIAL SAFETY DATA SHEET

BIRCHWOOD CASEY®
SAFE SCRUB® ST

DATE REVISED: 6/1/10
REVISION MSDS NO. 8705-05

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **BIRCHWOOD CASEY SAFE SCRUB® ST**

PRODUCT PART NUMBERS: 870551, 870558

MANUFACTURED BY: BIRCHWOOD LABORATORIES, INCORPORATED
7900 Fuller Road
Eden Prairie, MN 55344 USA
Product Information Telephone Number: (952) 937-7900 (8:00-4:00pm CST)
Fax Number: (952) 937-7979
www.birchwoodcasey.com

24 HOUR TRANSPORTATION EMERGENCY NUMBER: CHEMTREC 800-424-9300 U.S. & CANADA
703-527-3887 INTERNATIONAL (Collect)

24 HOUR POISON CONTROL EMERGENCY NUMBER: 866-291-7152 U.S. & CANADA

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: **DANGER!** Poison. Corrosive. May be fatal if swallowed. Causes severe burns to eyes and skin. May react with water or acids to generate heat.

APPEARANCE/ODOR: Clear amber liquid, mild odor.

EYE CONTACT: Severe or permanent eye damage. Corrosive.

SKIN CONTACT: Severe irritation and possible burns.

INGESTION: Severe burns of mouth, throat and stomach. Symptoms may include vomiting, diarrhea.

INHALATION: Severe irritation of respiratory tract and mucous membranes; coughing, difficulty breathing

3. COMPOSITION / INFORMATION ON INGREDIENTS

Description	CAS #	Weight %	OSHA PEL* TWA	OSHA PEL STEL/C	ACGIH TLV TWA	ACGIH TLV STEL/C
Potassium Hydroxide	1310-58-3	20	NE	NE	NE	2 mg/m^{3-C}
Sodium Gluconate	527-071-1	4	NE	NE	NE	NE
Sodium Silicate	1344-09-8	10	NE	NE	NE	NE
Tetrapotassium Pyrophosphate	7320-34-5	10	NE	NE	NE	NE
Phosphoric Acid Ester	813-78-5	3	NE	NE	NE	NE
Water	7732-18-5	>60	NE	NE	NE	NE

TWA – Time-weighted Average **STEL** – Short-term exposure limit **C** – Ceiling
(skin) – skin designation means that harmful amounts may be absorbed through the skin
* Certain States enforce PELs that were in place in 1989, but were later removed by the U.S. Supreme Court. Check with your State OSHA to determine which PEL is enforced in your State.
NE = not established **NA** = not applicable **NDA** = no data available

4. FIRST AID MEASURES

EYE CONTACT: Flush immediately with clean water. Continue for at least 15 minutes. Seek immediate medical attention.

SKIN CONTACT: Remove contaminated clothing to avoid prolonged contact. Wash affected areas with water. Seek medical attention if irritation develops.

INGESTION: Drink a glass of water and contact local poison control center or physician immediately. DO NOT induce vomiting.

INHALATION: Remove from exposure. Seek medical attention if necessary if breathing is difficult.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASHPOINT: None METHOD USED: NA

FLAMMABLE LIMITS: LFL: NA UFL: NA

EXTINGUISHING MEDIA: Non-flammable. Use media as appropriate for surrounding materials.

FIRE & EXPLOSION HAZARDS: Contact with metals may release flammable hydrogen gas.

SPECIAL FIRE FIGHTING PROCEDURES: Firefighters should wear approved SCBA and full turn-out gear.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Wear recommended protective equipment. Recover as much product as possible and collect in alkali-resistant container. Use absorbent to pick up residue. Neutralize residue with dilute solutions of phosphoric/sulfuric or hydrochloric acid. Avoid discharging liquid directly into a sewer or surface waters

Review current local, state and federal laws, codes, statutes, and regulations to determine appropriate agencies to be notified, and the conditions under which they are to be notified. (See Section 13 for waste disposal comments).

7. HANDLING AND STORAGE

HANDLING: Avoid breathing mists or spray. Avoid eye and skin contact. Wear protective equipment when handling product. Keep out of the reach of children.

STORAGE: Store in cool, dry area. Keep containers covered when not in use. Avoid storing with incompatible materials.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

RESPIRATORY PROTECTION: Use a NIOSH approved respirator (organic vapor/N95 cartridge type) if any of the occupational exposure limits in Section 3 may be exceeded.

EYE PROTECTION: goggles, face shield

PROTECTIVE GLOVES: nitrile, butyl rubber, neoprene

BODY PROTECTION: neoprene apron, as needed

VENTILATION: Use general/dilution or local exhaust ventilation as needed to ensure that occupational exposure limits are not exceeded.

OTHER PROTECTIVE EQUIPMENT: Eyewash and emergency shower

NOTE: All PPE should be selected on the basis of an exposure assessment performed by a competent person.

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: > 212°F
VAPOR PRESSURE: NDA
VAPOR DENSITY: (Air = 1): NA
SOLUBILITY IN WATER: Complete.
APPEARANCE: Amber liquid

SPECIFIC GRAVITY: (Water = 1): 1.241
VOLATILE BY VOLUME: NA
EVAPORATION RATE: (Ethyl Ether = 1): < 1
pH: 14.0
ODOR: mild odor

10. STABILITY AND REACTIVITY

STABILITY: Stable.

CONDITIONS TO AVOID: If heated, may product violent reaction with water.

INCOMPATIBILITY (materials to avoid): Water-reactive substances, metals (e.g. aluminum, zinc) strong acids, oxidizers, organic halogens, flammable liquids.

HAZARDOUS DECOMPOSITION PRODUCTS: Contact with metals such as aluminum and zinc may produce hydrogen gas. Thermal decomposition can produce oxides of carbon, potassium, nitrogen and sulfur.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

There is no product based toxicological information for this product. Toxicology information is provided based on individual ingredients.

LD_{50s}, oral, rat: 1960 mg/kg (sodium silicate); 273 mg/kg (potassium hydroxide)

TARGET ORGANS: Eyes, skin, lungs.

Medical conditions that may be aggravated by exposure: Pre-existing skin, eye, respiratory disorders.

Carcinogenicity IARC: None NTP: None OSHA: None

12. ECOLOGICAL INFORMATION

ECOTOXICITY: NDA

ENVIRONMENTAL FATE: NDA

13. DISPOSAL CONSIDERATIONS

Waste and its solutions are assigned EPA Hazardous Waste Number D002 (corrosivity). The Review current local, state and federal laws, codes, statutes and regulations to determine current status and appropriate disposal method for the ingredients listed in Section 2. Any disposal practice must be in compliance with local, state, and federal laws and regulations. Contact the appropriate agency for specific information. Treatment, transport, storage and disposal of hazardous waste must be dealt with by a licensed facility or waste hauler.

14. TRANSPORT INFORMATION

D.O.T. HAZARDOUS MATERIALS DESCRIPTION AND PROPER SHIPPING NAME:

Corrosive Liquid, Basic, Inorganic, N.O.S. (Potassium Hydroxide Solution), 8 / UN3266 / P.G. II

Exceptions: 49CFR 173.154

15. REGULATORY INFORMATION

TSCA (TOXIC SUBSTANCES CONTROL ACT): the materials in this product are listed on the TSCA Inventory.

CERCLA (Comprehensive Response compensation and Liability Act, 40 CFR 117, 302: Potassium Hydroxide has a Reportable Quantity of 1,000 lb. (> 600 gallons of product).

SARA TITLE III (Superfund Amendments and Authorization Act):

Section 311/312:
Immediate Health Effects: Yes
Delayed Health Effects: Yes
Fire Hazard: No
Sudden Release of Pressure Hazard: No
Reactivity Hazard: Yes
Section 313 Reportable Ingredients: None

STATE "RIGHT-TO-KNOW": This product may contain components cited on certain state lists. Consult with your individual State regarding this product's components.

16. OTHER INFORMATION

National Fire Protection Association (NFPA): Health: 3 Flammability: 0 Reactivity: 1

The data here is for hazard communication to our employees, our customers and their employees, and authorized regulatory agencies. For the intended purpose, this MSDS (Material Safety data Sheet) may be duplicated or the data transcribed to an alternative form. NOTE: The information contained herein is provided in good faith and is believed to be correct as of the date hereof. However, Birchwood Laboratories, Inc. makes no representation as to the comprehensiveness or accuracy of the information. It is expected that individuals receiving the information will exercise their independent judgment in determining its appropriateness for a particular period. Accordingly, Birchwood Laboratories, Inc. will not be responsible for damages of any kind resulting from the use of or reliance upon such information. NO REPRESENTATIONS, OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER NATURE ARE MADE HEREUNDER TO WHICH THE INFORMATION REFERS. The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment.

FOR ASSISTANCE WITH PLACING ORDERS:

- Product Pricing / Payment Terms
- Shipping and Tracing of Shipments
- Sales Rep Locations

Call our Sales Department (952) 937-7931

Or 1-800-328-6156 or Fax (952) 937-7979

FOR PRODUCT USAGE ASSISTANCE

- Questions on Operation of Products
- Solving Finishing Problems
- Operator Safety and Pollution Control

Call our Customer Service Desk Department (952) 937-7931

Or 1-800-328-6156 or Fax (952) 937-7979

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product number	836-002
Product name	Saw Cleaner - Pitch and Gum Remover
Effective date	25-Jan-2012
Company information	Sprayway, Inc. 1005 Westgate Addison, IL 60101 United States
Company phone	1-630-543-7600
Emergency telephone US	1-866-836-8855
Emergency telephone outside US	1-952-852-4646
Version #	01
Product use	Solvent cleaner

2. Hazards Identification

Emergency overview	Aerosol. CONTENTS UNDER PRESSURE. Causes skin and eye burns. Irritating to respiratory system. Prolonged exposure may cause chronic effects.
Potential health effects	
Routes of exposure	Eye contact. Skin contact. Ingestion.
Eyes	Causes eye burns.
Skin	Causes skin burns. May be harmful if absorbed through skin.
Inhalation	Intentional misuse by concentrating and inhaling the product can be harmful or fatal. Causes burns. Irritating to respiratory system. Prolonged inhalation may be harmful.
Ingestion	Exposure by ingestion of an aerosol is unlikely. Harmful if swallowed. Ingestion causes burns of the upper digestive and respiratory tracts. May cause delayed lung damage. Components of the product may be absorbed into the body by ingestion.
Target organs	Prolonged or repeated exposure may cause liver and kidney damage. These effects have not been observed in humans. Central nervous system. Lungs.
Chronic effects	May be harmful if absorbed through skin. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion and blurred vision) and/or damage. May cause delayed lung injury.
Signs and symptoms	Discomfort in the chest. Narcosis. Coughing.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Diethylene Glycol Monobutyl Ether	112-34-5	8 - 10
Sodium Hydroxide	1310-73-2	5 - 8
Propane	74-98-6	1 - 3
n-Butane	106-97-8	1 - 3
Monoethanolamine	141-43-5	1 - 3
Non-hazardous and other components below reportable levels		60 - 80

4. First Aid Measures

First aid procedures	
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
Skin contact	Immediately flush skin with plenty of water. Remove and isolate contaminated clothing and shoes. Get medical attention immediately.

Inhalation	If inhalation of gas/fume/vapor/dust/mist from the material is excessive (air concentration is greater than the TLV or health effects are noticed), immediately remove the affected person(s) to fresh air. Get medical attention if symptoms persist.
Ingestion	In the unlikely event of swallowing contact a physician or poison control center. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

5. Fire Fighting Measures

Flammable properties	Runoff to sewer may cause fire or explosion hazard.
Extinguishing media	
Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Protection of firefighters	
Protective equipment and precautions for firefighters	In case of fire and/or explosion do not breathe fumes. Containers should be cooled with water to prevent vapor pressure build up.

6. Accidental Release Measures

Methods for containment	Stop the flow of material, if this is without risk. Should not be released into the environment.
Methods for cleaning up	Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

7. Handling and Storage

Handling	Pressurized container: Do not pierce or burn, even after use. Do not smoke while using or until sprayed surface is thoroughly dry. Use only in area provided with appropriate exhaust ventilation. Do not use if spray button is missing or defective. Do not re-use empty containers. Do not get this material in contact with skin. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid prolonged exposure.
Storage	Level 1 Aerosol. Contents under pressure. Do not puncture, incinerate or crush. The pressure in sealed containers can increase under the influence of heat. Do not handle or store near an open flame, heat or other sources of ignition. Avoid exposure to long periods of sunlight. Store in cool place. Keep away from food, drink and animal feedingstuffs. Store at ambient temperature and atmospheric pressure.

8. Exposure Controls / Personal Protection

Exposure limits

ACGIH

Components	CAS #	TWA	STEL	Ceiling
Diethylene Glycol Monobutyl Ether	112-34-5	20 ppm	Not established	Not established
Sodium Hydroxide	1310-73-2	Not established	Not established	2 mg/m3
Propane	74-98-6	1000 ppm	Not established	Not established
n-Butane	106-97-8	1000 ppm	Not established	Not established
Monoethanolamine	141-43-5	3 ppm	6 ppm	Not established

OSHA

Components	CAS #	TWA	STEL	Ceiling
Diethylene Glycol Monobutyl Ether	112-34-5	100 ppm	Not established	Not established
Sodium Hydroxide	1310-73-2	2 mg/m3	Not established	Not established
Propane	74-98-6	1000 ppm	Not established	Not established
Monoethanolamine	141-43-5	3 ppm	Not established	Not established

Personal protective equipment	
Skin protection	Do not get this material on clothing. Wear appropriate chemical resistant clothing. Structural firefighters protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations. Use chemical splash goggles and face shield (ANSI Z87.1 or approved equivalent).
Respiratory protection	Do not breathe dust/fume/gas/mist/vapors/spray. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. If permissible levels are exceeded use NIOSH mechanical filter / organic vapor cartridge or an air-supplied respirator.

9. Physical & Chemical Properties

Appearance	Compressed liquefied gas.
Boiling point	386.6 °F (197.2 °C) estimated
Color	Colorless.
Density	1.009 g/cm3 estimated
Flammability (HOC)	5.7 kJ/g estimated
Flash back	No
Flash point	-156 °F (-104.4 °C) Propellant
Form	Aerosol.
Freezing point	Not available
Odor	Ammoniacal.
pH	13 - 14
Physical state	Liquid.
Pressure	85 - 105 psig @ 70F
Solubility	Completely
Specific gravity	1.0091 estimated

10. Chemical Stability & Reactivity Information

Chemical stability	Risk of ignition.
Conditions to avoid	Heat, flames and sparks.
Hazardous decomposition products	Irritants. Toxic gas.

11. Toxicological Information

Acute effects Acute LD50: 12919 mg/kg estimated, Rat, Dermal

Component analysis - LD50

Toxicology Data - Selected LD50s and LC50s

Diethylene Glycol Monobutyl Ether	112-34-5	Oral LD50 Rat 3384 mg/kg; Dermal LD50 Rabbit 2700 mg/kg
Monoethanolamine	141-43-5	Oral LD50 Rat 1720 mg/kg; Dermal LD50 Rabbit 1 mL/kg; Dermal LD50 Rabbit 1025 mg/kg
n-Butane	106-97-8	Inhalation LC50 Rat 658 mg/L 4 h
Propane	74-98-6	Inhalation LC50 Rat 658 mg/L 4 h
Sodium Hydroxide	1310-73-2	Dermal LD50 Rabbit 1350 mg/kg

Teratogenicity Not expected to be hazardous by OSHA criteria.

12. Ecological Information

Ecotoxicity

LC50 746 mg/L, Fish, 96.00 Hours,
EC50 3071 mg/L, Daphnia, 48.00 Hours,
IC50 687 mg/L, Algae, 72.00 Hours,
Components of this product are hazardous to aquatic life.

13. Disposal Considerations

Waste codes	D001: Waste Flammable material with a flash point <140 F D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel]
Disposal instructions	Contents under pressure. Dispose of this material and its container to hazardous or special waste collection point. Do not incinerate sealed containers. Do not allow this material to drain into sewers/water supplies. If discarded, this product is considered a RCRA ignitable waste, D001. Dispose in accordance with all applicable regulations.

14. Transport Information

Department of Transportation (DOT) Requirements

Basic shipping requirements:	
Proper shipping name	Aerosols
Hazard class	2.1
UN number	UN1950
Additional information:	
Special provisions	153, N82
Packaging exceptions	LTD QTY
Packaging non bulk	None
Packaging bulk	None

Further information

Until 12/31/2013, the "Consumer Commodity - ORM-D" marking may still be used in place of the new limited quantity diamond mark for packages of UN 1950 Aerosols. Limited quantities require the limited quantity diamond mark on cartons after 12/31/13 and may be used now in place of the "Consumer Commodity ORM-D" marking but not concurrently.

IMDG

Basic shipping requirements:	
Proper shipping name	AEROSOLS
Hazard class	2.1
Subsidiary hazard class	8
UN number	1950
Additional information:	
Packaging exceptions	LTD QTY
Item	5FC
Labels required	None
Transport Category	If <1L: Consumer Commodity

IATA

Basic shipping requirements:	
Proper shipping name	Aerosols, flammable, containing substances in Class 8, Packing Group II
Hazard class	2.1
Subsidiary hazard class	8
UN number	1950
Additional information:	
Packaging exceptions	Forbidden
Labels required	Forbidden

15. Regulatory Information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

Diethylene Glycol Monobutyl Ether 112-34-5	1.0 % de minimis concentration (applies to R-(OCH2CH2)n-OR', where n = 1,2, or 3, R=alkyl C7 or less, or R = phenyl or alkyl substituted phenyl, R' = H or alkyl C7 or less, or OR' consisting of carboxylic acid ester, sulfate, phosphate, nitrate, or sulfonate, Chemical Category N230)

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical	Yes

CERCLA (Superfund) reportable quantity

Sodium Hydroxide: 1000.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Section 302 extremely hazardous substance	No
Section 311 hazardous chemical	Yes

Hazard categories (311/312)

Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - Yes
Pressure Hazard - Yes
Reactivity Hazard - No

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of New and Existing Chemicals (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations

U.S. - Pennsylvania - RTK (Right to Know) List

Diethylene Glycol Monobutyl Ether	112-34-5	Environmental hazard
Monoethanolamine	141-43-5	Present
n-Butane	106-97-8	Present
Propane	74-98-6	Present
Sodium Hydroxide	1310-73-2	Environmental hazard

16. Other Information

Further information

HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings

Health: 3*
Flammability: 2
Physical hazard: 0
Personal protection:

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. The information in the sheet was written based on the best knowledge and experience currently available.

Prepared by

Regulatory Compliance

MATERIAL SAFETY DATA SHEET

SharpCool Premium Semi-Synthetic

I. PRODUCT AND MANUFACTURER INFORMATION	
Product name	SharpCool Premium Semi-Synthetic
Chemical name	NA
Synonyms	Cutting Fluid
CAS number	NE
Manufacturer	Manufactured for FMT - FASTENAL By: Ashburn Chemical Technologies 7403 Wright Rd Houston, TX 77041
Emergency phone number	USA: 800-424-9300 (CHEMTREC) Outside USA: 703-527-3887 (CHEMTREC)
General Information	832-399-1000
Date of last revision	7/21/11

II. HAZARDOUS INGREDIENTS					
HAZARDOUS COMPONENT	CAS NUMBER	%	OSHA PEL-TWA	ACGIH TLV-TWA	CHEMICAL AND/OR COMMON NAME(S)
Heavy Hydrotreated naphthenic distillates	64742-52-5	<15		5 mg/m3	PETROLEUM OIL (mist)
Triethanolamine	102-71-6	<5	NR	5 mg/m3	
Chlorinated paraffin	061788-76-9	<5	NE	NE	chloroalkanes
Monoethanolamine	141-43-5	<3	6 mg/m3	3 ppm	

III. PHYSICAL AND CHEMICAL CHARACTERISTICS	
Boiling point @ 760 mm Hg	ND
Vapor pressure at 20 °C	ND
Vapor density (air = 1)	ND
Solubility in water	COMPLETE, FORMS EMULSION
Appearance and odor	AMBER LIQUID
Specific gravity (H_2O = 1.0)	1.03
Ph @ 10:1	9.4
Melting point	ND
Evaporation rate (butyl acetate = 1)	<1

IV. FIRE AND EXPLOSION HAZARD DATA			
Combustible/Not combustible	Not combustible		
Flammable/Not flammable	Not flammable		
Pyrophoric/Not pyrophoric	Not pyrophoric		
Explosive/Not explosive	Not explosive		
Flash point (test method)	NA contains water		
Flammable limits (in Air % by volume)	ND	ND	ND
Extinguishing media	CO2, Dry chemical, foam, water spray, water fog		
Special fire-fighting procedures or equipment	Treat as hot oil. Fire Fighters should wear NIOSH approved self contained breathing apparatus.		
Unusual fire and explosion hazards	Intense heat can cause drums to rupture. Cool fire-exposed containers with water.		

V. REACTIVITY DATA	
Material is stable/unstable	Stable
Conditions to avoid	Oxidizing Agents
Incompatibility (materials to avoid)	Oxidizing Agents
Hazardous decomposition or by-products	Thermal decomposition and combustion are not expected to occur except under extreme conditions.
Hazardous polymerization will/will not occur	Will not occur

VI. HEALTH HAZARD DATA	
Threshold limit value	
Primary route(s) of entry	Skin, Mouth, Eyes
Known Hazards Under 29 CFR 1910.1200	
Mutagenic (genetic defects)	None
Reproductive	None
Systemic	None
Teratogenic (birth defects)	None
Carcinogen listed in:	
NTP (National Toxicology Program)	NO
IARC Monographs	NO
OSHA	NO
Signs and symptoms of exposure	
Inhalation	May irritate mucous membrane.
Skin contact	May cause skin irritation or dermatitis. May include redness, edema, drying, and cracking of the skin.
Eye contact	Weak to moderate eye irritant.
Ingestion	LD50 in rats is >5000mg/kg.
Emergency first aid procedures	
Inhalation	Remove exposed person (s) to fresh air.
Skin contact	Wash with soap and water. Immediately remove soiled clothing and launder before reuse. Get medical attention if irritation persists.
Eye contact	Flush immediately with water for at least 15 minutes. Get immediate medical attention.
Ingestion	DO NOT INDUCE VOMITING. If conscious give two pints of water. Get immediate medical attention.
Medical conditions generally aggravated by exposure	
Notes to physician	Treat Symptomatically.

VII. PRECAUTIONS FOR SAFE HANDLING AND USE		
Steps to take if released or spilled	Personal protective equipment must be worn. Prevent entry into sewers and waterways. Collect free liquid for reuse or disposal. Absorb with inert material.	
Waste disposal method	Dispose of in accordance with federal, state, and local regulations.	
Precautions for handling and storing	Keep containers closed when not in use. Wash thoroughly after handling.	
Other precautions		
Hazard ratings	NFPA	HMIS
Health	1	1
Flammability	0	0
Reactivity	0	0
Personal protection		B

VIII. CONTROL MEASURES

Protective gloves (type and material)	Use nitrile or neoprene gloves.
Eye protection	Chemical goggles or face shield.
Other protective clothing or equipment	Long sleeve shirt is recommended.
Respiratory protection (specify type)	Use NIOSH/MSHA approved full face respirator with a combination organic vapor and dust/mist cartridge if the recommended exposure limit is exceeded. Use self-contained breathing apparatus for entry into confined space and for other poorly ventilated areas and large spill clean-up sites.
Ventilation and conditions	
Local	Use local exhaust ventilation to control mist or vapors.
Mechanical	
Other	
Special	
Work/hygienic practices	Clean hands and contaminated clothing after exposure and before handling food.

IX. ADDITIONAL REGULATORY INFORMATION	
TSCA (Toxic Substances Control Act)	The ingredients of this product are on the TSCA inventory.
SARA hazard category (Section 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III)	None
Toxic chemical(s) subject to the supplier notification requirements of section 313 of the Superfund Amendment and Reauthorization Act of 1986 (SARA) and the requirements of 40 CFR part 372	None
Ingredient(s) regulated under the Clean Air Act Section 112 hazardous air pollutants and subject to all reporting requirements of CERCLA (Superfund)	None

NA – not applicable NR – not reported ND – not determined NE – not established UN – unknown

The information presented in this MSDS has been compiled from sources deemed reliable. This MSDS is presented in good faith and believed to be accurate as of the effective date shown above. No warranty, expressed or implied, is given. Regulatory requirements are subject to change and may differ from one location to another. It is the responsibility of the buyer to insure compliance with federal, state, provincial and local laws and regulations.

THE PRINCE/IZANT COMPANY

MATERIAL SAFETY DATA SHEET
SILVER BRAZING ALLOYS

PRODUCT NAME: SILVER BRAZING ALLOYS

MANUFACTURER: The Prince & Izant Company
12999 Plaza Drive
Cleveland, Ohio 44130

T: 216-362-7000
F: 216-362-7456
www.princeizant.com

EMERGENCY PHONE #: 1-800-424-9300 (CHEMTREC) **Revision 1/10/2012**

H.M.I.S. Information: HEALTH = 1 FLAMMABILITY = 0 REACTIVITY = 0

SECTION I - IDENTIFICATION

Common Name: NA
CAS Number: See Below
Formula: See Attachment

Chemical Family: Mixture
Chemical Name: Mixture (See Attachment)
TSCA Compliant: Yes

SECTION II - COMPOSITION INFORMATION

Hazardous Components	CAS NO.	OSHA PEL	ACGIH TLV	%
SILVER (Metal)	7440-22-4	0.01	0.1	NA
SILVER (soluble)	7440-22-4	0.01	0.01	NA
COPPER (dust)	7440-50-8	1.0	1.0	NA
ZINC (oxide)	1314-13-2	5.0	5.0 (fume)	NA
TIN (oxide)	7440-31-5	2.0	2.0	NA
NICKEL	7440-02-0	1.0	1.0	NA
MANGANESE (fume asM)	7439-96-5	10	1.0	NA

SARA SECTIONS 313 SUPPLIER NOTIFICATION: Individual filler metals covered by this MSDS may contain the following toxic chemicals subject to the reporting requirements of Section 3134 of the Emergency Planning and

ommunity Right-To-Know Act of 1986 and 40CFR 372. Copper, Manganese, Nickel, Silver and Zinc. Refer to S
this MSDS for the filler metal name and the percent by weight and Section 2 for the CAS number for each chemical.

PRODUCT NAME	AWS A5.8	AMS	AG	CU	ZN	NI	SN	Other
SILVERBRAZ 5			5	58	37			
SILVERBRAZ 7			7	93				
SILVERBRAZ 9			9	53	38			
SILVERBRAZ 20			20	45	35			
SILVERBRAZ 25			25	52.5	22.5		2	
SILVERBRAZ 25SN2			25	40	33			
SILVERBRAZ 30	BAg-20		30	38	32			
SILVERBRAZ 35			35	32	33		2	
SILVERBRAZ 38	BAg-34		38	32	28			
SILVERBRAZ 40L			40	30	30			
SILVERBRAZ 40			40	36	24		2	
SILVERBRAZ 40SN2	BAg-28		40	30	28	2		
SILVERBRAZ 40NI2	BAg-4		40	30	28	5		
SILVERBRAZ 40NI5			40	30	25		3	
SILVERBRAZ 45T			45	27	25			
SILVERBRAZ 45	BAg-5		45	30	25			7.5
SILVERBRAZ 49NI4	BAg-22		49	16	23	4.5		
SILVERBRAZ 50	BAg-6		50	34	16			
SILVERBRAZ 50NI2	BAg-24		50	20	28	2		
SILVERBRAZ 54	BAg-13	4772	54	40	5	1		
SILVERBRAZ 56NI2	BAg-13a	4765	56	42		2		
SILVERBRAZ 56	BAg-7	4763	56	22	17		5	
SILVERBRAZ 60			60	25	15			
SILVERBRAZ 60SN10	BAg-18	4773	60	30			10	
SILVERBRAZ 63	BAg-21	4774C	63	28.5		2.5	6	
SILVERBRAZ 65Ni2	Bag-9		65	20		2		5
SILVERBRAZ 72	BAg-8		72	28				
SILVERBRAZ 75			75	22	3			15
SILVERBRAZ 85	Bag-23	4766	85					
TRIMETAL 40NI2	BAg-4		40	30	28	2		
TRIMETAL 40NI5			40	30	25	5		
TRIMETAL 50NI2	BAg-24		50	20	28	2		

One way to determine the composition and quantity of fumes and gasses to which workers are exposed is to take an air sample in the workers breathing zone, See ANSI/AWS F1.1 available from the American Welding Society, 550 NW Laguna Rd., Miami FL, 33126.

SECTION III - HEALTH HAZARDS

EMERGENCY AND FIRST AID PROCEDURES

Inhalation	Remove from dust or fume exposure. If breathing has stopped, perform artificial respiration. Summon medical aid immediately.
Eyes	Flush eyes with plenty of water. If irritation develops, call a physician.
Skin	Flush with plenty of water. If irritation persists, call a physician.
Ingestion	Procedures normally not needed. If large quantities are ingested, seek medical advice
Primary Routes of Entry into Body	Fume inhalation
Symptoms of Overexposure	Copper and Zinc fume may cause fume fever. Short term symptoms may include a metallic taste in the mouth, dryness or irritation of the throat, followed by coughing, shortness of breath, nausea, fever, body ache, and chills. Long-term exposure to brazing fume, gasses, or dust may contribute to pulmonary irritation or pneumoconiosis. Nickel should be considered a possible carcinogen per OSHA 29 CFR 1910.1200. Certain nickel compounds have been implicated based on experience in some nickel refining operations. The specific compounds, however, have not been determined and direct association between nickel in welding fume and cancer has not been demonstrated.
	Code: AG, NI, SN, CU, ZN, MN
Medical Conditions Aggravated by Exposure	Individuals with impaired pulmonary functions or illness may have symptoms exacerbated by fume irritants.
Chemical Listed as Carcinogen	NA
OSHA Permissible Exposure Limit (PEL)	NA
ACGIH Threshold Limit Value (TLV)	NA
Other Health Considerations	Brazing alloys are frequently used with a fluoride type flux. If applicable, flux fume should be considered in evaluation of hazards.

The State of California requires the following information for products containing Nickel:

WARNING: This product contains a chemical known to the State of California that may cause cancer.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point NA

Flammable Limits Lower: NA Upper: NA

Extinguishing Media None Needed

Auto Ignition Temperature NA

Special Fire Fighting Procedures NA

Unusual Fire and Explosion Hazards Open flame and sparks can ignite combustibles

SECTION V - ACCIDENTAL RELEASE MEASURES

Steps to be Taken in Case Material is Spilled Solid Metal Wire / Strip does not spill or leak

SECTION VI - STABILITY AND REACTIVITY

Stability: Generally considered stable.

(Conditions to Avoid): None expected.

Incompatibility NA

Hazardous Decomposition Products

Brazing fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being brazed, the process, procedures, and filler metals used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being brazed (such as paint, plating, or galvanizing), the number of operators and the volume of the work area, the quality and amount of ventilation, the position of the operator's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors form cleaning and degreasing activities). When the filler metal is consumed, the fume and gas decomposition products generated are different in percent and form from the solid wire or rod ingredients listed in Section 1. Fume and gas decomposition products, and not the ingredients in the rod or wire are important. The concentration of a given fume or gas component may decrease or increase by many times the original concentration in the rod or wire. Also, new compounds not in the rod or wire may form. Decomposition products of normal operation include those originating from the volatilization reaction, or oxidation of the wire or rod plus those from the base metal and coating, etc., as noted above.

Hazardous Polymerization: Will not occur.

(Conditions to Avoid): NA

SECTION VII - CONTROL MEASURES

Ventilation	Use enough ventilation, local exhaust at the flame to keep the fumes and gases below TLV's in the worker's breathing zone and the general area. Train the employee to keep his head out of the fumes. See ANSI/ASC Z49.1 Section 5.
Local Exhaust	Yes
Protective Gloves	NA
Eye Protection	Wear safety glasses, goggles, or use face shield with filter lens of appropriate shade number (see ANSI/ASC Z49.1 – Section 4.2). Provide protection screens and flash goggles, if necessary, to shield others.
Mechanical (General)	NA
Respiratory Protection (Type):	NA
Other Protective Clothing or Equipment	Wear head and body protection, which helps to prevent injury from heat radiation, sparks, and flame. See ANSI Z49.1. At a minimum this includes gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing.

SECTION VIII - HANDLING AND STORAGE

Handling & Storage Precautions	Store in a cool, dry location away from incompatible materials.
Work/Hygienic Practices	Wash thoroughly after handling. Avoid contact with and dusts, mists or fumes resulting from the use of this product.. Do not eat, drink, or smoke in work area. Use only with adequate ventilation.
Other Precautions	NA

NOTE : Consult the most recent OSHA CADMIUM Standard (1910.1027) and its attachments, appendices, etc., for full requirements, some of which are not covered in this Material Safety Data Sheet.

NOTE:

ISCLAIMER

The information and recommendations contained in this publication have been provided without charge & compiled from sources believed to be reliable and to represent the best information available on the subject at the time of issue. No warranty, guarantee, or representation is made by the Prince and Izant Company, Inc. as to the absolute correctness or sufficiency of any representation contained in this and other publications; Prince and Izant Company, Inc. assumes no responsibility in connection therewith; nor can it be assumed that all acceptable safety measures are contained in this (and other publications, or that other or additional measures may not be required under particular or exceptional conditions or circumstances.

Silver-Copper-Manganese-Nickel-Zinc Alloys

Material Safety Data Sheet

1. Product And Company Identification

Supplier

Lucas Milhaupt, Inc.
5656 South Pennsylvania Avenue
Cudahy, WI 53110

Handy & Harman of Canada, Ltd.
290 Carlingview Drive
Rexdale, ON M9W5G1

Supplier Emergency Contacts & Phone Number

Lucas-Milhaupt, Inc.: 414-769-6000
Handy & Harman of Canada, Ltd.: 416-675-1860

Manufacturer

Lucas-Milhaupt, Inc.
5656 South Pennsylvania Avenue
Cudahy, WI 53110
Telephone: 414-769-6000
FAX: 414-769-1093

Manufacturer Emergency Contacts & Phone Number

Chemtrec: 800-424-9300

Issue Date: 06/29/2009
Product Name: Silver-Copper-Manganese-Nickel-Zinc Alloys
MSDS Number: 75

Product Identification Text

This MSDS is applicable to products with these product codes: 32-252(Braze 252); 32-495(Braze 495); 38-215; 38-245; 38-259, 38-490; and 39-259.

WARNING: These products contain a chemical(s) known to the State of California to cause cancer.

2. Composition/Information On Ingredients

Ingredient Name	CAS Number	%
Copper	7440-50-8	16-62
Manganese	7439-96-5	1-7.5
Nickel	7440-02-0	0.1-4.5
Silver	7440-22-4	24-49
Zinc	7440-66-6	9-44

3. Hazards Identification

Primary Routes(s) Of Entry

Ingestion; inhalation.

Eye Hazards

Eye contact with these products in finely-divided forms may cause irritation, conjunctivitis, ulceration of the cornea, and/or argyria, a permanent blue-gray discoloration of the eyes, skin, mucous membranes, and respiratory tract.

Skin Hazards

Skin contact with these products, particularly in finely-divided forms, may cause irritation, argyria, discoloration, and contact and/or allergic dermatitis.

Ingestion Hazards

Ingestion of these products in finely-divided form may cause nausea, vomiting, and gastrointestinal irritation. Long-term chronic ingestion may damage the liver, kidneys, gastrointestinal system, musculoskeletal system, and nervous system.

Inhalation Hazards

Inhalation of the components of these products is not known to present a significant risk to health when used according to instructions and with appropriate protective measures (see Section #8). Inhalation of component elements has been reported to cause one or more of the following symptoms and effects upon excessively high or prolonged exposure:

COPPER: Acute exposure may cause respiratory tract irritation, fever, muscle ache, chills, cough, weakness, and a metallic taste. Chronic exposure may damage the liver, kidney, spleen, pancreas, and brain.

MANGANESE: Acute inhalation may irritate the nose, throat, and upper respiratory tract, and produce flu-like symptoms and/or pneumonia. Chronic exposure may cause manganism, a disease of the central nervous system characterized by sleeplessness, muscle weakness, mental confusion, and spastic responses.

NICKEL: Acute exposure to nickel may cause headache, nausea, vertigo, and pulmonary edema. Chronic exposure may increase the risk of cancer to the nasopharynx, lungs, prostate, and kidney.

SILVER: Chronic exposure via inhalation may cause argyria.

ZINC: Acute exposure to zinc oxide may cause respiratory tract irritation and "metal fume fever", which is characterized by a metallic taste, cough, dry throat, chills, fever, tightness of chest, headache, nausea, shortness of breath, vomiting, and fatigue.

4. First Aid Measures

Eye

Flush affected areas with water for at least fifteen minutes. Seek medical assistance if necessary.

Skin

Remove contaminated clothing. Wash affected area with large quantities of water for at least five minutes. Seek medical attention if necessary. Launder or dry-clean clothing before reuse.

Ingestion

If subject is conscious, induce vomiting. If unconscious or convulsive, seek immediate medical assistance.

Inhalation

If signs and symptoms of toxicity are observed, remove subject from area, administer oxygen, and seek medical attention. Keep the subject warm and at rest. Perform artificial respiration if breathing has stopped.

Note To Physician

None of the components are acutely toxic by ingestion, nor are they absorbed through the skin. Extensive or prolonged skin contact may cause contact or allergic dermatitis.

5. Fire Fighting Measures

Flash Point: N/Appl.
Autoignition Point: N/Appl.
Flammability Class: N/Appl.
Lower Explosive Limit: N/Appl.
Upper Explosive Limit: N/Appl.

Fire And Explosion Hazards

In finely-divided form, these products may ignite when exposed to flame or by reaction with incompatible materials (see Section #10). If present in a fire or explosion, they may emit fumes of the constituent metals or metal oxides.

Extinguishing Media

Use dry chemical. Do not use water.

Fire Fighting Instructions

If fighting a fire in which these products are present, wear a self-contained breathing apparatus with full facepiece operated in pressure-demand or other positive pressure mode.

6. Accidental Release Measures

If a finely-divided form of product is spilled, clean up spillage so as to minimize dispersion of dust. Wet sweeping or vacuuming using HEPA filtration are recommended.

7. Handling And Storage

Handling Precautions

No special handling precautions are required.

Storage Precautions

Do not store in proximity to incompatible materials (see Section #10).

Work/Hygienic Practices

To minimize ingestion, wash hands and face before eating, drinking, applying cosmetics, or using tobacco.

8. Exposure Controls/Personal Protection

Engineering Controls

Use appropriate ventilation (e.g., dilution, local exhaust) adequate to maintain concentrations of all components to within their applicable standards.

Eye/Face Protection

Wear eye protection adequate to prevent eye contact with finely-divided product and eye injury if products are used with a flame. Plastic-frame spectacles withside shields and filter lenses (shade #3 or #4) are recommended.

Skin Protection

Wear appropriate protective gloves and clothing to prevent skin injury if these products are used with a flame and/or for prolonged or repeated contact with finely-divided forms of product. Avoid flammable fabrics.

Respiratory Protection

If an exposure level exceeds an applicable exposure standard, use a NIOSH-approved respirator having a configuration (type of facepiece, filter media, assigned protection factor, etc.) appropriate to the concentration of the contaminant(s) generated. For guidance on selection and use of respirators, consult American National Standard Z88.2 (ANSI, New York, NY 10036 USA).

Ingredient(s) - Exposure Limits

Copper

ACGIH TLVs: 0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dusts and mists)
OSHA PELs: 0.1 mg/m3 TWA (fume); 1 mg/m3 TWA (dusts and mists)

Manganese
ACGIH TLV: 0.2 mg/m3 TWA OSHA PEL: 5 mg/m3 "Ceiling"

Nickel
ACGIH TLV: 1.5 mg/m3 TWA OSHA PEL: 1 mg/m3 TWA

Silver
ACGIH TLV: 0.1 mg/m3 TWA (metal) OSHA PEL: 0.01 mg/m3 TWA

Zinc
ACGIH TLVs: 5 mg/m3 TWA; 10 mg/m3 STEL (as ZnO fume)
OSHA PEL: 5 mg/m3 TWA (as ZnO fume)

9. Physical And Chemical Properties

Appearance

Odorless brass-yellow or yellow-white metals in form of wire, strip, rod, powder, clad alloys, or preformed shapes.

Chemical Type: Mixture
Physical State: Solid
Solubility: Insoluble

Other physical properties (odor threshold, evaporation rate, vapor pressure, vapor density, oil-water partition coefficient, percent volatiles, percent VOCs) are not applicable to these products.

10. Stability And Reactivity

Stability: stable
Hazardous Polymerization: will not occur

Conditions To Avoid (Stability)

Silver and copper can form unstable acetylides in contact with acetylene gas.

Incompatible Materials

Strong oxidizers; ammonia; azides; nitric acid; nitrates; ethylene imine; chlorine trifluoride; sulfuric acid; inorganic and organic peroxides; peroxyformic acid; oxalic acid; tartaric acid; 1-bromo-2-propyne; selenium; permonosulfuric acid; bromates, chlorates, and iodates of alkali and alkali earth metals; ammonium nitrate; halogens; hydrazine; hydrazoic acid; dioxane; performic acid; phosphorus; sulfur; titanium plus potassium perchlorate; nitrogen dioxide; sulfur dioxide; carbon disulfide; hydrazine mononitrate; hydroxylamine; tellurium; lead azide.

Hazardous Decomposition Products

Heating to elevated temperatures may liberate metal/metal oxide fumes.

11. Toxicological Information

Reproductive Effects

Nickel has produced fetotoxic and teratogenic effects in animal studies.

Mutagenicity (Genetic Effects)

Nickel has produced mutagenic responses in mammalian cell cultures.

Conditions Aggravated By Overexposure

Pre-existing pulmonary diseases (e.g., bronchitis, asthma) may be aggravated by inhalation overexposure, particularly as fume. Chronic overexposure by inhalation and/or ingestion may aggravate pre-existing diseases of the liver, kidneys, gastrointestinal system, musculoskeletal system, and nervous system.

Ingredient(s) - Carcinogenicity

Nickel
NTP - Listed On The National Toxicology Program
Listed In The IARC Monographs

Ingredient(s) - Toxicological Data

Copper	LD50: No data available	LC50: No data available
Manganese	LD50: 9,000 mg/kg (oral/rat)	LC50: No data available
Nickel	LD50: 5,000 mg/kg (oral/rat)	LC50: No data available
Silver	LD50: >2,000 mg/kg (oral/rat)	LC50: No data available
Zinc	LD50: No data available	LC50: No data available

12. Ecological Information

In their intended manner of use, these products should not be released into the environment, and adverse effects on ecosystems are not anticipated under recommended conditions of use, storage, and disposal.

13. Disposal Considerations

Dispose of unused or unusable product in accordance with applicable Federal, State/Provincial, and local regulations.

14. Transport Information

These products are not Hazardous Substances or Dangerous Goods per USDOT, TDG (Canada), IATA, or IMO regulations.

15. Regulatory Information

TSCA Information

All components of these products are on the EPA's TSCA registry.

SARA Hazard Classes

Acute Health Hazard; Chronic Health Hazard

Ingredient(s) - U.S. Regulatory Information

Copper
SARA Title III - Section 313 Form "R"/TRI Reportable Chemical

Manganese
SARA Title III - Section 313 Form "R"/TRI Reportable Chemical

Nickel
SARA Title III - Section 313 Form "R"/TRI Reportable Chemical

Silver
SARA Title III - Section 313 Form "R"/TRI Reportable Chemical

Ingredient(s) - State Regulations

Nickel
California - Proposition 65

Canadian Regulatory Information

All components of these products are on the Domestic Substances List.
WHMIS Class(es) and Division(s): D2A, D2B
Component(s) on Ingredients Disclosure List:

1. Copper, elemental (CASRN 7440-50-8)
2. Manganese, elemental (CASRN 7439-96-5)
3. Nickel, elemental (CASRN 7440-02-0)
4. Silver, elemental (CASRN 7440-22-4)

16. Revision Information

This MSDS supersedes a previous MSDS dated 08/05/2004.

Disclaimer

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

Silver-Copper-Nickel-Zinc Alloys

Safety Data Sheet

1. Product and Company Identification

Suppliers and Manufacturers

Lucas Milhaupt, Inc.
5656 South Pennsylvania Avenue
Cudahy, WI 53110 USA
Telephone: 414-769-6000
www.lucasmilhaupt.com

Lucas-Milhaupt Toronto
290 Carlingview Drive
Rexdale, ON M9W 5G1 Canada
Telephone: 416-675-1860
www.lucas-milhaupt.com

Emergency Phone Number

Chemtrec: 800-424-9300

Issue Date: 03/21/2013
Product Name: Silver-Copper-Nickel-Zinc Alloys
SDS Number: 88
Product Codes: 24-703, 30-104, 30-114, 32-299, 32-403, 32-404, 32-505, 32-541, 38-201, 38-202, 39-506, 39-681, 40-075, 69-207, 70-005.

Alloy 39-506 is coated with a flux that contains potassium fluoride (CASRN 7789-23-3), but is <1% of the product by weight. Therefore, this substance is not required to be listed as an ingredient in Section #2 by either HAZCOM or WHMIS criteria.

WARNING: These products contain a chemical(s) known to the State of California to cause cancer.

2. Composition/Information on Ingredients

Ingredient Name	CAS Number	%
Copper	7440-50-8	19-95
Nickel	7440-02-0	0.1-24
Silver	7440-22-4	1.5-55
Zinc	7440-66-6	2-44

3. Hazards Identification

Primary Routes(s) of Entry

Ingestion; inhalation

Eye Hazards

Eye contact with these products in finely-divided forms may cause irritation, conjunctivitis, ulceration of the cornea, and/or argyria, a gray discoloration of the eyes, skin, mucous membranes, and respiratory tract.

If signs and symptoms of toxicity are observed, remove subject from area, administer oxygen, and seek medical attention. Keep the subject warm and at rest. Perform artificial respiration if breathing has stopped.

Note to Physician

None of the components are acutely toxic by ingestion, nor are they absorbed through the skin. Extensive or prolonged skin contact may cause contact or allergic dermatitis.

5. Fire Fighting Measures

Flash Point: Not Applicable (N/Appl.)
Autoignition Point: N/Appl.
Flammability Class: N/Appl.
Lower Explosive Limit: N/Appl.
Upper Explosive Limit: N/Appl.

Fire and Explosion Hazards

In finely-divided form, these products may ignite when exposed to flame or by reaction with incompatible materials (see Section #10). If present in a fire or explosion, they may emit fumes of the constituent metals or metal oxides.

Extinguishing Media

Use dry chemical. Do not use water.

Fire Fighting Instructions

If fighting a fire in which these products are present, wear a self-contained breathing apparatus with full facepiece operated in pressure-demand or other positive pressure mode.

6. Accidental Release Measures

If a finely-divided form of product is spilled, clean up spillage so as to minimize dispersion of dust. Wet sweeping or vacuuming using HEPA filtration are recommended.

7. Handling and Storage

Handling Precautions

No special handling precautions are required.

Storage Precautions

Do not store in proximity to incompatible materials (see Section #10).

Work/Hygienic Practices

Section 1: PRODUCT & COMPANY IDENTIFICATION

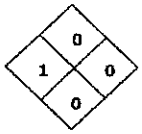
Product Name: Simple Green® All-Purpose Cleaner
Additional Names: Simple Green® Concentrated Cleaner Degreaser Deodorizer
Simple Green® Scrubbing Pad (Fluid in pad only)

Manufacturer's Part Number: **Please refer to page 4*

Company: Sunshine Makers, Inc.
15922 Pacific Coast Highway
Huntington Beach, CA 92649 USA
Telephone: 800-228-0709 • 562-795-6000 Fax: 562-592-3830
Emergency Phone: Chem-Tel 24-Hour Emergency Service: 800-255-3924

Section 2: HAZARDS IDENTIFICATION

Emergency Overview: **CAUTION. Irritant. This is a Green colored liquid with a sassafras added odor. Scrubbing pad is a green fibrous rectangle infused with Simple Green Cleaner.**



NFPA/HMIS Rating:
Health = 1 = slight
Fire, Reactivity, and Special = 0 = minimal

Potential Health Effects

Eye Contact: Mildly irritating.
Skin Contact: No adverse effects expected under typical use conditions. Prolonged exposure may cause dryness. Chemically sensitive individuals may experience mild irritation.
Ingestion: May cause stomach or intestinal irritation if swallowed.
Inhalation: No adverse effects expected under typical use conditions. Adequate ventilation should be present for prolonged usage in small enclosed areas.

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS Number	Percent Range
Water	7732-18-5	≥ 78%
2-butoxyethanol	111-76-2	≤ 5%
Ethoxylated Alcohol	68439-46-3	≤ 5%
Tetrapotassium Pyrophosphate	7320-34-5	≤ 5%
Sodium Citrate	68-04-2	≤ 5%
Fragrance	Proprietary Mixture	≤ 1%
Colorant	Proprietary Mixture	≤ 1%

Section 4: FIRST AID MEASURES

If Inhaled: If adverse effect occurs, move to fresh air.
If on skin: If adverse effect occurs, rinse skin with water.
If in eyes: Flush with plenty of water. After 5 minutes of flushing, remove contact lenses, if present. Continue flushing for at least 10 more minutes. If irritation persists seek medical attention.
If ingested: Drink plenty of water to dilute.

Section 5: FIRE FIGHTING MEASURES

This formula is stable, non-flammable, and will not burn. No special procedures necessary

Flammability: Non-flammable
Flash Point: Non-flammable

Suitable Extinguishing Media: Use Dry chemical, CO2, water spray or "alcohol" foam.
Extinguishing Media to Avoid High volume jet water.
Special Exposure Hazards: In event of fire created carbon oxides, oxides of phosphorus may be formed.
Special Protective Equipment: Wear positive pressure self-contained breathing apparatus; Wear full protective clothing.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions: See section 8 – personal protection.

Environmental Precautions: Do not allow into open waterways and ground water systems.

Method for Clean Up: Dilute with water and rinse into sanitary sewer system or soak up with inert absorbent material.

Section 7: HANDLING AND STORAGE

Handling: Keep container tightly closed. Ensure adequate ventilation. Keep out of reach of children.

Storage: Keep in cool dry area.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limit Values:	OSHA PEL	ACGIH TLV
2-butoxyethanol	TWA 50 ppm (240 mg/m^3)	20 ppm (97 mg/m^3)
Tetrapotassium Pyrophosphate		5 mg/m^3

Exposure Controls:
Eye Contact: Use protective glasses if splashing or spray-back is likely.
Respiratory: Use in well ventilated areas.
Skin Contact: Prolonged exposure or dermal sensitive individuals should use protective gloves.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Green Liquid	**Vapor Pressure:**	18 mmHg @20°C; 23.5 mmHg @26°C	
Odor:	Added Sassafras odor	**Density:**	8.5 lb/gal;	
Specific Gravity:	1.010 ± 0.010	**Water Solubility:**	100%	
pH:	9.5 ± 0.5	**VOC composite Partial Pressure:**		TBD
Boiling Point:	~210°F (98 °C)	**VOC:**	CARB Method 310	3.8%
Freezing Point:	~ 32°F (0 °C)		SCAQMD Method 313	2.8%
Nutrient Content:	Phosphorous: 0.28% Chloride: ~110 ppm	Sulfur: ~180 ppm Fluorine: ~90 ppm		

Section 10: STABILITY AND REACTIVITY

Stability:	Stable
Materials to Avoid:	None known
Hazardous Decomposition Products:	Normal products of combustion - CO, CO2; Oxides of Phosphorous may occur.

Section 11: TOXICOLOGICAL INFORMATION

Acute Toxicity: Oral LD_{50} (rat) > 5 g/kg body weight
Dermal LD_{50} (rabbit) > 5 g/kg body weight
Toxicity calculated from ingredients using OECD SERIES ON TESTING AND ASSESSMENT Number 33

Carcinogens: No ingredients are listed by OSHA, IARC, or NTP as known or suspected carcinogens.

Section 12: ECOLOGICAL INFORMATION

Hazard to wild mammals:	Low, based on toxicology profile
Hazard to avian species:	Low, based on toxicology profile
Hazard to aquatic organisms:	Low, based on toxicology profile
Chemical Fate Information:	Readily Biodegradable per OECD 301D, Closed Bottle Test

Section 13: DISPOSAL CONSIDERATIONS

Appropriate Method for Disposal:

Unused Product:	*Dilute with water to use concentration and dispose by sanitary sewer.
Used Product:	*This product can enter into clarifiers and oil/water separators. Used product may be hazardous depending on the cleaning application and resulting contaminants.
Empty Containers:	*Triple-rinse with water and offer for recycling if available in your area. Otherwise, dispose as non-hazardous waste.

*Dispose of used or unused product, and empty containers in accordance with the local, State, Provincial, and Federal regulations for your location. Never dispose of used degreasing rinsates into lakes, streams, and open bodies of water or storm drains.

Section 14: TRANSPORT INFORMATION

U.S. Department of Transportation (DOT) / Canadian TDG:	Not Regulated
IMO / IDMG:	Not classified as Dangerous
ICAO/ IATA:	Not classified as Dangerous
ADR/RID:	Not classified as Dangerous

U.N. Number	Not Required	Proper Shipping Name:	Detergent Solution
Hazard Class:	Non-Hazardous	Marine Pollutant:	No

Section 15: REGULATORY INFORMATION

All components are listed on: EINECS, TSCA, DSL and AICS Inventory.
No components listed under: Clean Air Act Section 112; Clean Water Act 307 & 311

SARA Title III: 2-butoxyethanol is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 as Category N230 – Certain Glycol Ethers.

RCRA Status: Not a hazardous waste CERCLA Status : No components listed

State Right To Know Lists

2-butoxyethanol Illinois, Massachusetts, New Jersey, Pennsylvania, Rhode Island

WHMIS Classification – Category D, subcategory 2B, eye irritant

Name	Toxic Substances List – Schedule 1 – CEPA (Canadian Environmental Protection Act)	NPRI Inventory
2-butoxyethanol	Yes	No

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by Canada's Controlled Products Regulation.

Section 16: OTHER INFORMATION

Questions about the information found on this MSDS should be directed to:
SUNSHINE MAKERS, INC. – TECHNICAL DEPARTMENT
15922 Pacific Coast Hwy. Huntington Beach, CA 92649
Phone: 800/228-0709 [8am-5pm Pacific time, Mon-Fri] *Fax:* 562/592-3830 *Email:* infoweb@simplegreen.com

CAGE CODE 1Z575
GSA/FSS - CONTRACT NO. GS-07F-0065J
Scrubbing Pad GSA/BPA - CONTRACT NO. GS-07F-BSIMP
National Stock Numbers & Industrial Part Numbers:

	Part Number	NSN	Size
Simple Green	13012	7930-01-342-5315	24 oz spray (12/case)
	13005	7930-01-306-8369	1 Gallon (6/case)
	13006	7930-01-342-5316	5 Gallon
	13016	7930-01-342-5317	15 Gallon
	13008	7930-01-342-4145	55 Gallon
	13103	N/A	2oz samples
	13225	N/A	2.5 Gallon
	13275	N/A	275 Gallon tote
	48049	N/A	1 Gallon Conc. w/ 32oz dilution
Scrubbing Pad	10224	7930-01-346-9148	Each (24/case)

Retail Numbers:

Part Number	Size
13002	16 oz Trigger (12/case)
13005	1 Gallon (6/case)
13013	24 oz Trigger (12/case)
13014	67 oz / 2 L (6/case)
13033	32 oz Trigger (12/case)
80007	Tier display holding 13005 (36/Tier)

part number is for both industrial and retail

****International Part Numbers May Differ.**

DISCLAIMER: The information provided with this MSDS is furnished in good faith and without warranty of any kind. Personnel handling this material must make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of this material and the safety and health of employees and customers. Sunshine Makers, Inc. assumes no additional liability or responsibility resulting from the use of, or reliance on this information.

1. IDENTIFICATION OF THE SUBSTANCE & PREPARATION/COMPANY/UNDERTAKING

1.1 Identification of the substance or preparation.

BPU100	AW99	BM100	GPS15-DP	HAZ412	MRO12P	MRO200	UN15DPS	UXT100-J
BPU500	AW124	CH15P	GPS30-DP	HAZ100-7	MRO15; P; DP	MRO300; F	UN510	UXT200
BPU200	AW412	CH30DP	GPS200	HAZ1818; -2	MRO15DPS	MRO315P	UN810	UXT500
BRU150	AW430	CH100	GPX153 P	HT15	MRO24; -DP	MRO350; DP	UN1019	UXT505
BHT150	AW806	CH1212	GPX303 DP	HT30	MRO30; P; DP	MRO450	UN1113	UXT514
	AW1818; -2	DTA25	H300	HT153	MRO36; P	MRO777	UN1201	UXT519
	BM15	GP30	H3844	HT303	MRO50	MRO1113	UN1719	UXT538
	BM20	GP100	HAZ99	HT555	MRO100, -2	MRO wipes	UN3800	UXT100
	BM30; X	GP200	300GRNW	Lite Wipes	MRO125	MXU1000	UXT15P	
AAA1515	BM40	GP500	HAZ124	M200	MRO150DND	TUF150	UXT30DP	

1.2 Company/Undertaking Identification

Manufacturer/Distributor	SPC 645 Howard Avenue; Somerset, NJ 08873, USA Tel: +1 732 302 0080 *EMERGENCY: +1 800 333 7672 (24-hours)*
Manufacturer/Distributor	SPC International bvba Atealaan 71, B2200; Herentals, BELGIUM Tel: +32 14 32 18 55 *EMERGENCY: + Tel: +32 14 32 18 55*

2. COMPOSITION/INFORMATION ON INGREDIENTS

POLYPROPYLENE	CAS Number: 9003-07-0	>99%
CARBON BLACK	CAS Number: 1333-86-4	<0.1% (Grey/Charcoal products ONLY)
GREEN PIGMENT	CAS Number: 1328-53-6	<0.1% (Green products ONLY)
YELLOW PIGMENT	CAS Number: 5580-57-4	<0.1% (Yellow products ONLY)
PROPRIETARY SURFACTANT	CAS Number: Proprietary	<1.0%

3. HAZARDS IDENTIFICATION

This product is NOT DANGEROUS in its unused form and contains no hazardous ingredients.

4. FIRST AID MEASURES/HEALTH INFORMATION/PROTECTION

Eye Contact:	Not applicable, product is inert
Ingestion:	Not applicable, first aid is not normally required.
Inhalation:	Not applicable
Skin Contact:	Not applicable, product is inert, except if product is melted use gloves. For hot melted product, immerse in or flush affected area with water to dissipate heat, then obtain medical attention.
Exposure Limits:	None
Threshold Limits	None
Personal Protection:	None (ambient conditions)
NPCA-HMIS Rating:	Health: 0; Flammability: 1; Reactivity: 0
NFPA-704 Rating:	Health: 0; Flammability: 1; Reactivity: 0

5. FIRE-FIGHTING MEASURES:

Be cautious of hot melted polypropylene
Use water spray to cool fire, exposed surfaces, and to protect personnel.
Isolate product from fire.
Extinguish fire with water spray.
Respiratory and eye protection is required for fire fighting personnel.
Decomposition products under fire conditions: Oxygen-lean conditions may cause monoxide and irritating smoke.

6. ACCIDENTAL RELEASE MEASURES:

Land:	Recover material and place in suitable container for reuse or for disposal in conformance with local regulations.
Water:	Recover material and place in suitable container for reuse or for disposal in conformance with local regulations.

7. HANDLING AND STORAGE:

7.1 Handling.
No precautions noted—see local regulation if needed.

7.2 Storage.
Storage temperature: Ambient, no direct sunlight
Storage Pressure: Atmospheric

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

8.1 Exposure limit values
None

8.2 Exposure Controls.

8.2.1 Occupational Exposure Controls

8.2.1.1 Respiratory Protection:	Not applicable
8.2.1.2 Hand Protection:	Not applicable
8.2.1.3 Eye Protection:	Not applicable
8.2.1.4 Skin Protection:	Not applicable

8.2.2 Environmental Exposure Controls
No data available

9. PHYSICAL AND CHEMICAL PROPERTIES:

9.1 General Information

Aspect:	Pads, rolls, booms, pillows, bilge booms, particulate, cartridges, microfibers, socs, drum top cover
Physical State	Solid
Color:	White
Odor:	May be mild hydrocarbon

9.2 Important Health, Safety, and Environmental Information

pH:	Not applicable	**Explosive Properties:**	No data available
Boiling Point:	Not applicable	**Vapor Pressure:**	No data available
Density:	0.04-0.06 gram/cc;	**Vapor Density:**	No data available
Odor:	May be mild hydrocarbon	**Solubility in Water**	None
Melting Point:	160 C; 320 F	**Flash Point:**	>315 C; >600 F (estimated)
Specific Gravity	0.90-0.92	**Auto-ignition Temperature:**	>315 C; >600 F (estimated)

9.3 Other Information

10. STABILITY AND REACTIVITY

10.1 Conditions to Avoid

Higher Temperatures and direct sunlight (chemical resistance is excellent);
Highly stable, but temperatures over 480 F may cause degradation.

10.2 Materials to Avoid:

No data available

10.3 Hazardous Decomposition Products:

Under fire and oxygen-lean conditions may cause monoxide and irritating smoke.

11. TOXICOLOGY INFORMATION

Product is inert.

12. ECOLOGICAL INFORMATION

12.1 Ecotoxicity.
No data available.

12.2 Mobility.
Inert Product.

12.3 Persistence and Degradability.
No data available.

12.4 Bioaccumulative Potential.
No data available.

12.5 Other Adverse Effects.
No data available.

13 DISPOSAL CONSIDERATIONS

In accordance with any applicable federal, state, and local law.

14 TRANSPORT INFORMATION

No data available.

15 REGULATORY INFORMATION

Department of Transportation (DOT) Hazard Class: Not Regulated
Department of Transportation (DOT) Identification No.: None
TSCA: This product is listed in the TSCA Inventory
CERCLA: This product is not subject to reporting.
SARA: (Title III) Not Hazardous, No Reportable Ingredients

16 OTHER INFORMATION

While Sorbent Products Company believes that the data set forth in this sheet is accurate, Sorbent Products Company makes no warranty with respect thereto, and expressly disclaims all liability for reliance thereon. Please consider the assistance of individuals trained in proper evaluation for health-related data.

Stratasys®

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 10/17/2012 Reviewed on 10/17/2012

1 Identification of the substance/mixture and of the company/undertaking

· **Product identifier**

· **Trade name: Ecoworks A**

· **Relevant identified uses of the substance or mixture and uses advised against**

· **Application of the substance / the preparation** Cleaning material / Detergent

· **Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**
Stratasys, Inc.
7665 Commerce Way
Eden Prairie, MN 55344
USA

Tel +1 952 937 3000
Fax +1 952 937 0070

In Europe:

C.S.B. GmbH
Parkstraße 29
D-47829 Krefeld
Germany

Tel.: +49-2151-6520860
Fax: +49-2151-6520869
E-Mail: info@csb-online.de

· **Information department:** Sales / Technics
· **Emergency telephone number:** see above

*

2 Hazards identification

· **Classification of the substance or mixture**

GHS05 Corrosion

Eye Dam. 1 H318 Causes serious eye damage.

GHS07

Acute Tox. 4 H302 Harmful if swallowed.

· **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**

Harmful

Harmful if swallowed.

Irritant

Risk of serious damage to eyes.

· **Classification system:**
The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

· **Label elements**

· **GHS label elements**
The product is classified and labelled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**

GHS05 GHS07

(Contd. on page 2)

· **Signal word** Danger

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Material Safety Data Sheet
acc. to ISO/DIS 11014

Reviewed on 10/17/2012

Printing date 10/17/2012

Trade name: Ecoworks A

(Contd. of page 1)

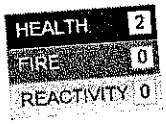
· **Hazard-determining components of labelling:**
Disodium carbonate, compound with hydrogen peroxide (2:3)
· **Hazard statements**
H302 Harmful if swallowed.
H318 Causes serious eye damage.
· **Precautionary statements**

P280	Wear protective gloves/protective clothing/eye protection/face protection.
P264	Wash thoroughly after handling.
P270	Do no eat, drink or smoke when using this product.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor/physician.
P330	Rinse mouth.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system**
· **NFPA ratings (scale 0-4)**

Health = 2
Fire = 0
Reactivity = 0

The substance possesses oxidizing properties.
· **HMIS**



Health = 2
Fire = 0
Reactivity = 0

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**

15630-89-4	Disodium carbonate, compound with hydrogen peroxide (2:3) Xn R22; Xi R41; O R8 Ox. Sol. 2, H272; Eye Dam. 1, H318; Acute Tox. 4, H302	50-100%
497-19-8	Sodium carbonate Xi R36 Eye Irrit. 2, H319	25-50%

· **Additional information** For the wording of the listed risk phrases refer to section 16.

4 First aid measures

· **Description of first aid measures**
· **General information** Remove contaminated clothing.
· **After inhalation** Supply fresh air; consult doctor in case of complaints.
· **After skin contact**
Wash with soap and water.
If skin irritation continues, consult a doctor.

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Avoid contact with skin and eyes.
Prevent formation of dust.
Any deposit of dust which cannot be avoided must be regularly removed.
Do not breathe dust.
Make sure that all applicable workplace limits are observed.
· **Information about protection against explosions and fires:**
Protect from heat.
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.

· **Conditions for safe storage, including any incompatibilities**
· **Storage**
· **Requirements to be met by storerooms and receptacles:**
Observe all local and national regulations for storage of water polluting products.
· **Information about storage in one common storage facility:**
Store away from foodstuffs.
Store away from flammable substances.
Store away from reducing agents.
· **Further information about storage conditions:**
Store in cool, dry conditions in well sealed receptacles.
Protect from heat and direct sunlight.
Store receptacle in a well ventilated area.
· **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment**
· **General protective and hygienic measures**
Keep away from foodstuffs, beverages and feed.
Do not eat, drink, smoke or sniff while working.
Immediately remove all soiled and contaminated clothing
Do not breathe dust.
Avoid contact with the eyes and skin.
Wash hands before breaks and at the end of work.
· **Breathing equipment:** Use breathing protection in case of dust formation.
· **Protection of hands:**
Protective gloves
To avoid skin problems reduce the wearing of gloves to the required minimum.
Check the permeability prior to each renewed use of the glove.
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.
· **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

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Trade name: Ecoworks A

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· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye protection:** Tightly sealed goggles.
· **Body protection:**
Protective work clothing.
Body protection must be chosen depending on activity and possible exposure.

9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	solid
Color:	according to product specification
· **Odor:**	characteristic
· **Odor threshold:**	no data available
· **pH-value:**	Alkaline
· **Change in condition**	
Melting point/Melting range:	undetermined
Boiling point/Boiling range:	undetermined
· **Flash point:**	Not applicable
· **Flammability (solid, gaseous)**	Not applicable
· **Auto igniting:**	Product is not selfigniting.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Explosion limits:**	
Lower:	Not applicable
Upper:	Not applicable
· **Oxidizing properties**	not classified as oxidising
· **Vapor pressure:**	Not determined
· **Density:**	Not determined
· **Solubility in / Miscibility with**	
Water:	Partly soluble
· **Partition coefficient (n-octanol/water):**	Not determined
· **Viscosity:**	
dynamic:	Not applicable
kinematic:	Not applicable
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Reactivity**
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
Avoid impact, friction, heat, sparks, electrostatic charges.
· **Possibility of hazardous reactions** Reacts with flammable substances
· **Conditions to avoid** No further relevant information available.

(Contd. on page 6)

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· **Incompatible materials:**
Reducing agents
Flammable materials
· **Hazardous decomposition products:** Carbon monoxide and carbon dioxide

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**

15630-89-4 Disodium carbonate, compound with hydrogen peroxide (2:3)

Oral	LD50	1034 mg/kg (rat)
Dermal	LD50	> 2000 mg/kg (rabbit)
Inhalative	LC50/1 h	> 4.58 mg/l (rat)

· **Primary irritant effect:**
· **on the skin:** Dust particles may mechanically irritate the skin.
· **on the eye:** Strong irritant with the danger of severe eye injury.
· **Additional toxicological information:**
The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:
Harmful
Acute Tox. 4
Irritant
Eye Dam. 1

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**
None of the ingredients is listed.

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

12 Ecological information

· **Toxicity**

· **Aquatic toxicity:**

15630-89-4 Disodium carbonate, compound with hydrogen peroxide (2:3)

EC50	4.9 mg/l (Daphnia pulex)
LC50	70.7 mg/l (fathead minnow (pimephales promelas))
NOEC	2.0 mg/l (Daphnia pulex)
NOEC/96 h	7.4 mg/l (fathead minnow (pimephales promelas))

· **Persistence and degradability** No further relevant information available.
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
Water hazard class 1 (Self-assessment) (German regulation): slightly hazardous for water.
Do not allow product to reach ground water, water course or sewage system.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

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· **Other adverse effects** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation** Disposal must be made according to local/official regulations.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to local/official regulations.

14 Transport information

· **UN-Number** · **DOT, ADR, ADN, IMDG, IATA**	Void
· **UN proper shipping name** · **DOT, ADR, ADN, IMDG, IATA**	Void
· **Transport hazard class(es)**	
· **DOT, ADR, ADN, IMDG, IATA** · **Class**	Void
· **Packing group** · **DOT, ADR, IMDG, IATA**	Void
· **Special precautions for user**	Not applicable.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	Not dangerous according to the above specifications.
· **UN "Model Regulation":**	-

*

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

· **SARA Section 355 (extremely hazardous substances)**

None of the ingredients is listed.

· **TSCA (Toxic Substances Control Act)**

All ingredients are listed.

· **Cancerogenity categories**

· **MAK (German Maximum Workplace Concentration)**

None of the ingredients is listed.

· **GHS label elements**
The product is classified and labelled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS05 GHS07

· **Signal word** Danger

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· **Hazard-determining components of labelling:**
Disodium carbonate, compound with hydrogen peroxide (2:3)
· **Hazard statements**
H302 Harmful if swallowed.
H318 Causes serious eye damage.
· **Precautionary statements**
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P264 Wash thoroughly after handling.
P270 Do no eat, drink or smoke when using this product.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/physician.
P330 Rinse mouth.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **National regulations**

· **Information about limitation of use:** Employment restrictions concerning young persons must be observed.

· **Disturbance regulations:** Directive 96/82/EC does not apply.

· **Water hazard class:**
Water hazard class 1 (Self-assessment) (German regulation): slightly hazardous for water.
· **Other regulations, limitations and prohibitive regulations**
Observe restrictions on the marketing and use according to Annex XVII of Regulation (EC) No 1907/2006.
· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing MSDS:**
C.S.B. GmbH
Parkstraße 29
D-47829 Krefeld
Germany
Phone: +49 - 2151 - 652086-0
Fax: +49 - 2151 - 652086-9

· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent

· * **Data compared to the previous version altered.**

USA

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1 Identification of the substance/mixture and of the company/undertaking

· **Product identifier**

· **Trade name: Ecoworks B**

· **Relevant identified uses of the substance or mixture and uses advised against**

· **Application of the substance / the preparation** Cleaning material / Detergent

· **Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**
Stratasys, Inc.
7665 Commerce Way
Eden Prairie, MN 55344
USA
Tel +1 952 937 3000
Fax +1 952 937 0070

In Europe:

C.S.B. GmbH
Parkstraße 29
D-47829 Krefeld
Germany
Tel.: +49-2151-6520860
Fax: +49-2151-6520869
E-Mail: info@csb-online.de

· **Information department:** Sales / Technics
· **Emergency telephone number:** see above

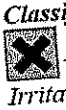
* 2 Hazards identification

· **Classification of the substance or mixture**

GHS07

H319 Causes serious eye irritation.

· **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**



Irritant

Irritating to eyes.

· **Classification system:**
The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

· **Label elements**

· **GHS label elements**
The product is classified and labelled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**

GHS07

· **Signal word** Warning

· **Hazard statements**
H319 Causes serious eye irritation.

· **Precautionary statements**
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P264 Wash thoroughly after handling.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 If eye irritation persists: Get medical advice/attention.

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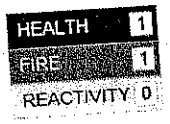
Trade name: Ecoworks B

(Contd. of page 1)

· **Classification system**
· **NFPA ratings (scale 0-4)**

Health = 1
Fire = 1
Reactivity = 0

· **HMIS**



Health = 1
Fire = 1
Reactivity = 0

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**			
77-92-9	Citric acid, anhydrous	Xi R36 H319	25-50%

· **Additional information** For the wording of the listed risk phrases refer to section 16.

4 First aid measures

· **Description of first aid measures**
· **General information** Remove contaminated clothing.
· **After inhalation** Supply fresh air; consult doctor in case of complaints.
· **After skin contact**
Wash with soap and water.
If skin irritation continues, consult a doctor.
· **After eye contact**
Rinse opened eye for several minutes under running water. Then consult a doctor.
Remove contact lenses, if present and easy to do. Continue rinsing.
· **After swallowing**
Do not induce vomiting!
Rinse out mouth and then drink plenty of water.
If symptoms persist consult doctor.
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Firefighting measures

· **Extinguishing media**
· **Suitable extinguishing agents**
CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· **For safety reasons unsuitable extinguishing agents** Water with full jet.
· **Special hazards arising from the substance or mixture**
In case of fire, the following can be released:

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Carbon monoxide and carbon dioxide
In certain fire conditions, traces of other toxic gases cannot be excluded.
· **Advice for firefighters**
· **Protective equipment:** Wear self-contained respiratory protective device.
· **Additional information**
Cool endangered receptacles with water spray.
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Ensure adequate ventilation
Wear protective clothing and keep away unprotected persons.
Avoid contact with skin and eyes.
Avoid formation of dust.
Do not breathe dust.
· **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up:**
Ensure adequate ventilation.
Pick up mechanically.
Send for recovery or disposal in suitable receptacles.
Dispose of the collected material according to regulations.
Clean up affected area.
· **Reference to other sections**
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Avoid contact with skin and eyes.
Prevent formation of dust.
Any deposit of dust which cannot be avoided must be regularly removed.
Do not breathe dust.
Make sure that all applicable workplace limits are observed.
· **Information about protection against explosions and fires:** No special measures required.
· **Information about protection against explosions and fires:** No special measures required.
· **Conditions for safe storage, including any incompatibilities**
· **Storage**
· **Requirements to be met by storerooms and receptacles:**
Observe all local and national regulations for storage of water polluting products.
· **Information about storage in one common storage facility:**
Store away from foodstuffs.
Store away from oxidizers.
Store away from metals.
· **Further information about storage conditions:**
Keep receptacle tightly sealed.
Store in cool, dry conditions in well sealed receptacles.
Store receptacle in a well ventilated area.
Recommended storage temperature: 20-25 °C
· **Specific end use(s)** No further relevant information available.

(Contd. on page 4)

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(Contd. of page 3)

8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment**
· **General protective and hygienic measures**
Keep away from foodstuffs, beverages and feed.
Do not eat, drink, smoke or sniff while working.
Immediately remove all soiled and contaminated clothing
Avoid contact with the eyes and skin.
Wash hands before breaks and at the end of work.
Use skin protection cream for skin protection.
· **Breathing equipment:**
Use breathing protection in case of dust formation.
If all workplace limits are observed and good ventilation is ensured, no special precautions necessary.
· **Protection of hands:**
Protective gloves
To avoid skin problems reduce the wearing of gloves to the required minimum.
Check the permeability prior to each renewed use of the glove.
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.
· **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye protection:** Tightly sealed goggles.
· **Body protection:**
Protective work clothing.
Body protection must be chosen depending on activity and possible exposure.

9 Physical and chemical properties

· **Information on basic physical and chemical properties**
· **General Information**
· **Appearance:**
Form: solid
Color: according to product specification
· **Odor:** characteristic
· **pH-value (10 g/l) at 20°C (68 °F):** ~ 9
· **Change in condition**
Melting point/Melting range: undetermined

(Contd. on page 5)

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Boiling point/Boiling range:	undetermined
· **Flash point:**	Not applicable
· **Auto igniting:**	Product is not selfigniting.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Density:**	Not determined
· **Solubility in / Miscibility with Water:**	soluble
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Reactivity**
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** Strong oxidizing agents
· **Hazardous decomposition products:** Carbon monoxide and carbon dioxide

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:** Dust particles may mechanically irritate the skin.
· **on the eye:** Irritating effect.
· **Additional toxicological information:**
The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:
Irritant

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**
None of the ingredients is listed.
· **NTP (National Toxicology Program)**
None of the ingredients is listed.

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
Water hazard class 1 (Self-assessment) (German regulation): slightly hazardous for water.
Do not allow product to reach ground water, water course or sewage system.

(Contd. on page 6)

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Trade name: Ecoworks B

(Contd. of page 5)

· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation** Disposal must be made according to local/official regulations.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to local/official regulations.
· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

· **UN-Number** · **DOT, ADR, ADN, IMDG, IATA**	Void
· **UN proper shipping name** · **DOT, ADR, ADN, IMDG, IATA**	Void
· **Transport hazard class(es)**	
· **DOT, ADR, ADN, IMDG, IATA** · **Class**	Void
· **Packing group** · **DOT, ADR, IMDG, IATA**	Void
· **Special precautions for user**	Not applicable.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	Not dangerous according to the above specifications.
· **UN "Model Regulation":**	-

*

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

· **SARA Section 355 (extremely hazardous substances)**

None of the ingredients is listed.

· **TSCA (Toxic Substances Control Act)**

7732-18-5	Water
77-92-9	Citric acid, anhydrous
68-04-2	Citric acid, trisodium salt

· **Cancerogenity categories**

· **MAK (German Maximum Workplace Concentration)**

None of the ingredients is listed.

· **GHS label elements**
The product is classified and labelled according to the Globally Harmonized System (GHS).

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Trade name: Ecoworks B

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· **Hazard pictograms**

GHS07

· **Signal word** Warning
· **Hazard statements**
H319 Causes serious eye irritation.
· **Precautionary statements**
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P264 Wash thoroughly after handling.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 If eye irritation persists: Get medical advice/attention.

· **National regulations**

· **Information about limitation of use:** Employment restrictions concerning young persons must be observed.

· **Disturbance regulations:** Directive 96/82/EC does not apply.

· **Water hazard class:**
Water hazard class 1 (Self-assessment) (German regulation): slightly hazardous for water.
· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing MSDS:**
C.S.B. GmbH Phone: +49 - 2151 - 652086-0
Parkstraße 29 Fax: +49 - 2151 - 652086-9
D-47829 Krefeld
Germany

· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)

· **Sources** These data are based on information submitted by pre-suppliers.

· * **Data compared to the previous version altered.**

USA

Stratasys®

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 01/07/2013 Reviewed on 01/07/2013

1 Identification of the substance/mixture and of the company/undertaking

· **Product identifier**

· **Trade name:** P430 ABS Model / M30 ABS Model

· **Application of the substance / the preparation** Filament for Stratasys® Inc. FDM™ modeler

· **Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**

Stratasys, Inc.
7665 Commerce Way
Eden Prairie, MN 55344
USA

Tel +1 952 937 3000
Fax +1 952 937 0070

In Europe:

C.S.B. GmbH
Parkstraße 29
D-47829 Krefeld
Germany

Tel.: +49-2151-6520860
Fax: +49-2151-6520869
E-Mail: info@csb-online.de

· **Information department:** Product safety department.

· **Emergency telephone number:** see above

2 Composition/information on ingredients

· **Chemical characterization: Mixtures**

· **Description:** Thermoplastic polymer

· **Dangerous components:** Void

· **Other components:**

9010-94-0	Butadiene-styrene-acrylonitrile-methyl methacrylate copolymer	70-75%
9003-54-7	Styrene/acrylonitrile copolymer (SAN)	25-30%

3 Hazards identification

· **Classification of the substance or mixture**

The product is not classified according to the Globally Harmonized System (GHS).

· **Classification according to Directive 67/548/EEC or Directive 1999/45/EC** Void

· **Information concerning particular hazards for human and environment:**

Heightened danger of slipping when the product is spilled on the floor.

· **Classification system:**

The product does not have to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

· **Label elements**

· **GHS label elements** Void

· **Hazard pictograms** Void

· **Signal word** Void

· **Hazard statements** Void

· **Classification system**

· **NFPA ratings (scale 0-4)**

Health = 0
Fire = 0
Reactivity = 0

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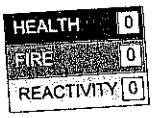
· **HMIS**



Health = 0
Fire = 0
Reactivity = 0

4 First aid measures

· **General information** Remove contaminated clothing.
· **After inhalation**
Supply fresh air; consult doctor in case of complaints.
If dust or other particles are generated during processing, it is necessary to provide adequate ventilation and/or respiration protection. If dust/particles have been inhaled call physician.
· **After skin contact**
Wash with soap and water.
After contact with the molten product, cool rapidly with cold water.
Do not pull solidified product away from the skin.
Call a doctor immediately.
· **After eye contact**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· **After swallowing**
Rinse out mouth and then drink plenty of water.
If symptoms persist consult doctor.

5 Firefighting measures

· **Suitable extinguishing agents**
Water spray
Foam
Alcohol resistant foam
· **For safety reasons unsuitable extinguishing agents**
Carbon dioxide
Extinguishing powder.
Lack of cooling capacity may permit re-ignition.
· **Special hazards arising from the substance or mixture**
In case of fire, the following can be released:
Smoke
Carbon monoxide and carbon dioxide
Hydrocarbons
Hydrogen cyanide (HCN)
In certain fire conditions, traces of other toxic gases cannot be excluded.
· **Protective equipment:** Wear self-contained respiratory protective device.
· **Additional information**
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Wear protective clothing.
Avoid formation of dust.
Do not breathe dust.
Avoid contact with eyes.
Do not breathe vapours.
Particular danger of slipping on leaked/spilled product.

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· **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up:**
Pick up mechanically.
Allow to solidify. Pick up mechanically.
Dispose of the collected material according to regulations.
· **Reference to other sections**
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of dust.
If dust/smoke is developed, avoid breathing dust/smoke.
Avoid contact with eyes.
Avoid long or repeated skin contact.
Avoid contact with hot product.
Make sure that all applicable workplace limits are observed.
· **Information about protection against explosions and fires:**
Dust can combine with air to form an explosive mixture.
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
· **Storage**
· **Requirements to be met by storerooms and receptacles:**
Observe all local and national regulations for storage of water polluting products.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** Store in cool, dry conditions in well sealed receptacles.
· **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.
· **Components with limit values that require monitoring at the workplace:**
Observe all workplace limits for dust:
TLV inhalable dust: 15 mg/m³ OSHA
TLV respirable dust: 5 mg/m³ OSHA
· **Additional information:** The lists that were valid during the creation were used as basis.
· **Personal protective equipment**
· **General protective and hygienic measures**
Do not inhale dust / smoke / mist.
Avoid contact with the eyes.
Avoid close or long term contact with the skin.
Avoid skin contact with the liquefied material.
Wash hands before breaks and at the end of work.
· **Breathing equipment:**
If all workplace limits are observed and good ventilation is ensured, no special precautions necessary.
· **Protection of hands:**
No chemical-protective gloves required.
Use heat resistant gloves when handling hot/molten product.
· **Eye protection:** Safety glasses
· **Body protection:**
Protective work clothing.

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Wear heat-resistant protective clothing when handling hot/molten product.

9 Physical and chemical properties

· **General Information**	
· **Appearance:**	solid
Form:	milky white
Color:	Nearly odorless
· **Odor:**	no data available
· **Odor threshold:**	Not applicable
· **pH-value:**	
· **Change in condition**	
Melting point/Melting range:	Not applicable
Boiling point/Boiling range:	Not applicable
· **Flash point:**	Not applicable
· **Auto igniting:**	Product is not selfigniting.
· **Danger of explosion:**	Product does not present an explosion hazard. Risk of dust explosion if enriched with fine dust in the presence of air
· **Explosion limits:**	
Lower:	Not determined
Upper:	Not determined
· **Oxidizing properties**	Not applicable
· **Vapor pressure:**	Not determined
· **Density at 20°C (68 °F):**	> 1 g/cm³ (> 8.345 lbs/gal)
· **Solubility in / Miscibility with**	
Water:	Insoluble
· **Segregation coefficient (n-octonol/water):**	Not applicable
· **Viscosity:**	
dynamic:	Not applicable
kinematic:	Not applicable
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
Avoid impact, friction, heat, sparks, electrostatic charges.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:**
Carbon monoxide and carbon dioxide
Hydrogen cyanide (prussic acid)
Hydrocarbons
Possible in traces.
Styrene
Acrylonitril
Phenol
Acetophenone

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Acrylmonomeres, Acrylcompounds

11 Toxicological information

· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**

Oral	LD50	> 5000 mg/kg (rat)
Dermal	LD50	> 2000 mg/kg (rabbit)

· **Primary irritant effect:**
· **on the skin:** Dust particles may mechanically irritate the skin.
· **on the eye:** Dust particles may mechanically irritate the eye.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		3
9003-54-7	Styrene/acrylonitrile copolymer (SAN)	

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

12 Ecological information

· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Bioaccumulative potential** No further relevant information available.
· **Additional ecological information:**
· **General notes:** Water hazard class 1 (Self-assessment) (German regulation): slightly hazardous for water.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
Disposal must be made according to local/official regulations.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to local/official regulations.

14 Transport information

· **UN-Number**	
· **DOT, ADR, ADN, IMDG, IATA**	Void
· **UN proper shipping name**	
· **DOT, ADN, IMDG, IATA**	Void
· **ADR**	Void

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· **Transport hazard class(es)**	
· **DOT, ADR, ADN, IMDG, IATA** · **Class**	Void
· **Packing group** · **DOT, ADR, IMDG, IATA**	Void
· **Special precautions for user**	Not applicable.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	Not dangerous according to the above specifications.
· **UN "Model Regulation":**	-

15 Regulatory information

· **TSCA (Toxic Substances Control Act)**
All ingredients are listed.

· **Cancerogenity categories**
· **MAK (German Maximum Workplace Concentration)**
None of the ingredients is listed.

· **GHS label elements** Void
· **Hazard pictograms** Void
· **Signal word** Void
· **Hazard statements** Void

· **National regulations**

· **Water hazard class:**
Water hazard class 1 (Self-assessment) (German regulation): slightly hazardous for water.
· **Other regulations, limitations and prohibitive regulations**

The monomer compounds of this product are listed in:
Toxic Substance Control Act TSCA (USA)
Canadian Domestic Substance List DSL
Existing and New Chemical Substance List ENCS (Japan)
Australian Inventory of Chemical Substances AICS (Australia)
Korean Existing Chemical Inventory KECI

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing MSDS:**
C.S.B. GmbH
Parkstraße 29
D-47829 Krefeld
Germany
Phone: +49 - 2151 - 652086-0
Fax: +49 - 2151 - 652086-9

· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association

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NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent

USA

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acc. to ISO/DIS 11014

Printing date 10/15/2012 Reviewed on 10/15/2012

1 Identification of the substance/mixture and of the company/undertaking

· **Product identifier**

· **Trade name: SR-30 Soluble Support**
· **CAS Number:**
25036-16-2
· **Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.

· **Application of the substance / the preparation**
Soluble Release Material for Stratasys® Inc. FDM™ modelers

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Stratasys, Inc.
7665 Commerce Way
Eden Prairie, MN 55344
USA
Tel +1 952 937 3000
Fax +1 952 937 0070

In Europe:

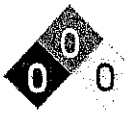
C.S.B. GmbH
Parkstraße 29
D-47829 Krefeld
Germany
Tel.: +49-2151-6520860
Fax: +49-2151-6520869
E-Mail: info@csb-online.de

· **Information department:** Product safety department.
· **Emergency telephone number:** see above

2 Hazards identification

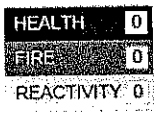
· **Classification of the substance or mixture**
· **Classification according to Directive 67/548/EEC or Directive 1999/45/EC Void**
· **Classification system:** Void
· **Label elements**

· **Labelling according to EU guidelines:** Observe the general safety regulations when handling chemicals
· **Classification system**
· **NFPA ratings (scale 0-4)**



Health = 0
Fire = 0
Reactivity = 0

· **HMIS**



Health = 0
Fire = 0
Reactivity = 0

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

3 Composition/information on ingredients

· **Chemical characterization: Substances**
· **CAS No. Description:**
25036-16-2 Terpolymer of Methacrylic Acid, Styrene and Butylacrylate

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Reviewed on 10/15/2012

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Trade name: SR-30 Soluble Support

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· **Identification number(s):** void, polymer

4 First aid measures

· **Description of first aid measures**
· **General information** Remove contaminated clothing.
· **After inhalation** Supply fresh air; consult doctor in case of complaints.
· **After skin contact**
Wash with soap and water.
After contact with the molten product, cool rapidly with cold water.
Do not pull solidified product away from the skin.
Call a doctor immediately.
· **After eye contact**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· **After swallowing** No special measures required.
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Firefighting measures

· **Extinguishing media**
· **Suitable extinguishing agents**
CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· **For safety reasons unsuitable extinguishing agents** Water with full jet.
· **Special hazards arising from the substance or mixture**
In case of fire, the following can be released:
Smoke
Carbon monoxide and carbon dioxide
In certain fire conditions, traces of other toxic gases cannot be excluded.
· **Advice for firefighters**
· **Protective equipment:** Wear self-contained respiratory protective device.
· **Additional information**
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Wear protective clothing.
Avoid contact with eyes.
Avoid formation of dust.
· **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up:**
Prevent formation of dust.
Pick up mechanically.
Dispose of the collected material according to regulations.
· **Reference to other sections**
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

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Trade name: SR-30 Soluble Support

(Contd. of page 2)

7 Handling and storage

- **Precautions for safe handling**
  Ensure good ventilation/exhaustion at the workplace.
  Prevent formation of dust.
  Any deposit of dust which cannot be avoided must be regularly removed.
  Do not breathe dust.
  Avoid contact with eyes.
  Make sure that all applicable workplace limits are observed.
- **Information about protection against explosions and fires:**
  Protect against electrostatic charges.
  Keep ignition sources away - Do not smoke.
- **Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and receptacles:**
  Observe all local and national regulations for storage of water polluting products.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Store in cool, dry conditions in well sealed receptacles.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace:**
  Observe all workplace limits for dust:
  TLV inhalable dust: 15 mg/m³ OSHA
  TLV respirable dust: 5 mg/m³ OSHA
- **Additional information:** The lists that were valid during the creation were used as basis.
- **Exposure controls**
- **Personal protective equipment**
- **General protective and hygienic measures**
  Do not breathe dust.
  Avoid contact with the eyes.
  Avoid close or long term contact with the skin.
  Wash hands before breaks and at the end of work.
- **Breathing equipment:**
  If all workplace limits are observed and good ventilation is ensured, no special precautions necessary.
- **Protection of hands:** Use heat resistant gloves when handling hot/molten product.
- **Material of gloves**
  The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
- **Penetration time of glove material**
  The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- **Eye protection:** Safety glasses
- **Body protection:** Body protection must be chosen depending on activity and possible exposure.

USA

(Contd. on page 4)

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Trade name: SR-30 Soluble Support

(Contd. of page 3)

9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Pellets
Color:	milky white
· **Odor:**	Nearly odorless
· **Odor threshold:**	no data available
· **pH-value:**	Not applicable
· **Change in condition**	
Melting point/Melting range:	no data available
Boiling point/Boiling range:	no data available
· **Flash point:**	no data available
· **Ignition temperature:**	> 450°C (> 842 °F)
· **Decomposition temperature:**	> 290°C (> 554 °F)
· **Auto igniting:**	Product is not selfigniting.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Explosion limits:**	
Lower:	Not determined
Upper:	Not determined
· **Oxidizing properties**	Not applicable
· **Vapor pressure:**	Not determined
· **Density at 20°C (68 °F):**	1.1 g/cm³ (9.18 lbs/gal)
· **Solubility in / Miscibility with Water:**	Insoluble
· **Viscosity:**	
dynamic:	Not applicable
kinematic:	Not applicable
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Reactivity**
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
Avoid impact, friction, heat, sparks, electrostatic charges.
· **Possibility of hazardous reactions** Toxic fumes may be released if heated above the decomposition point
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:**
Carbon monoxide and carbon dioxide
Possible in traces.
Hydrocarbons
Styrene
Nitrogen oxides (NOx)
Organic acids
Acrylmonomeres, Acrylcompounds

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Trade name: SR-30 Soluble Support

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Alcohols

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **LD/LC50 values that are relevant for classification:** no data available
· **Primary irritant effect:**
· **on the skin:** Dust particles may mechanically irritate the skin.
· **on the eye:** Dust particles may mechanically irritate the eye.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**
Substance is not listed.
· **NTP (National Toxicology Program)**
Substance is not listed.

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Degree of elimination:** no data available
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:** Water hazard class 1 (Self-assessment) (German regulation): slightly hazardous for water.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
Disposal must be made according to local/official regulations.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to local/official regulations.

14 Transport information

· **UN-Number** Void
· **DOT, ADR, IMDG, IATA**

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Trade name: SR-30 Soluble Support

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· **UN proper shipping name**	
· **DOT, IMDG, IATA**	Void
· **ADR**	Void
· **Transport hazard class(es)**	
· **DOT, ADR, IMDG, IATA**	
· **Class**	Void
· **Packing group**	
· **DOT, ADR, IMDG, IATA**	Void
· **Special precautions for user**	Not applicable.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	Not dangerous according to the above specifications.

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

· **SARA Section 355 (extremely hazardous substances)**

Substance is not listed.

· **TSCA (Toxic Substances Control Act)**

9003-56-9	Acrylonitrile/butadiene/styrene copolymer
8042-47-5	White mineral oil (petroleum)

· **Cancerogenity categories**

· **MAK (German Maximum Workplace Concentration)**

Substance is not listed.

· **National regulations**

· **Disturbance regulations:** Directive 96/82/EC does not apply.

· **Water hazard class:**
Water hazard class 1 (Self-assessment) (German regulation): slightly hazardous for water.

· **Other regulations, limitations and prohibitive regulations**

The monomer compounds of this product are listed in:
EINECS / ELINCS (Europa)

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing MSDS:**
C.S.B. GmbH
Parkstraße 29
D-47829 Krefeld
Germany

Phone: +49 - 2151 - 652086-0
Fax: +49 - 2151 - 652086-9

USA

Material Safety Data Sheet

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Performance 500 M16 Synthetic Grinding Fluid

Company Identification
General Petroleum
19501 South Santa Fe Avenue
Rancho Dominguez, CA 90221
United States of America
www.generalpetroleum.com

Contact Information
Phone: (800) 659-5823
Fax: (310) 356-2624
custsvc@pecos-inc.com

Transportation
(310) 356-2501

Emergency Response
CHEMTREC: (800) 424-9300

Health Emergency
(800) 424-9300
(310) 356-2375

SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Triethanolamine, Diethanolamine, Water based fluid	Mixture	90 - 100 %weight
Threshold Limit Value: 5 MG/M3 TLV-8 HOURS		

SECTION 3 HAZARDS IDENTIFICATION

IMMEDIATE HEALTH EFFECTS
Eye: Not expected to cause prolonged or significant eye irritation.
Skin: Contact with the skin is not expected to cause prolonged or significant irritation. Not expected to be harmful to internal organs if absorbed through the skin.

High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

Ingestion: Not expected to be harmful if swallowed.
Inhalation: Not expected to be harmful if inhaled. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficulty breathing.

SECTION 4 FIRST AID MEASURES

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

Skin: No specific first aid measures are required. As a precaution, remove clothing and shoes if contaminated. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: No specific first aid measures are required. As a precaution, get medical advice and do not induce vomiting.

Inhalation: No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

Note to Physicians: In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

SECTION 5 FIRE FIGHTING MEASURES

FIRE CLASSIFICATION:
OSHA Classification (29 CFR 1910.1200): Not classified by OSHA as flammable or combustible.

NFPA RATINGS: Health: 1 Flammability: 0 Reactivity: 0

FLAMMABLE PROPERTIES:
Flashpoint: N/A
Auto-ignition: N/A
Flammability (Explosive) Limits (% by volume in air): Lower: Not Applicable Upper: Not Applicable

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.
Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Container Warnings: Container is not designed to contain pressure. Do not apply pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioned or disposed of properly.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:
Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:
Use in a well-ventilated area.

PERSONAL PROTECTIVE EQUIPMENT
Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.
Skin Protection: No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted physical requirements and other substances in the workplace. Suggested materials for protective gloves include: 4H (PE/EVAL), Nitrile Rubber, Silver Shield, Viton.
Respiratory Protection: No respiratory protection is normally required.
If user operations generate an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge.
Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Amber
Physical State: Liquid
Odor: Mild odor
pH: 9.4
Vapor Pressure: <0.01 mmHg @ 37.8 °C (100 °F)
Vapor Density (Air = 1): >1
Boiling Point: (212°F)
Solubility: Soluble in water.

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Incompatibility With Other Materials: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Hazardous Decomposition Products: None known (None expected)
Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

IMMEDIATE HEALTH EFFECTS
Eye Irritation: The eye irritation hazard is based on evaluation of data for similar materials or product components.
Skin Irritation: The skin irritation hazard is based on evaluation of data for similar materials or product components.
Skin Sensitization: No product toxicology data available
Acute Dermal Toxicity: The acute dermal toxicity hazard is based on evaluation of data for similar materials or product components.
Acute Oral Toxicity: The acute oral toxicity hazard is based on evaluation of data for similar materials or product components.
Acute Inhalation Toxicity: The acute inhalation toxicity hazard is based on evaluation of data for similar materials or product components.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY
48 hour(s) EC50: >1000 mg/l (Daphnia magna)
96 hour(s) LC50: >1000 mg/l (Oncorhynchus mykiss)

ENVIRONMENTAL FATE
This material is not expected to be readily biodegradable.

SECTION 13 DISPOSAL CONSIDERATIONS

Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Description: NOT REGULATED AS A HAZARDOUS MATERIAL FOR TRANSPORTATION UNDER 49 CFR
Additional Information: NOT HAZARDOUS BY U.S. DOT. ADR/RID HAZARD CLASS NOT APPLICABLE

IMO/IMDG Shipping Description: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER THE IMDG CODE

ICAO/IATA Shipping Description: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER ICAO

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES: 1. Immediate (Acute) Health Effects: NO
2. Delayed/Chronic Health Effects: NO
3. Fire Hazard: NO
4. Sudden Release of Pressure Hazard: NO
5. Reactivity Hazard: NO

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	03=EPCRA 313
01-2A=IARC Group 2A	04=CA Proposition 65
01-2B=IARC Group 2B	05=MA RTK
02=NTP Carcinogen	06=NJ RTK
	07=PA RTK

No components of this material were found on the regulatory lists above.

CHEMICAL INVENTORIES:
All components comply with the following chemical inventory requirements: AICS (Australia), DSL (Canada), ENCS (Japan), IECSC (China), KECI (Korea), PICCS (Philippines), TSCA (United States).

One or more components are listed on ELINCS (European Union). Secondary notification by the importer may be required. All other components are listed or exempted from listing on EINECS.

WHMIS CLASSIFICATION:
This product is not considered a controlled product according to the criteria of the Canadian Controlled Products Regulations.

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 1 Flammability: 0 Reactivity: 0

HMIS RATINGS: Health: 1 Flammability: 0 Reactivity: 0
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE: - Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

LABEL RECOMMENDATION:
INDUSTRIAL OIL

REVISION STATEMENT: This is a revised Material Safety Data Sheet; 07/1/09

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Government Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	MSDS - Material Safety Data Sheet
CVX – Chevron	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

MATERIAL SAFETY DATA SHEET

U.S. DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200

The Steco Corporation
2330 Cantrell Road
P.O. Box 2238
Little Rock, AR 72203

Emergency Response: (800) 255-3924
Information: (800)-643-8026
Fax #: (501) 374-4278
Date Reviewed: **August 15, 2011**

TRADE NAME: **TAP MAGIC EP-XTRA® Formula**
DOT SHIPPING NAME: Not a Regulated Material
CHEMICAL NAME & SYNONYMS: Petroleum Hydrocarbons and Additives
HMIS/NFPA CODE: Health 1; Fire 1; Reactivity 1
MANUFACTURING CODE NO.: 8358
COMMODITY CODE NO.: 332-9150

I. HAZARDOUS INGREDIENTS

Component	CAS #	OSHA PEL ppm	ACGIH TLV mg/m³ ppm	Other Limits Recommended	Max.%
Chlorinated Paraffins	61788-76-9	*	N/A	---	<20

II. INGREDIENTS

Naphthenic Oils	64742-53-6	*	N/A	---	<80
Sulfurized Paraffins	64742-54-7	*	N/A	---	<5
Petroleum Sulfonic Acid Salt	68608-26-4	*	10	---	<5
Petroleum Olefins	64743-02-8	*	10	TWA 1 mg/m³	<5

* These products do not have a unique regulatory limit, however, the OSHA Pel for mineral oil is 5 mg/m³

III. PHYSICAL DATA

BOILING RANGE, (760 mm, Mercury)	N/A
SPECIFIC GRAVITY (Water =1), lbs/gal.	0.94 (7.8 lbs/gal)
VAPOR PRESSURE (mm of Mercury) @ 68° F	<5
VAPOR DENSITY (Air = 1)	>1
SOLUBILITY IN WATER, % by weight	<1
EVAPORATION RATE (Butyl Acetate = 1)	<1
% VOLATILE BY VOLUME	<1
APPEARANCE	Yellow Liquid
ODOR	Mild Sulfur Odor
pH	N/A (Non-Aqueous)

IV. FIRE & EXPLOSION DATA

FLASH POINT, TOC, TCC, PMCC	>300° F
AUTOIGNITION TEMPERATURE	N/A
EXTINGUISHING MEDIA	CO_2, Dry Chemical Foam, Water Fog
SPECIAL FIRE FIGHTING PROCEDURES	Containers will self-pressurize on heating and should be cooled as possible during any fire fighting event to prevent explosive rupturing of containers.
UNUSUAL FIRE AND EXPLOSION HAZARD	This product may release toxic fumes when burned; including but not limited to : hydrogen chloride, hydrogen sulfide, carbon monoxide, and short chain hydrocarbons. Under fire conditions, sufficient evolution of such agents will occur to necessitate the use of self-contained breathing apparatus.

V. HEALTH HAZARD INFORMATION

PRIMARY ROUTES OF ENTRY : Exposure may occur via inhalation, skin contact or ingestion.

EFFECTS OF ACUTE OVEREXPOSURE

INHALATION: (Unlikely due to low vapor pressure). Mist may cause headache, nasal, respiratory and eye irritation.
SKIN CONTACT: Prolonged or repeated exposure may cause irritation.
INGESTION: Headache, drowsiness, nausea, fatigue.
EYE: May cause pain and irritation.

***This MSDS covers part #s 10004E, 10016E, 10128E, 10640E, 13840E & 17040E

EFFECTS OF CHRONIC OVEREXPOSURE : Same as for acute overexposure.
CARCINOGENICITY : Not a carcinogen or suspect carcinogen.
EMERGENGY AND FIRST AID PROCEDURES:

EYE: Flush eyes gently with water for at least 15 minutes, forcibly holding eyelids open to ensure complete irrigation of all eye and lid tissue. See physician.
SKIN: Wash with soap and water. If rash or irritation persists, see physician.
INHALATION: Remove to fresh air. See physician if irritation persists. In case of exposure to fumes from fire, remove person to fresh air. If unconscious, have professional administer oxygen. If breathing stops, administer mouth to mouth resuscitation.
INGESTION: Do not induce vomiting. Call physician. If individual is conscious, give large quantities of water (milk if available). If vomiting occurs spontaneously, keep airway clear and give more water.

VI. REACTIVITY DATA

STABILITY: Stable at ambient temperatures and pressure. Elevated temperature and exposure to strong alkalis, oxidizers, and/or acids will promote decomposition. Such decomposition results in the release of hydrogen chloride, hydrogen sulfide, and sulfur from the product. At normal room temperatures, decomposition is virtually nil. Exposure to strong direct sunlight may cause decomposition and discoloration of some components present in this product.
INCOMPATIBILITY: Contact with alkali materials, oxidizers, or acids should be avoided.
HAZARDOUS DECOMPOSITION PRODUCTS: This product may release toxic fumes when burned; including but not limited to: hydrogen chloride, hydrogen sulfide, carbon monoxide, and short chain hydrocarbons.
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: None

VII. DISPOSAL, SPILL OR LEAK PROCEDURES

AQUATIC TOXICITY : Not Determined.

SPILL OR LEAK PROCEDURES : Small Spills: Soak up with shop towels or absorbent material such as oil-dry or vermiculite. Large Spills: Any leaks should be stopped. Spill should be contained, then cleaned up using vacuum truck or absorbent material.

WASTER DISPOSAL METHOD : Dispose of in accordance with all local, state and federal regulations. "If inert absorbents are employed in spill containment or cleanup, these absorbents must be non-biodegradable materials if destined for landfill disposal. Suitable absorbents include natural minerals (clay), activated charcoal, man-made polymers (HD polyethylene)."

NEUTRALIZATION CHEMICALS : N/A

VIII. SPECIAL PROTECTION INFORMATION

EYE PROTECTION : Standard eye protection should be worn when using this product.

SKIN PROTECTION : No special equipment is needed. However, good personal hygiene practices should be followed.
RESPIRATORY PROTECTION: If application to which this product is being applied generates excessive mist or fumes, then appropriate respiratory protective equipment should be used. No special requirements under ordinary conditions of use and proper ventilation of work area.

VENTILATION : No special requirements under ordinary conditions of use and with adequate ventilation.

IX. SPECIAL PRECAUTIONS: N/A

X. ADDITIONAL INFORMATION:

CAUTION: Any cutting fluid can be "overworked" or "overheated", causing it to break down. This overuse is identified by the sight of or strong odor of vapors or fumes not normally present. The effects of these vapors or fumes on human health have not been fully determined. After use of this product, clean and lubricate metal surfaces to avoid staining and/or corrosion. Shelf life is indefinite at ambient temperatures and left in original containers.

Tap Magic with EP-Xtra® DOES NOT CONTAIN 1,1,1-trichloroethane or any ozone depleting substances.
Incomplete combustion can produce carbon monoxide.
Tap Magic with EP-Xtra® does not contain any chemical compound listed on the SARA list of "Extremely Hazardous Chemicals" and is in compliance with all of the requirements of the TSCA at the time of shipment.

Prepared by: Asa L. Morton, Chief Chemist, American Interplex Corp, Little Rock, AR 72204 (501) 224-5060

***This MSDS covers part #s 10004E, 10016E, 10128E, 10640E, 13840E & 17040E

4-18-12

3M

Material Safety Data Sheet

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This material safety data sheet (MSDS) is provided as a courtesy in response to a customer request. This product is not regulated under, and a MSDS is not required for this product by the OSHA Hazard Communication Standard (29 CFR 1910.1200) because, when used as recommended or under ordinary conditions, it should not present a health and safety hazard. However, use or processing of the product not in accordance with the product's recommendations or not under ordinary conditions may affect the performance of the product and may present potential health and safety hazards.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: 3M 8500 Non-toxic Particulate Mask
MANUFACTURER: 3M
DIVISION: Occupational Health & Environ. Safety

ADDRESS: 3M Center
St. Paul, MN 55144-1000

EMERGENCY PHONE: 1-800-364-3577 or (651) 737-6501 (24 hours)

Issue Date: 01/27/2003
Supercedes Date: 06/21/1999

Document Group: 07-9196-2

Product Use:
Intended Use: Respiratory protection

SECTION 2: INGREDIENTS

Ingredient	C.A.S. No.	% by Wt
Polyester	Unknown	60 - 100
Aluminum	Unknown	10 - 30
Polyisoprene	Unknown	7 - 13
Steel	Unknown	1 - 5

SECTION 3: HAZARDS IDENTIFICATION

3.1 EMERGENCY OVERVIEW

Specific Physical Form: Non-Woven Material
Odor, Color, Grade: White, non-woven mask. No odor.
General Physical Form: Solid
Immediate health, physical, and environmental hazards: The environmental properties of this product present a low environmental hazard. This product, when used under reasonable conditions and in accordance with the 3M directions for use, should not present a health hazard. However, use or processing of the product in a manner not in accordance with the product's directions for

use may affect the performance of the product and may present potential health and safety hazards.

3.2 POTENTIAL HEALTH EFFECTS

Eye Contact:
No health effects are expected.

Skin Contact:
No health effects are expected.

Inhalation:
No health effects are expected.

Ingestion:
No health effects are expected.

3.3 POTENTIAL ENVIRONMENTAL EFFECTS
Not determined.

SECTION 4: FIRST AID MEASURES

4.1 FIRST AID PROCEDURES

The following first aid recommendations are based on an assumption that appropriate personal and industrial hygiene practices are followed.

Eye Contact: No need for first aid is anticipated.

Skin Contact: No need for first aid is anticipated.

Inhalation: No need for first aid is anticipated.

If Swallowed: No need for first aid is anticipated.

SECTION 5: FIRE FIGHTING MEASURES

5.1 FLAMMABLE PROPERTIES

Autoignition temperature	*Not Applicable*
Flash Point	*Not Applicable*
Flammable Limits - LEL	*Not Applicable*
Flammable Limits - UEL	*Not Applicable*

5.2 EXTINGUISHING MEDIA
Use fire extinguishers with class B extinguishing agents (e.g., dry chemical, carbon dioxide).

5.3 PROTECTION OF FIRE FIGHTERS

Special Fire Fighting Procedures: Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

Unusual Fire and Explosion Hazards: No unusual fire or explosion hazards are anticipated.

Note: See STABILITY AND REACTIVITY (SECTION 10) for hazardous combustion and thermal decomposition information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Not applicable.

SECTION 7: HANDLING AND STORAGE

7.1 HANDLING

This product is considered to be an article which does not release or otherwise result in exposure to a hazardous chemical under normal use conditions.

7.2 STORAGE

Not applicable.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 ENGINEERING CONTROLS

Not applicable.

8.2 PERSONAL PROTECTIVE EQUIPMENT (PPE)

8.2.1 Eye/Face Protection

Not applicable.

8.2.2 Skin Protection

Not applicable.

8.2.3 Respiratory Protection

Not applicable.

8.2.4 Prevention of Swallowing

Not applicable.

8.3 EXPOSURE GUIDELINES

None Established

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Specific Physical Form:	Non-Woven Material
Odor, Color, Grade:	White, non-woven mask. No odor.
General Physical Form:	Solid
Autoignition temperature	*Not Applicable*
Flash Point	*Not Applicable*
Flammable Limits - LEL	*Not Applicable*
Flammable Limits - UEL	*Not Applicable*
Boiling point	*Not Applicable*
Vapor Density	*Not Applicable*
Vapor Pressure	*Not Applicable*
Specific Gravity	*Not Applicable*
pH	*No Data Available*
Melting point	*Not Applicable*
Solubility In Water	*Not Applicable*
Evaporation rate	*Not Applicable*
Volatile Organic Compounds	*Not Applicable*
Percent volatile	*Not Applicable*
VOC Less H2O & Exempt Solvents	*Not Applicable*
Viscosity	

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable.

Materials and Conditions to Avoid: None known

Hazardous Polymerization: Hazardous polymerization will not occur.

Hazardous Decomposition or By-Products

Substance	Condition
Aldehydes	Not Specified
Hydrocarbons	Not Specified
Methane	Not Specified
Carbon monoxide	Not Specified
Carbon dioxide	Not Specified
Ketones	Not Specified
Toxic Vapor, Gas, Particulate	Not Specified

Hazardous Decomposition: Under recommended usage conditions, hazardous decomposition products are not expected. Hazardous decomposition products may occur as a result of oxidation, heating, or reaction with another material.

SECTION 11: TOXICOLOGICAL INFORMATION

Please contact the address listed on the first page of the MSDS for Toxicological Information on this material and/or its components.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION
Not applicable.

CHEMICAL FATE INFORMATION
Not applicable.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Method: Reclaim if feasible. Dispose of used product by the same method as recommended for the disposal of the substance the respirator was used for.

Since regulations vary, consult applicable regulations or authorities before disposal.

SECTION 14:TRANSPORT INFORMATION

ID Number(s):
67-7102-7504-0, 70-0700-2797-7

Please contact the emergency numbers listed on the first page of the MSDS for Transportation Information for this material.

SECTION 15: REGULATORY INFORMATION

US FEDERAL REGULATIONS
Contact 3M for more information.

311/312 Hazard Categories:
Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - No Delayed Hazard - No

STATE REGULATIONS
Contact 3M for more information.

CHEMICAL INVENTORIES
This product is an article as defined by TSCA regulations, and is exempt from TSCA Inventory listing requirements.

Contact 3M for more information.

INTERNATIONAL REGULATIONS

Contact 3M for more information.

This MSDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: OTHER INFORMATION

NFPA Hazard Classification
Health: 0 **Flammability:** 1 **Reactivity:** 0 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

No revision information is available.

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3M MSDSs are available at www.3M.com

Precision Kidd Steel Company

One Quality Way • Aliquippa, PA 15001• Phone: 724-302-2306 • Fax: 724-375-6685

Material Safety Data Sheet

General Information

Creation Date: April 1, 1986
Revision Date: March 1, 2006

Manufacturer:
Precision Kidd Steel Company, Inc.
Aliquippa, PA; Clinton, PA

For additional information contact:
1-800-245-3056 or
1-800-438-1303

Product Identification

Product Name:
Tool Steel; Grades A-2, D-2, O-1, S-7, W-1

Formula:
N/A

Chemical Family:
N/A

Synonyms:
N/A

Typical Chemical Composition

Ingredient (2)	CAS #	Wt.- %	Permissible Air Level (3) OSHA PEL	ACGIH TLV
Iron	7439-89-6	Balance	10 (4)	5 (4)
Chromium	7740-47-3	.01-13.0	0.1 (5)	.05 (5)
Molybdenum	7439-98-7	.01-10.0	5 (Soluble Compounds)	5
			15 (Insoluble Compounds)	10
Cobalt	7440-48-4	.01-5.0	0.1	0.1
Vanadium	7440-62-2	.01-5.0	0.1 (6)	.05 (7)
Nickel	7440-02-0	.01-4.0	1.0 (8)	1.0 (8)
Manganese	7439-96-5	.25-2.5	5.0 (9)	1.0 (10)
Carbon	7440-44-0	.05-2.5	N/A	N/A
Silicon	7740-21-3	.01-2.5	15 (Total Dust)	10
			5 (Respirable Dust)	5
Aluminum	7429-90-5	.01-1.5	N/A	5 (11)
Copper	7440-50-8	.01-1.0	0.1 (12)	0.2 (12)
Trace Elements	N/A	> 1.0	N/A	N/A

* See last page for important additional terms and conditions including disclaimer of warrantees.

Physical Data

Physical State:	Solid	*Specific Gravity:*	7.6 - 7.8
Appearance/Odor:	Gray Metal/Odorless	*Vapor Pressure:*	N/A
Boiling Point:	N/A	*Vapor Density:*	N/A
Melting Point:	2800° F	*Evaporation Rate:*	N/A
Solubility in Water:	N/A	*% Volatile by Vol.:*	N/A
pH:	N/A		

Fire and Explosion Hazard Data

Not applicable

Reactivity Data

Stability: Stable

Incompatibilities: Acids

Hazardous Decomposition Products:
Welding and burning on this product may cause the generation of a variety of noxious fumes and gases.
(e.g. Carbon Monoxide, Chromium fume, etc.)

Polymerization: Will not occur

Health Hazard Data

Health Effects / Signs and Symptoms:
Steel products in their usual physical form do not pose any health hazards. However, when subjected to welding, burning, grinding, cutting, abrasive blasting, heat treatment, pickling, or similar operations; potentially hazardous fumes or dusts may be emitted. Despite the fact that the welding, burning, etc. of steel in this categorymay produce fumes containing manganese, silicon, aluminum, and copper. The air concentrations generated of these components are expected to be extremely low. Particular attention should be directed to the other constituents which may be present at substantial levels. The following is a list of fumes or dusts that may be generated from this steel product category and the health effects associated with overexposure to them:

Iron (Fe)
Subjecting iron and alloys containing iron to high temperatures (such as occurs during welding) will cause the formation of iron oxide. Long-term exposure to iron oxide fumes or dusts has been associated with a benign lung condition known as siderosis which is observable as an x-ray change. No physical impairment of lung function has been linked to siderosis.

Chromium (Cr)
The toxicity and health hazards of chromium are heavily dependent upon its oxidation state. The elemental (as in the metal), divalent, and trivalent forms are of very low toxicity. The hexavalent form (such as occurs in chromates and chromic acid is very toxic and can produce both acute and chronic effects. Adverse effects on the skin may include ulcerations, irritative dermatitis, and allergic skin reactions. Adverse effects on the respiratory system may include bronchospasms, edema, hypersecretion, bronchitis, irritation, allergic asthmatic reactions, and ulceration and perforation of the nasal septum. Respiratory symptoms may include coughing and wheezing, shortness of breath, and nasal itch. Eye irritation or inflamation can also be produced. Exposure to some hexavalent chromium compounds have also been shown to be associated with an increased risk of lung cancer.

Molybdenum (Mo)
Molybdenum and its compounds generally exhibit a low order of toxicity; however soluble compounds (such as Molybdenum Trioxide) are considerably more toxic. Molybdenum Trioxide may produce irritation of the eyes, nose, and throat. In animals, soluble Molybdenum compounds have also caused weight loss, diarrhea, loss of coordination, pneumoconiosis (accumulation of particles in the lungs), breathing difficulties, anemia, and colic. Animal data also suggest that repeated exposures might be associated with gout. Pneumoconiosis, with x-ray findings and subjective symptoms, has been observed in a small number of workers exposed to metallic Molybdenum and Molybdenum trioxide; however, no physical impairment of lung function has been linked to this condition.

Cobalt (Co)
Cobalt dust and fume is mildly irritating to the eyes, skin, and upper respiratory tract. An allergic dermatitis may be produced especially in skin areas subject to friction such as the creases of the elbow, knee, neck, and ankles. Inhalation to Cobalt dust and fume may result in an asthma-like respiratory disease with symptoms such as cough and shortness of breath. In some instances, this condition progresses to interstitial pneumonia with marked fibrosis. As a result, permanent disability or even death may occur.

Vanadium (V)
Vanadium compounds (especially Vanadium Pentoxide) are irritants to tne eyes, respiratory tract, and, to a less frequent extent, the skin. Eye symptoms may include excessive tearing and a burning sensation. Skin rashes (which may be allergic in nature) resemble eczema and may itch intensely. Excessive inhalation exposures even after brief periods may result in inflammation of the nasal passages, sore throat, cough, tracheitis, bronchitis, wheezing, and chest pain. Excessive long-term or repeated exposures may result in more severe effects such as pulmonary edema, pneumonia, chronic bronchitis, and recurring episodes of labored breathing. Workers exposed to excessive levels of Vanadium often show a greenish discoloration of the tongue.

Nickel (Ni)
Nickel fumes and dusts are respiratory irritants and may cause severe pneumonitis. Skin contact with Nickel and its compounds may cause an allergic dermatitis. .The resulting skin rash is often referred to as Nickel Itch. Nickel and its compounds may also produce eye irritation, particularly on the inner surfaces of the eyelids (i.e., the conjunctiva). Animal and/or epidemiology studies have linked Nickel and certain Nickel compounds to an increased incidence of cancer of the lungs and nasal passages.

Manganese (Mn)
Manganese intoxication is usually due to the oxide or salts of Manganese, elemental Manganese exhibits very low toxicity. The dusts and fumes can act as minor irritants to the eyes and respiratory tract. Both acute and chronic exposures may adversely affect the central nervous system (CNS) , but symptoms are more likely to occur after at least 1 or 2 years of prolonged or repeated exposures. Early symptoms may include weakness, in lower extremities, sleepiness, salivation, nervousness, and apathy. In more advanced stages, severe muscular incoordination, impaired speech, spastic walking, mask-like facial expression and uncontrollable laughter may occur. Manganese fumes have also been reported to result in metal fume fever, a flu-like syndrome with symptoms such as dizziness, chills, fever, headache, and nausea. An increased incidence of pneumonia, bronchitis, and pneumonitis has been reported in some worker populations exposed to manganese. Animal studies indicate that Manganese exposure may increase susceptibility to bacterial and viral infections.

Silicon (Si)
This is considered to be a nuisance particulate by ACGIH.

Aluminum (Al)
Particles of Aluminum deposited in the eye may cause irreversible tissue damage of the cornea. Aluminum salts may cause dermatitis, eczema, conjunctivitis, and irritation of the.mucous membranes of the upper respiratory tract. Long-term inhalation exposure to Aluminum dusts or fumes has been associated with a fibrotic lung condition known as Shaver's disease; however, the evidence for this is not conclusive since affected workers were exposed to other substances (such as Silica) as well. Symptoms of this condition may include shortness' of breath, cough, and fatigue.

Copper (Cu)
Inhalation of Copper fume may cause irritation of the eyes nose, and throat and a flu-like illness called metal fume fever. Signs and symptoms of metal fume fever include fever, muscle aches, nausea,-chills, dry throat, cough, and weakness. Copper fume may also produce a metallic or sweet taste. Repeated or prolonged exposure to Copper fume may cause discoloration of the skin and hair.

Usual Route(s) of Entry:
Inhalation
Medical Conditions Possibly Aggravated:
Chronic diseases or.disorders of the respiratory system.
Carcinogen Information: .
NTP and IARC consider (1) Chromium and certain Chromium compounds to be known human carcinogens and (2) Nickel and certain Nickel compounds to be probable human carcinogens..

Health Hazard Data, cont.

Eye Contact:
Not anticipated to pose a significant eye hazard.

Skin Contact:
Not anticipated to pose a significant skin hazard.

Inhalation:
Remove from excessive exposure levels unless proper respiratory protection is worn.

Ingestion: .
Not considered an ingestion hazard.

Occupational Exposure Control Measures

Engineering Controls (Ventilation, etc.):
Ventilation should be sufficient to maintain exposure levels below the applicable exposure limit.

Work Practices (Handling and Storage, etc):
Arc or spark generated when welding or burning on these products could be a source of ignition for combustible or flammable materials.

Eye Protection:
Not anticipated to pose a significant eye hazard.

Skin Protection:
Not anticipated to pose a significant skin hazard.

Respiratory Protection:
When engineering controls are not sufficient to lower exposure levels below the applicable exposure limit, use a NIOSH-approved respirator for dusts and metal fumes within the use limits of the respirator.

Spill, Leak and Disposal Information

Procedures to Follow if Material is Released or Spilled:
N/A

Waste Disposal Method(s):
Any excess product can be recycled for further use, disposed in a permitted hazardous waste landfill, or disposed by other methods which are in accordance with local, state, and federal regulations.

Additional or Miscellaneous Information

None

Footnotes

(1) Concentrations may vary somewhat between batches or lots. Where possible a concentration range is indicated. Occasionally, however, levels may even fall outside of the usual concentration ranges.
(2) Common names, if applicable, appear in parentheses following the chemical names.
(3) All values, unless otherwise specified, refer to 8-hour time-weighted average concentrations and units are in mg/M^3.
(4) As Iron Oxide fume.
(5) As hexavalent Chromium compounds..
(6) As Vanadium pentoxide fume.
(7) As Vanadium Pentoxide respirable dust and fume.
(8) As Nickel metal.
(9) Ceiling value.
(10) As Manganese fume.
(11) As Aluminum welding fumes.
(12) As Copper fume.

Abbreviations

NA - Not applicable
NE = Not Established
UK - Unknown (No applicable information was found.
GT = Greater Than
LT = Less Than

All information, recommendations, and suggestions contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made by Precision-Kidd Steel Co. with respect to the information provided. Employers should use this information only as a supplement to other information gathered by them. Since the actual use of this product is beyond our control, and it is each employer's responsibility to assure the safety and health of their employees, Precision-Kidd Steel Co. will not assume liability arising out of the use of this product by others.

MATERIAL SAFETY DATA SHEET
ENTERPRISE OIL CO.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

COMPANY: TRANSOR FILTER USA, 1265 OAKTON ST., ELK GROVE VILLAGE, IL. 60007
EMERGENCY TELEPHONE NUMBER: 800-354-3040

PRODUCT NAME: TRANSOGRIND EXP GRINDING FLUID
PRODUCT GRADES:
PRODUCT CODE:

DATE ISSUED: December 28, 1992
DATE REVISED: Feb. 10, 2010

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

CAS NAME: 1-DECENE, DIMER, HYDROGENATED > 99%; CAS#: 68649116
PROPRIETARY ADDITIVES: < 1%

SECTION 3: HAZARD IDENTIFICATION

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS)
HEALTH 1 FLAMMABILITY 1 REACTIVITY 0
PERMISSIBLE CONCENTRATIONS (AIR):
IF USED IN APPLICATIONS WHERE A MIST MAY BE GENERATED, OBSERVE A TWA/PEL OF 5mg/m3 FOR MINERAL OIL MIST (OSHA AND ACGIN).
CHRONIC EFFECTS OF OVEREXPOSURE:
PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE DERMATITIS (SKIN IRRITATION).
SEE SECTION 16. COMMENTS.
CARCINOGENICITY PROPERTIES:
NPT? NO IARC? NO OSHA? NO
VARIABILITY AMONG INDIVIDUALS:
HEALTH STUDIES HAVE SHOW THAT MANY PETROLEUM HYDROCARBONS AND SYNTHETIC LUBRICANTS POSE POTENTIAL HUMAN HEALTH RISKS WHICH MAY VARY FROM PERSON TO PERSON. AS A PRECAUTION, EXPOSURE TO LIQUIDS, VAPORS, MISTS OR FUMES SHOULD BE MINIMIZED.

SECTION 4: FIRST AID MEASURES

EYE CONTACT:
IMMEDIATELY FLUSH WITH LARGE QUANTITIES OF WATER FOR AT LEAST 15 MINUTES AND CALL A PHYSICIAN.
SKIN CONTACT:
REMOVE EXCESS WITH CLOTH OR PAPER. WASH THOROUGHLY WITH SOAP AND WATER.
INHALATION:
REMOVE VICTIM TO FRESH AIR AND CALL A PHYSICIAN.

INGESTION:
CALL A PHYSICIAN IMMEDIATELY. DO NOT INDUCE VOMITING. (VOMITING MAY CAUSE ASPIRATION INTO LUNGS RESULTING IN CHEMICAL PNEUMONIA.)

SECTION 5. FIRE-FIGHTING MEASURES

SPECIAL FIRE FIGHTING PROCEDURES:
DO NOT USE WATER EXCEPT AS FOG.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
NONE
FLASH POINT:
(METHOD USED) CLEVELAND OPEN CUP > 177 C (350 F)
FLAMMABLE LIMIT%:
N/A
EXTINGUISHING AGENTS:
DRY CHEMICAL, OR WATER FOG, OR CARBON DIOXIDE, OR FOAM.
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) - HAZARD IDENTIFICATION:
HEALTH 1 FLAMMABILITY 1 REACTIVITY 0

SECTION 6. ACCIDENTAL RELEASE MEASURES

CLEAN WATER ACT / OIL POLLUTION ACT:
THIS PRODUCT MAY BE CLASSIFIED AS AN OIL UNDER SECTION 311 OF THE CLEAN WATER ACT, AND UNDER THE OIL POLLUTION ACT. DISCHARGES OR SPILLS INTO OR LEADING TO SURFACE WATERS THAT CAUSE A SHEEN MUST BE REPORTED TO NATIONAL RESPONSE CENTER (1-800-424-8802).
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
RECOVER FREE PRODUCT. ADD SAND, EARTH, OR OTHER SUITABLE ABSORBENT TO SPILL AREA. MINIMIZE SKIN CONTACT. KEEP PRODUCT OUT OF SEWERS AND WATERCOURSES BY DIKING OR IMPOUNDING. ADVISE AUTHORITIES IF PRODUCT HAS ENTERED OR MAY ENTER SEWERS, WATERCOURSES, OR EXTENSIVE LAND AREAS. ASSURE CONFORMITY WITH APPLICABLE GOVERNMENTAL REGULATIONS.

SECTION 7. STORAGE AND HANDLING

HANDLING PRECAUTIONS:
USE PRODUCT WITH CAUTION AROUND HEAT, SPARKS, PILOT LIGHTS, STATIC ELECTRICITY, AND OPEN FLAME.
PROCEDURES FOR CLEAN-UP:
TRANSFER BULK OF MIXTURE INTO ANOTHER CONTAINER. ABSORB RESIDUE WITH AN INERT MATERIAL SUCH AS EARTH, SAND, OR VERMICULITE. SWEEP UP AND DISPOSE AS SOLID WASTE IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
"EMPTY" CONTAINER WARNING:
"EMPTY" CONTAINERS RETAIN RESIDUE (LIQUID AND/OR VAPOR) AND CAN BE DANGEROUS. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.
DO NOT ATTEMPT TO REFILL OR CLEAN CONTAINERS SINCE RESIDUE IS DIFFICULT TO REMOVE.
"EMPTY" DRUMS SHOULD BE COMPLETELY DRAINED, PROPERLY BUNGED AND PROMPTLY RETURNED TO A DRUM RECONDITIONER. ALL OTHER CONTAINERS SHOULD BE DISPOSED OF IN AN ENVIRONMENTALLY SAFE MANNER AND IN ACCORDANCE WITH GOVERNMENTAL REGULATIONS.

WASTE DISPOSAL
DISPOSE OF IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.

SECTION 8. EXPOSURE CONTROL/PERSONAL PROTECTION

EXPOSURE LIMIT FOR TOTAL PRODUCT:
5 mg/m3 FOR OIL MIST (AEROSOL) FOR AN 8-HOUR WORKDAY.

BASIS:
OSHA REGULATION CFR 1910.1000 AND RECOMMENDED BY THE AMERICAN HYGIENISTS (ACGIH). ACGIH STATES THAT THE AIR IS TO BE SAMPLE BY A METHOD THAT DOES NOT COLLECT VAPOR; IN ADDITION, IT LISTS A 10 mg/m3 STEL.

VENTILATION:
USE LOCAL EXHAUST TO CAPTURE VAPOR, MISTS OR FUMES, IF NECESSARY. PROVIDE VENTILATION SUFFICIENT TO EXCEEDING RECOMMENDED EXPOSURE LIMIT OR BUILDUP OF EXPLOSIVE CONCENTRATIONS OF VAPOR IN AIR. NO SMOKING, OR USE OF FLAME OR OTHER IGNITION SOURCES.

RESPIRATORY PROTECTION:
USE SUPPLIED-AIR RESPIRATORY PROTECTION IN CONFINED OR ENCLOSED SPACES, IF NEEDED.

PROTECTIVE GLOVES:
USE CHEMICAL-RESISTANT GLOVES, IF NEEDED, TO AVOID PROLONGED OR REPEATED SKIN CONTACT.

EYE PROTECTION:
USE SPLASH GOGGLES OR FACE SHIELD WHEN EYE CONTACT MAY OCCUR.

OTHER PROTECTIVE EQUIPMENT
USE CHEMICAL-RESISTANT APRON OR OTHER IMPERVIOUS CLOTHING, IF NEEDED, TO AVOID CONTAMINATING REGULAR CLOTHING, WHICH COULD RESULT IN PROLONGED OR REPEATED SKIN CONTACT.

PERSONAL HYGIENE
MINIMIZE BREATHING VAPOR, MIST OR FUMES. AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. REMOVE CONTAMINATED CLOTHING; LAUNDER OR DRY-CLEAN BEFORE RE-USE. REMOVE CONTAMINATED SHOES AND THOROUGHLY CLEAN BEFORE RE-USE; DISCARD IF OIL SOAKED. CLEANSE SKIN THOROUGHLY AFTER CONTACT, BEFORE BREAKS AND MEALS, AND AT END OF WORK PERIOD. PRODUCT IS READILY REMOVED FROM SKIN BY WATERLESS HAND CLEANERS FOLLOWED BY WASHING THOROUGHLY WITH SOAP AND WATER.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

FORM: LIQUID
APPEARANCE: VISCOUS LIQUID
SPECIFIC GRAVITY: 0.80 @ 15.6/15.6 C
MELTING POINT: <-73 C (<-100 F)
VAPOR PRESSURE: <1 mmHg @ 75 C
VISCOSITY: 5.1 cSt @ 40 C
PH: N/A

ODOR: ODORLESS
COLOR: CLEAR, COLORLESS
BOILING POINT: 55 C (132 F) @ 10 mmHg
FREEZING POINT: <-73 C (<-100 F)
VAPOR DENSITY (air=1): 9.0
POUR POINT: <-73 C (<-100 F)
SOLUBILITY: SOLUBLE IN HYDROCARBON SOLVENTS: INSOLUBLE IN WATER.

SECTION 10. STABILITY AND REACTIVITY

THIS PRODUCT STABLE AND WILL NOT REACT VIOLENTLY WITH WATER. HAZARDOUS POLYMERIZATION WILL NOT OCCUR. AVOID CONTACT WITH STRONG OXIDANTS SUCH AS LIQUID CHLORINE, CONCENTRATED OXYGEN, SODIUM HYPOCHLORITE, CALCIUM HYPOCHLORITE, ETC. , AS THIS PRESENTS A SERIOUS EXPLOSIONS EXPLOSION HAZARD.

SECTION 11. TOXICOLOGICAL INFORMATION

NATURE OF HAZARD AND TOXICITY INFORMATION:

REPEATED AND PROLONGED OVEREXPOSURE TO OIL MISTS MAY RESULT IN DROPLET DEPOSITION, OIL GRANULOMA FORMATION, INFLAMMATION AND INCREASED INCIDENCE OF INFECTION.

TOXIC AND HAZARDOUS INGREDIENTS:

NONE

SECTION 12. ECOLOGICAL INFORMATION:

ECOLOGICAL EFFECT TESTING HAS NOT BEEN CONDUCTED ON THIS PRODUCT. DO NOT DISCHARGE THIS PRODUCT INTO PUBLIC WATER OR WATERWAYS UNLESS AUTHORIZED BY A NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NODES) PERMIT ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA) AN ENVIRONMENTAL FATE ANALYSIS HAS NOT BEEN CONDUCTED ON THIS SPECIFIC PRODUCT. HOWEVER, PLANTS AND ANIMALS MAY EXPERIENCE HARMFUL OR FATAL EFFECTS WHEN COATED WITH PETROLEUM-BASED PRODUCTS. PETROLEUM-BASED (MINERAL) LUBE OILS WILL NORMALLY FLOAT ON WATER. IN STAGNANT OR SLOW-FLOWING WATERWAYS, AN OIL LAYER CAN COVER A LARGE SURFACE AREA. AS A RESULT, THIS OIL LAYER MIGHT LIMIT AND ELIMINATE NATURAL ATOMOSPHERIC OXYGEN TRANSPORT INTO THE WATER. WITH TIME, IF NOT REMOVED, OXYGEN DEPLETION IN THE WATERWAY MIGHT BE ENOUGH TO CAUSE A FISH KILL OR CREATE AN ANAEROBIC ENVIRONMENT.

SECTION 13. DISPOSAL CONSIDERATION

OPTIONS FOR DISPOSAL OF THIS PRODUCT MAY DEPEND ON THE CONDITIONS UNDER WHICH IT WAS USED. TO DETERMINE THE PROPER METHOD OF DISPOSAL, REFER TO RCRA (40 CRF 261), AS WELL AS FEDERAL EPA AND STATE AND LOCAL REGULATIONS.
PLEASE REFER TO SECTION 5, 6 AND 15 FOR ADDITIONAL INFORMATION.

SECTION 14. TRANSPORTATION INFORMATION

TRANSPORTATION INCIDENT INFORMATION

FOR FURTHER INFORMATION RELATIVE TO SPILLS RESULTING FROM TRANSPORTATION INCIDENTS, REFER TO LATEST DEPARTMENT OF TRANSPORTATION EMERGENCY RESPONSE GUIDEBOOK FOR HAZARDOUS MATERIALS INCIDENTS.

D.O.T.: NOT REGULATED
REPORTABLE QUANTITY: N/A
FREIGHT CLASSIFICATION: PETROLEUM LUBRICATING OIL
SPECIAL TRANSPORTATION NOTES: NONE

SECTION 15. REGULATORY INFORMATION

U. S. FEDERAL REGULATIONS:
THE FOLLOWING INFORMATION MAY BE USEFUL IN COMPLYING WITH VARIOUS STATE AND FEDERAL LAWS AND REGULATIONS UNDER VARIOUS ENVIRONMENTAL STATUTES:
THRESHOLD PLANNING QUANTITY (TPQ), EPA REGULATION 40 CFR 355 (SARA SECTIONS 301-304) NO TPQ FOR PRODUCT OR ANY CONSTITUENT GREATER THAN 1% OR 0.1% (CARCINOGEN).
TOXIC CHEMICAL RELEASE REPORTING, EPA REGULATION 40 CFR 372 (SARA SECTION 313)
NO TOXIC CHEMICAL IS PRESENT GREATER THAN 1% OR 0.1% (CARCINOGEN).
HAZARDOUS CHEMICAL REPORTING, EPA REGULATION 40 CFR 370 (SARA SECTION 311-312)
EPA HAZARD CLASSIFICATION CODE: NOT APPLICABLE
TOXIC SUBSTANCES CONTROL ACT (TSCA)
THIS PRODUCT DOES NOT CONTAIN POLYCHLORINATED BIPHENYLS (PCB's).
ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE U. S. TSCA INVENTORY.
THIS PRODUCT DOES NOT CONTAIN DETECTABLE AMOUNT OF ANY MATERIAL LISTED BY THE STATE OF CALIFORNIA AS KNOWN TO CAUSE REPRODUCTIVE TOXICITY.

WHMIS
NOT A CONTROLLED PRODUCT.
CEPA (CANADIAN ENVIRONMENTAL PROTECTION ACT)
ALL COMPONENTS OF THIS PRODUCT ARE ON THE DOMESTIC SUBSTANCES LIST (DSL) OR ARE EXEMPT.

SECTION 16. OTHER INFORMATION

THE HEALTH AND SAFETY INFORMATION PRESENTED HEREIN MUST BE USED IN CONJUNCTION WITH THE PERTINENT STANDARDS FOR TRAINING, WORK PRACTICES AND FACILITIES DESIGN ESTABLISHED BY OSHA, NFPA, API, NEC, UNDERWRITERS, BUREAU OF MINES, AND SIMILAR ORGANIZATIONS.

THE INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN, TO THE BEST TRANSOR FILTER USA KNOWLEDGE AND BELIEF, ACCURATE AND RELIABLE AS OF THE DATE ISSUED. TRANSOR FILTER USA DOES NOT WARRANT OR GUARANTEE THEIR ACCURACY OR RELIABILITY, AND TRANSOR FILTER USA SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE ARISING OUT OF THE USE THEREOF.

THE INFORMATION AND RECOMMENDATIONS ARE OFFERED FOR THE USER'S CONSIDERATION AND EXAMINATION, AND IT IS THE USER'S RESPONSIBILITY TO TO SATISFY ITSELF THAT ARE SUITABLE AND COMPLETE FOR ITS PARTICULAR USE.

4-18-12

MATERIAL SAFETY DATA SHEET

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

COMPANY: TRANSOR FILTER USA, 1265 OAKTON ST., ELK GROVE VILLAGE, IL. 60007
EMERGENCY TELEPHONE NUMBER: 800-354-3040

PRODUCT NAME: TRANSOGRIND 250
PRODUCT GRADES:
PRODUCT CODE:

DATE ISSUED: December 28, 1992
DATE REVISED: MAY 1, 2009

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

CAS NAME: SEVERELY HYDROTREATED PETROLEUM BASE OIL
CAS NUMBER: >99% SEVERELY HYDROTREATED PARAFFINIC BASE OIL,. <1% FOOD GRADE OXIDATION INHIBITOR

SECTION 3: HAZARD IDENTIFICATION

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS)
HEALTH 1 FLAMMABILITY 1 REACTIVITY 0
PERMISSIBLE CONCENTRATIONS (AIR):
IF USED IN APPLICATIONS WHERE A MIST MAY BE GENERATED, OBSERVE A TWA/PEL OF 5mg/m3 FOR MINERAL OIL MIST (OSHA AND ACGIN).
CHRONIC EFFECTS OF OVEREXPOSURE:
PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE DERMATITIS (SKIN IRRITATION). SEE SECTION 16. COMMENTS.
CARCINOGENICITY PROPERTIES:
NPT? NO IARC? NO OSHA? NO
VARIABILITY AMONG INDIVIDUALS:
HEALTH STUDIES HAVE SHOW THAT MANY PETROLEUM HYDROCARBONS AND SYNTHETIC LUBRICANTS POSE POTENTIAL HUMAN HEALTH RISKS WHICH MAY VARY FROM PERSON TO PERSON. AS A PRECAUTION, EXPOSURE TO LIQUIDS, VAPORS, MISTS OR FUMES SHOULD BE MINIMIZED.

SECTION 4: FIRST AID MEASURES

EYE CONTACT:
IMMEDIATELY FLUSH WITH LARGE QUANTITIES OF WATER FOR AT LEAST 15 MINUTES AND CALL A PHYSICIAN.
SKIN CONTACT:
REMOVE EXCESS WITH CLOTH OR PAPER. WASH THOROUGHLY WITH SOAP AND WATER.
INHALATION:
REMOVE VICTIM TO FRESH AIR AND CALL A PHYSICIAN.

INGESTION:
CALL A PHYSICIAN IMMEDIATELY. DO NOT INDUCE VOMITING. (VOMITING MAY CAUSE ASPIRATION INTO LUNGS RESULTING IN CHEMICAL PNEUMONIA.)

SECTION 5. FIRE-FIGHTING MEASURES

SPECIAL FIRE FIGHTING PROCEDURES:
DO NOT USE WATER EXCEPT AS FOG.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
NONE

FLASH POINT:
(METHOD USED) CLEVELAND OPEN CUP > 275 F

FLAMMABLE LIMIT%:
N/A

EXTINGUISHING AGENTS:
DRY CHEMICAL, OR WATER FOG, OR CARBON DIOXIDE, OR FOAM.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) - HAZARD IDENTIFICATION:
HEALTH 1 FLAMMABILITY 1 REACTIVITY 0

SECTION 6. ACCIDENTAL RELEASE MEASURES

CLEAN WATER ACT / OIL POLLUTION ACT:
THIS PRODUCT MAY BE CLASSIFIED AS AN OIL UNDER SECTION 311 OF THE CLEAN WATER ACT, AND UNDER THE OIL POLLUTION ACT. DISCHARGES OR SPILLS INTO OR LEADING TO SURFACE WATERS THAT CAUSE A SHEEN MUST BE REPORTED TO NATIONAL RESPONSE CENTER (1-800-424-8802).

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
RECOVER FREE PRODUCT. ADD SAND, EARTH, OR OTHER SUITABLE ABSORBENT TO SPILL AREA. MINIMIZE SKIN CONTACT. KEEP PRODUCT OUT OF SEWERS AND WATERCOURSES BY DIKING OR IMPOUNDING. ADVISE AUTHORITIES IF PRODUCT HAS ENTERED OR MAY ENTER SEWERS, WATERCOURSES, OR EXTENSIVE LAND AREAS. ASSURE CONFORMITY WITH APPLICABLE GOVERNMENTAL REGULATIONS.

SECTION 7. STORAGE AND HANDLING

HANDLING PRECAUTIONS:
USE PRODUCT WITH CAUTION AROUND HEAT, SPARKS, PILOT LIGHTS, STATIC ELECTRICITY, AND OPEN FLAME.

PROCEDURES FOR CLEAN-UP:
TRANSFER BULK OF MIXTURE INTO ANOTHER CONTAINER. ABSORB RESIDUE WITH AN INERT MATERIAL SUCH AS EARTH, SAND, OR VERMICULITE. SWEEP UP AND DISPOSE AS SOLID WASTE IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.

"EMPTY" CONTAINER WARNING:
"EMPTY" CONTAINERS RETAIN RESIDUE (LIQUID AND/OR VAPOR) AND CAN BE DANGEROUS. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.
DO NOT ATTEMPT TO REFILL OR CLEAN CONTAINERS SINCE RESIDUE IS DIFFICULT TO REMOVE.
"EMPTY" DRUMS SHOULD BE COMPLETELY DRAINED, PROPERLY BUNGED AND PROMPTLY RETURNED TO A DRUM RECONDITIONER. ALL OTHER CONTAINERS SHOULD BE DISPOSED OF IN AN ENVIRONMENTALLY SAFE MANNER AND IN ACCORDANCE WITH GOVERNMENTAL REGULATIONS.

WASTE DISPOSAL
DISPOSE OF IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.

SECTION 8. EXPOSURE CONTROL/PERSONAL PROTECTION

EXPOSURE LIMIT FOR TOTAL PRODUCT:
5 mg/m3 FOR OIL MIST (AEROSOL) FOR AN 8-HOUR WORKDAY.

BASIS:
OSHA REGULATION CFR 1910.1000 AND RECOMMENDED BY THE AMERICAN HYGIENISTS (ACGIH). ACGIH STATES THAT THE AIR IS TO BE SAMPLE BY A METHOD THAT DOES NOT COLLECT VAPOR; IN ADDITION, IT LISTS A 10 mg/m3 STEL.

VENTILATION:
USE LOCAL EXHAUST TO CAPTURE VAPOR, MISTS OR FUMES, IF NECESSARY. PROVIDE VENTILATION SUFFICIENT TO EXCEEDING RECOMMENDED EXPOSURE LIMIT OR BUILDUP OF EXPLOSIVE CONCENTRATIONS OF VAPOR IN AIR. NO SMOKING, OR USE OF FLAME OR OTHER IGNITION SOURCES.

RESPIRATORY PROTECTION:
USE SUPPLIED-AIR RESPIRATORY PROTECTION IN CONFINED OR ENCLOSED SPACES, IF NEEDED.

PROTECTIVE GLOVES:
USE CHEMICAL-RESISTANT GLOVES, IF NEEDED, TO AVOID PROLONGED OR REPEATED SKIN CONTACT.

EYE PROTECTION:
USE SPLASH GOGGLES OR FACE SHIELD WHEN EYE CONTACT MAY OCCUR.

OTHER PROTECTIVE EQUIPMENT
USE CHEMICAL-RESISTANT APRON OR OTHER IMPERVIOUS CLOTHING, IF NEEDED, TO AVOID CONTAMINATING REGULAR CLOTHING, WHICH COULD RESULT IN PROLONGED OR REPEATED SKIN CONTACT.

PERSONAL HYGIENE
MINIMIZE BREATHING VAPOR, MIST OR FUMES. AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. REMOVE CONTAMINATED CLOTHING; LAUNDER OR DRY-CLEAN BEFORE RE-USE. REMOVE CONTAMINATED SHOES AND THOROUGHLY CLEAN BEFORE RE-USE; DISCARD IF OIL SOAKED. CLEANSE SKIN THOROUGHLY AFTER CONTACT, BEFORE BREAKS AND MEALS, AND AT END OF WORK PERIOD. PRODUCT IS READILY REMOVED FROM SKIN BY WATERLESS HAND CLEANERS FOLLOWED BY WASHING THOROUGHLY WITH SOAP AND WATER.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

FORM: LIQUID
APPEARANCE: VISCOUS LIQUID
SPECIFIC GRAVITY (water=1): 0.825
MELTING POINT: ND
VOLATILE: 0
VAPOR PRESSURE: 0.225 mmHg
PH: N/A
VISCOSITY SUS AT 100 F: 38.5

ODOR: ODORLESS
COLOR: CLEAR & BRIGHT
BOILING POINT: >495 F
SOLUBILITY IN WATER: 0 AT 20 C
EVAPORATION RATE: 0
VAPOR DENSITY: N/A
STABILITY: STABLE UNDER NORMAL CONDITIONS

SECTION 10. STABILITY AND REACTIVITY

THIS PRODUCT STABLE AND WILL NOT REACT VIOLENTLY WITH WATER. HAZARDOUS POLYMERIZATION WILL NOT OCCUR. AVOID CONTACT WITH STRONG OXIDANTS SUCH AS LIQUID CHLORINE, CONCENTRATED OXYGEN, SODIUM HYPOCHLORITE, CALCIUM HYPOCHLORITE, ETC. , AS THIS PRESENTS A SERIOUS EXPLOSIONS EXPLOSION HAZARD.

SECTION 11. TOXICOLOGICAL INFORMATION

NATURE OF HAZARD AND TOXICITY INFORMATION:

REPEATED AND PROLONGED OVEREXPOSURE TO OIL MISTS MAY RESULT IN DROPLET DEPOSITION, OIL GRANULOMA FORMATION, INFLAMMATION AND INCREASED INCIDENCE OF INFECTION.

TOXIC AND HAZARDOUS INGREDIENTS:

NONE

SECTION 12. ECOLOGICAL INFORMATION:

ECOLOGICAL EFFECT TESTING HAS NOT BEEN CONDUCTED ON THIS PRODUCT. DO NOT DISCHARGE THIS PRODUCT INTO PUBLIC WATER OR WATERWAYS UNLESS AUTHORIZED BY A NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NODES) PERMIT ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA) AN ENVIRONMENTAL FATE ANALYSIS HAS NOT BEEN CONDUCTED ON THIS SPECIFIC PRODUCT. HOWEVER, PLANTS AND ANIMALS MAY EXPERIENCE HARMFUL OR FATAL EFFECTS WHEN COATED WITH PETROLEUM-BASED PRODUCTS. PETROLEUM-BASED (MINERAL) LUBE OILS WILL NORMALLY FLOAT ON WATER. IN STAGNANT OR SLOW-FLOWING WATERWAYS, AN OIL LAYER CAN COVER A LARGE SURFACE AREA. AS A RESULT, THIS OIL LAYER MIGHT LIMIT AND ELIMINATE NATURAL ATOMOSPHERIC OXYGEN TRANSPORT INTO THE WATER. WITH TIME, IF NOT REMOVED, OXYGEN DEPLETION IN THE WATERWAY MIGHT BE ENOUGH TO CAUSE A FISH KILL OR CREATE AN ANAEROBIC ENVIRONMENT.

SECTION 13. DISPOSAL CONSIDERATION

OPTIONS FOR DISPOSAL OF THIS PRODUCT MAY DEPEND ON THE CONDITIONS UNDER WHICH IT WAS USED. TO DETERMINE THE PROPER METHOD OF DISPOSAL, REFER TO RCRA (40 CRF 261), AS WELL AS FEDERAL EPA AND STATE AND LOCAL REGULATIONS.
PLEASE REFER TO SECTION 5, 6 AND 15 FOR ADDITIONAL INFORMATION.

SECTION 14. TRANSPORTATION INFORMATION

TRANSPORTATION INCIDENT INFORMATION

FOR FURTHER INFORMATION RELATIVE TO SPILLS RESULTING FROM TRANSPORTATION INCIDENTS, REFER TO LATEST DEPARTMENT OF TRANSPORTATION EMERGENCY RESPONSE GUIDEBOOK FOR HAZARDOUS MATERIALS INCIDENTS.

D.O.T.: NOT REGULATED
REPORTABLE QUANTITY: N/A
FREIGHT CLASSIFICATION: PETROLEUM LUBRICATING OIL
SPECIAL TRANSPORTATION NOTES: NONE

SECTION 15. REGULATORY INFORMATION

U. S. FEDERAL REGULATIONS:

THE FOLLOWING INFORMATION MAY BE USEFUL IN COMPLYING WITH VARIOUS STATE AND FEDERAL LAWS AND REGULATIONS UNDER VARIOUS ENVIRONMENTAL STATUTES:
THRESHOLD PLANNING QUANTITY (TPQ), EPA REGULATION 40 CFR 355 (SARA SECTIONS 301-304) NO TPQ FOR PRODUCT OR ANY CONSTITUENT GREATER THAN 1% OR 0.1% (CARCINOGEN).

TOXIC CHEMICAL RELEASE REPORTING, EPA REGULATION 40 CFR 372 (SARA SECTION 313)

NO TOXIC CHEMICAL IS PRESENT GREATER THAN 1% OR 0.1% (CARCINOGEN).

HAZARDOUS CHEMICAL REPORTING, EPA REGULATION 40 CFR 370 (SARA SECTION 311-312)

EPA HAZARD CLASSIFICATION CODE: NOT APPLICABLE

TOXIC SUBSTANCES CONTROL ACT (TSCA)

THIS PRODUCT DOES NOT CONTAIN POLYCHLORINATED BIPHENYLS (PCB's).
ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE U. S. TSCA INVENTORY.
THIS PRODUCT DOES NOT CONTAIN DETECTABLE AMOUNT OF ANY MATERIAL LISTED BY THE STATE OF CALIFORNIA AS KNOWN TO CAUSE REPRODUCTIVE TOXICITY.

WHMIS

NOT A CONTROLLED PRODUCT.

CEPA (CANADIAN ENVIRONMENTAL PROTECTION ACT)

ALL COMPONENTS OF THIS PRODUCT ARE ON THE DOMESTIC SUBSTANCES LIST (DSL) OR ARE EXEMPT.

SECTION 16. OTHER INFORMATION

THE HEALTH AND SAFETY INFORMATION PRESENTED HEREIN MUST BE USED IN CONJUNCTION WITH THE PERTINENT STANDARDS FOR TRAINING, WORK PRACTICES AND FACILITIES DESIGN ESTABLISHED BY OSHA, NFPA, API, NEC, UNDERWRITERS, BUREAU OF MINES, AND SIMILAR ORGANIZATIONS.

THE INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN, TO THE BEST TRANSOR'S KNOWLEDGE AND BELIEF, ACCURATE AND RELIABLE AS OF THE DATE ISSUED. TRANSOR FILTER USA DOES NOT WARRANT OR GUARANTEE THEIR ACCURACY OR RELIABILITY, AND TRANSOR FILTER USA SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE ARISING OUT OF THE USE THEREOF.

THE INFORMATION AND RECOMMENDATIONS ARE OFFERED FOR THE USER'S CONSIDERATION AND EXAMINATION, AND IT IS THE USER'S RESPONSIBILITY TO TO SATISFY ITSELF THAT ARE SUITABLE AND COMPLETE FOR ITS PARTICULAR USE.

MATERIAL SAFETY DATA SHEET

DATE REVISED: 6/1/10
REVISION MSDS NO. 6113-03

BIRCHWOOD CASEY®
TRU TEMP® XL BLACKENER

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **TRU TEMP® XL BLACKENER**

PRODUCT PART NUMBERS: 611351, 611358

MANUFACTURED BY: BIRCHWOOD LABORATORIES, INCORPORATED
7900 Fuller Road
Eden Prairie, MN 55344 USA
Product Information Telephone Number: (952) 937-7900 (8:00-4:00pm CST)
Fax Number: (952) 937-7979
www.birchwoodcasey.com

24 HOUR TRANSPORTATION EMERGENCY NUMBER: CHEMTREC 800-424-9300 U.S. & CANADA
703-527-3887 INTERNATIONAL (Collect)

24 HOUR POISON CONTROL EMERGENCY NUMBER: 866-291-7152 U.S. & CANADA

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: **DANGER! Corrosive.** May be fatal if swallowed. Causes severe burns to eyes and skin. May react with water or acids to generate heat.

APPEARANCE/ODOR: Blue liquid, odorless.

EYE CONTACT: Severe or permanent eye damage.

SKIN CONTACT: Severe irritation and possible burns.

INGESTION: Severe burns of mouth, throat and stomach; possible symptoms include nausea, vomiting, abdominal pain, diarrhea, lowered blood pressure, abnormally low heartbeat, cyanosis, methemoglobinemia and fluid retention.

INHALATION: Severe irritation of respiratory tract and mucous membranes; coughing, difficulty breathing

3. COMPOSITION / INFORMATION ON INGREDIENTS

Description	CAS #	Weight %	OSHA PEL* TWA	OSHA PEL STEL/C	ACGIH TLV TWA	ACGIH TLV STEL/C
Sodium Hydroxide	1310-73-2	30	2 mg/m^3	NE	NE	2 mg/m^{3-C}
Sodium Nitrate	7631-99-4	10	NE	NE	NE	NE
Sodium Nitrite	7632-00-0	1	NE^{Skin}	NE	NE	NE
Water	7732-18-5	59	NE	NE	NE	NE

TWA – Time-weighted Average **STEL** – Short-term exposure limit **C** – Ceiling
(skin) – skin designation means that harmful amounts may be absorbed through the skin
* Certain States enforce PELs that were in place in 1989, but were later removed by the U.S. Supreme Court. Check with your State OSHA to determine which PEL is enforced in your State.
NE = not established **NA** = not applicable **NDA** = no data available

4. FIRST AID MEASURES

EYE CONTACT: Flush immediately with clean water. Continue for at least 15 minutes. Seek immediate medical attention.

SKIN CONTACT: Remove contaminated clothing to avoid prolonged contact. Wash affected areas with water. Seek medical attention if irritation develops.

INGESTION: Drink a glass of water and contact poison control center or physician immediately. DO NOT induce vomiting.

INHALATION: Remove from exposure. Seek medical attention if necessary if breathing is difficult.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASHPOINT: None METHOD USED: NA

FLAMMABLE LIMITS: LFL: NA UFL: NA

EXTINGUISHING MEDIA: Non-flammable. Use media as appropriate for surrounding materials.

FIRE & EXPLOSION HAZARDS: Contact with metals may release flammable hydrogen gas.

SPECIAL FIRE FIGHTING PROCEDURES: Firefighters should wear approved SCBA and full turn-out gear.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Wear recommended protective equipment. Recover as much product as possible and collect in alkali-resistant container.

Review current local, state and federal laws, codes, statutes, and regulations to determine appropriate agencies to be notified, and the conditions under which they are to be notified. (See Section 13 for waste disposal comments).

7. HANDLING AND STORAGE

HANDLING: Avoid breathing mists or spray. Avoid eye and skin contact. Wear protective equipment when handling product. Keep out of the reach of children.

STORAGE: Store in cool, dry area. Keep containers covered when not in use. Avoid storing with incompatible materials.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

RESPIRATORY PROTECTION: Use a NIOSH approved respirator (Full or half-face N95 cartridge type) if any of the occupational exposure limits in Section 3 may be exceeded.

EYE PROTECTION: goggles, face shield

PROTECTIVE GLOVES: butyl rubber, neoprene

BODY PROTECTION: neoprene apron, as needed

VENTILATION: Use general/dilution or local exhaust ventilation as needed to ensure that occupational exposure limits are not exceeded.

OTHER PROTECTIVE EQUIPMENT: Eyewash and emergency shower

NOTE: All PPE should be selected on the basis of an exposure assessment performed by a competent person.

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: >212°F
VAPOR PRESSURE: NDA
VAPOR DENSITY: (Air = 1): NDA
SOLUBILITY IN WATER: Complete
APPEARANCE: Blue liquid

SPECIFIC GRAVITY: (Water = 1): 1.295
VOLATILE BY VOLUME: NA
EVAPORATION RATE: (Ethyl Ether = 1): < 1
pH: 14.0
ODOR: odorless

10. STABILITY AND REACTIVITY

STABILITY: Stable.

CONDITIONS TO AVOID: NDA

INCOMPATIBILITY (materials to avoid): Water-reactive substances, metals (e.g. aluminum, zinc) strong acids, oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Contact with metals such as aluminum and zinc may produce hydrogen gas.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

There is no product based toxicological information for this product. Toxicology information is provided based on individual ingredients.

$LD_{50,}$ oral, rat: 180 mg/kg (sodium nitrite)

TARGET ORGANS: Eyes, skin, lungs (corrosive), blood.

Medical conditions that may be aggravated by exposure: Pre-existing skin, eye, respiratory, blood disorders.

Carcinogenicity: IARC: None NTP: None OSHA: None

12. ECOLOGICAL INFORMATION

ECOTOXICITY: NDA

ENVIRONMENTAL FATE: NDA

13. DISPOSAL CONSIDERATIONS

Waste and its solutions are assigned EPA Hazardous Waste Number D002. Review current local, state and federal laws, codes, statutes and regulations to determine current status and appropriate disposal method for the ingredients listed in Section 2. Any disposal practice must be in compliance with local, state, and federal laws and regulations. Contact the appropriate agency for specific information. Treatment, transport, storage and disposal of hazardous waste must be dealt with by a licensed facility or waste hauler.

14. TRANSPORT INFORMATION

D.O.T. HAZARDOUS MATERIALS DESCRIPTION AND PROPER SHIPPING NAME:

Corrosive Liquid, Basic, Inorganic, N.O.S. (Sodium Hydroxide Solution). Class 8 / UN3266 / P.G. III Exceptions: 49CFR 173.154

15. REGULATORY INFORMATION

TSCA (TOXIC SUBSTANCES CONTROL ACT): the materials in this product are listed on the TSCA Inventory.

CERCLA (Comprehensive Response compensation and Liability Act, 40 CFR 117, 302: Sodium Hydroxide has a Reportable Quantity of 1,000 lb. (>450 gallons of product)

SARA TITLE III (Superfund Amendments and Authorization Act):

Section 311/312:
Immediate Health Effects: Yes
Delayed Health Effects: No
Fire Hazard: No
Sudden Release of Pressure Hazard: No
Reactivity Hazard: Yes
Section 313 Reportable Ingredients: Sodium nitrite

STATE "RIGHT-TO-KNOW": This product may contain components cited on certain state lists. Consult with your individual State regarding this product's components.

16. OTHER INFORMATION

National Fire Protection Association (NFPA): Health: 3 Flammability: 0 Reactivity: 1

The data here is for hazard communication to our employees, our customers and their employees, and authorized regulatory agencies. For the intended purpose, this MSDS (Material Safety data Sheet) may be duplicated or the data transcribed to an alternative form. NOTE: The information contained herein is provided in good faith and is believed to be correct as of the date hereof. However, Birchwood Laboratories, Inc. makes no representation as to the comprehensiveness or accuracy of the information. It is expected that individuals receiving the information will exercise their independent judgment in determining its appropriateness for a particular period. Accordingly, Birchwood Laboratories, Inc. will not be responsible for damages of any kind resulting from the use of or reliance upon such information. NO REPRESENTATIONS, OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER NATURE ARE MADE HEREUNDER TO WHICH THE INFORMATION REFERS. The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment.

FOR ASSISTANCE WITH PLACING ORDERS:

- Product Pricing / Payment Terms
- Shipping and Tracing of Shipments
- Sales Rep Locations

Call our Sales Department (952) 937-7931

Or 1-800-328-6156 or Fax (952) 937-7979

FOR PRODUCT USAGE ASSISTANCE

- Questions on Operation of Products
- Solving Finishing Problems
- Operator Safety and Pollution Control

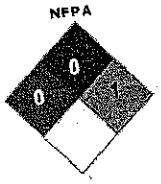
Call our Customer Service Desk Department (952) 937-7931

Or 1-800-328-6156 or Fax (952) 937-7979

SAINT-GOBAIN ABRASIVES

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Product Name:	**Vitrified Abrasive Product**
MSDS Manufacturer Number:	983594_BA_Vit
Manufacturer Name:	Saint-Gobain Abrasives, Inc.
Address:	1 New Bond Street Worcester, MA 01615
General Phone Number:	508-795-5000
Emergency Phone Number:	508-795-5000
Website:	www.sgabrasives.com
MSDS Creation Date:	December 15, 2010
MSDS Revision Date:	June 30, 2011
MSDS Format:	ANSI



HMIS	
Health Hazard	1
Fire Hazard	0
Reactivity	1
Personal Protection	X

* Chronic Health Effects

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Ingredient Percent	EC Num.
Aluminum Oxide, Non-fibrous	1344-28-1	60 - 100 by weight	215-691-6
Amorphous Silica, Fused	60676-86-0	5 - 10 by weight	262-373-8

SECTION 3 - HAZARDS IDENTIFICATION

Potential Health Effects:

Eye:	Dust may cause slight irritation.
Skin:	Dust from this product may cause temporary mechanical irritation.
Inhalation:	Dusts from this product may cause mechanical irritation of the nose, throat and respiratory tract.
Ingestion:	Ingestion of this product is unlikely. However, ingestion of product may produce gastrointestinal irritation and disturbances.
Chronic Health Effects:	May affect breathing capacity.

SECTION 4 - FIRST AID MEASURES

Eye Contact:	Immediately flush eyes with plenty of water for at least 15 to 20 minutes. Ensure adequate flushing of the eyes by separating the eyelids with fingers. Get medical attention, if irritation or symptoms of overexposure persists.
Skin Contact:	Immediately wash skin with soap and plenty of water. Get medical attention if irritation develops or persists.
Inhalation:	If dust from cutting or drilling is inhaled, remove the affected person to fresh air. If symptoms persist, get medical attention.
Ingestion:	Accidental ingestion of this material is unlikely. If this does occur, watch person for several days to make sure intestinal blockage does not occur. If symptoms persist, call a physician.
Note to Physicians:	No information available.

SECTION 5 - FIRE FIGHTING MEASURES

Flammable Properties:	Non Flammable.
Flash Point:	Does not apply.

Auto Ignition Temperature:	Not determined.
Lower Flammable/Explosive Limit:	Not available.
Upper Flammable/Explosive Limit:	Not available.
Extinguishing Media:	Use any extinguishing media appropriate for the surrounding fires.
Unsuitable Media:	None.
Protective Equipment:	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA Ratings:

NFPA Health:	0
NFPA Flammability:	0
NFPA Reactivity:	1
NFPA Other:	

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Methods for containment:	Containment of this material should not be necessary.
Methods for cleanup:	Shovel or sweep up for re-use or disposal. Avoid creating dusty conditions. Evaluate residue to determine if it is a hazardous waste by characteristic. Dispose of in accordance with Local, State, Federal and Provincial regulations.

SECTION 7 - HANDLING and STORAGE

Handling:	Always HANDLE AND STORE wheels in a CAREFUL manner. Always VISUALLY INSPECT all wheels before mounting. Always CHECK MACHINE SPEED against the established maximum safe operating speed MARKED ON THE WHEEL. Always CHECK MOUNTING FLANGES for equal and correct diameter. Always USE MOUNTING BLOTTERS. Always be sure WORK REST is properly adjusted. Always USE A SAFETY GUARD covering at least one-half of the grinding wheel. Always allow NEWLY MOUNTED WHEELS to run at operating speed, with guard in place, for at least one minute before grinding. Always TURN OFF COOLANT before stopping wheel to avoid creating an out-of-balance wheel.
Storage:	No special storage conditions required.
Hygiene Practices:	Wear suitable gloves and eye/face protection.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION - EXPOSURE GUIDELINES

Engineering Controls:	General dilution ventilation and/or local exhaust ventilation should be provided as necessary to maintain exposures below occupational exposure limits.
Eye/Face Protection:	Always WEAR SAFETY GLASSES or some type of eye protection when grinding.
Skin Protection Description:	Protective gloves. Long sleeved shirt and long pants.
Respiratory Protection:	When workers are facing airborne particulate/dust concentrations above the exposure limit they must use appropriate certified respirators. A properly fitted NIOSH approved disposable N 95 type dust respirator or better is recommended.
Other Protective:	Use of this product may create elevated sound levels. Hearing protection should be worn where required (see OSHA 29 CFR 1910.134 and other applicable regulations).
General Hygiene Considerations:	Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Avoid getting dust into boots and gloves through wrist bands and pant tucks.

EXPOSURE GUIDELINES

Ingredient	Guideline OSHA	Guideline NIOSH	Guideline ACGIH	Quebec Canada	Ontario Canada
Aluminum Oxide, Non-fibrous	PEL-TWA: 5 mg/m3 Respirable fraction (R) PEL-TWA: 15 mg/m3 Total particulate/dust (T)		TLV-TWA: 10 mg/m3	VEMP-TWA: 10 mg/m3 Total particulate/dust (T)	OEL-TWAEV: 10 mg/m3 Total particulate/dust (T)
Amorphous	OSHA PEL-TWA	REL-TWA: 0.05	ACGIH TLV-TWA	VEMP-TWA: 0.1	OEL-TWAEV: 0.1

Silica, Fused	0.1 mg/m3	mg/m3 (Respirable)	0.1 mg/m3	mg/m3 Respirable fraction (R)	mg/m3 Respirable fraction (R)
Ingredient	**Alberta Canada**	**Mexico**	**British Columbia Canada**		
Aluminum Oxide, Non-fibrous	OEL-TWA: 10 mg/m3	MPE-PPT: 0.1 mg/m3 Respirable fraction (R)	OEL-TWA: 3 mg/m3 Respirable fraction (R) OEL-TWA: 10 mg/m3 OEL-TWA: 10 mg/m3 Total particulate/dust (T) OEL-STEL: 20 mg/m3 Total particulate/dust (T)		
Amorphous Silica, Fused	OEL-TWA: 0.1 mg/m3 Respirable fraction (R)	MPE-PPT: 0.1 mg/m3 Respirable fraction (R)			

SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES

Physical State Appearance:	Solid article.
Odor:	Odorless
Flash Point:	Does not apply.
Auto Ignition Temperature:	Not determined.

SECTION 10 - STABILITY and REACTIVITY

Chemical Stability:	Stable under normal conditions.
Hazardous Polymerization:	Hazardous polymerization does not occur.
Special Decomposition Products:	In use, dust and decomposing odors may be generated. In most cases, the material removed from the workplace will be significantly greater than the grinding wheel components. Coolants may produce other decomposition products.

SECTION 11 - TOXICOLOGICAL INFORMATION

Acute Toxicity: This product has not been tested for its toxicity.

Carcinogens:	ACGIH	NIOSH	OSHA	IARC	NTP		
Aluminum Oxide, Non-fibrous	A4 Not Classifiable as a Human Carcinogen	No Data	No Data	No Data	No Data		
Amorphous Silica, Fused	No Data	NIOSH carcinogen	No Data	No Data	No Data		

Aluminum Oxide, Non-fibrous:

RTECS Number: "BD1200000"

Inhalation: Inhalation - Rat TCLo: 200 mg/m3/5H/28W (Intermittent) [Lungs, Thorax, or Respiration - Structural or functional change in trachea or bronchi; Lungs, Thorax, or Respiration - Chronic pulmonary edema; Related to Chronic Data - death] (RTECS)

Amorphous Silica, Fused:

RTECS Number: "VV7328000"

Inhalation: Inhalation - Rat TCLo: 197 mg/m3/6H/26W (Intermittent) [Lungs, Thorax, lor Respiration - Changes in lung weight] (RTECS)

SECTION 12 - ECOLOGICAL INFORMATION

Biodegradation: No environmental information found for this product.

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste Disposal: Use standard landfill methods consistent with applicable Federal, State, Provincial and local laws.

SECTION 14 - TRANSPORT INFORMATION

DOT Shipping Name:	Not regulated as hazardous material for transportation.
DOT UN Number:	Not regulated as hazardous material for transportation.
IATA Shipping Name:	Not regulated as hazardous material for transportation.
Canadian Shipping Name:	This product is Not Regulated under the Transportation of Dangerous Goods Act. (CAN)

SECTION 15 - REGULATORY INFORMATION

Aluminum Oxide, Non-fibrous :

TSCA Inventory Status:	Listed
EINECS Number:	262-373-8
New Jersey:	Listed: NJ Hazardous List; Substance Number: 2891
Massachussetts:	Listed
Pennsylvania:	Listed
Minnesota:	Listed
Illinois:	No Data
Rhode Island:	Listed
Canada DSL:	Listed
EC Number:	215-691-6

Amorphous Silica, Fused :

TSCA Inventory Status:	Listed
EINECS Number:	262-373-8
Massachussetts:	Listed
Rhode Island:	Listed
Canada DSL:	Listed
EC Number:	262-373-8

SECTION 16 - ADDITIONAL INFORMATION

HMIS Health Hazard:	1
HMIS Fire Hazard:	0
HMIS Reactivity:	1
HMIS Personal Protection:	X
MSDS Creation Date:	December 15, 2010
MSDS Revision Date:	June 30, 2011

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HANGSTERFER'S®
Research, Development & Manufacturing of Metalworking Lubricants

Material Safety Data Sheet

pared according to OSHA Hazard Communication Standard (29 CFR 1910.1200) and ANSI MSDS Standard (Z400.1).
Complies with Canadian Workplace Hazardous Materials Information System (WHMIS) standards.

lidation Date 05-12-2010

1. PRODUCT AND COMPANY IDENTIFICATION

oduct Name	Way Oil 1
roduct Code	205
Material Uses	Machine Lubricant
Manufacturer	Hangsterfer's Laboratories, Inc., 175 Ogden Road, Mantua, NJ 08051; Phone 856-468-0216, Fax 856-468-0200, Website: www.hangsterfers.com
Emergency Telephone Number	Chemtrec 1-800-424-9300 in US Canutec 1-613-996-6666 in Canada For international assistance, dial Chemtrec US number 703-527-3887

2. HAZARDS IDENTIFICATION

Acute Health Effects

Skin	Not expected to be a primary skin irritant.
Eye	None known
Inhalation	Not expected to present a hazard under normal use conditions.
Ingestion	No known effect

HMIS		NFPA	
Health Hazard	1	**Health Hazard**	1
Fire Hazard	1	**Fire Hazard**	1
Physical Hazard	0	**Reactivity**	0

Chronic Health Effects	No known effect
Chronic Toxicity	No known effect
Carcinogenic Effects	None known
Aggravated Medical Conditions	None known
Miscellaneous Hazards	Avoid prolonged and/or repeated contact with skin. Prolonged and/or repeated contact with this material may produce mild skin irritation or inflammation.

3. COMPOSITION/INFORMATION ON INGREDIENTS

If any of the components of this product are defined as hazardous by OSHA Hazard Communication Standard 1910.1200 and are present at 1% or more (0.1% or more for carcinogens) they will be listed in this section. If no components appear in this section, no components of the product meet or exceed the reporting requirements. OSHA PELs and ACGIH TLVs refer to the concentration in air of the specific chemical as measured by specific analytical methods.

4. FIRST AID MEASURES

Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists, consult a specialist.
Skin Contact	Wash off with warm water and soap. Consult a physician if necessary.

nalation	Move to fresh air. Consult a physician if necessary.
gestion	Do not induce vomiting. Drink plenty of water. Consult a physician if necessary.

5. FIRE-FIGHTING MEASURES

Flammable Properties	Material may burn but does not ignite readily.
Suitable Extinguishing Media	Water spray or fog, dry chemical, carbon dioxide (CO_2) or foam. Cool containers with flooding quantities of water until well after fire is out.
Unsuitable Extinguishing Media	Do not use a solid water stream as it may scatter and spread fire.
Hazardous Combustion Products	Carbon oxides
Specific Hazards Arising from the Chemical	May be ignited by heat, sparks or flames. Keep product and empty container away from heat and sources of ignition.
Protective Equipment and Precautions for Firefighters	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	Remove all sources of ignition. Avoid contact with the skin and the eyes. Wear boots, gloves and protective suit when handling large spills. Ensure adequate ventilation.
Methods for Containment	Prevent further leakage or spillage if safe to do so. Dike to collect large liquid spills.
Methods for Clean-up	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Take all appropriate steps to avoid contamination of ground water.
Other Information	Report spills as required to the appropriate authorities.

7. HANDLING AND STORAGE

Handling	Avoid contact with eyes. Keep in a well ventilated place. Do not puncture, crush or incinerate containers.
Storage	Keep container tightly closed in a dry and well ventilated place. Keep away from direct sunlight. Keep away from heat and sources of ignition.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines	This product does not contain any hazardous materials with occupational exposure limits below those specified under Engineering Controls.
Engineering Controls	Use in well ventilated area. If user operations generate an oil mist, use process enclosures, local exhaust ventilation or other engineering controls to control airborne levels below the recommended mineral oil mist exposure limits (ACGIH TLV TWA: 5 mg/m^3; ACGIH TLV STEL: 10 mg/m^3; OSHA PEL TWA: 5 mg/m^3).
Eye/face Protection	Safety glasses with side-shields.
Skin Protection	Use protective gloves and clothing if contact with product is likely.
Respiratory Protection	If personal exposure levels cannot be maintained below accepted exposure limits, NIOSH/MSHA approved respiratory protection should be worn.
General Hygiene Considerations	Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Amber.	**Odor**	Mild.
Physical State	Liquid.	**pH (10% soln/water)**	Not applicable.
Flash Point (COC)	210°C / 410°F	**Boiling Point/Range**	232°C / 450°F
Melting Point/Range	May begin to solidify at -28 °C/ -18 °F.	**Solubility In Water**	Insoluble.
Specific Gravity (Water=1)	0.87	**Vapor Density (Air=1)**	> 5
Vapor Pressure	<0.1 mmHg @ 20 °C	**Volatility**	No data available.
VOC Content, % Vol	No data available.		
Viscosity	SUS @ 100°F = 150 cSt @ 40°C = 32		

10. STABILITY AND REACTIVITY

Chemical Stability	Stable under normal conditions.
Conditions to Avoid	Keep away from open flames, hot surfaces and sources of ignition.
Incompatible Materials	Acids. Incompatible with oxidizing agents. Alkalines.
Hazardous Decomposition Products	Carbon oxides.
Hazardous Polymerization	Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

This section relates to available toxicology information on the complete product. Information on components classified as hazardous is listed in Section 3.

Acute Toxicity LD50 Oral:	> 5000 mg/kg (rat, predicted based on data on components).
Irritation	Skin Irritation - OECD 404: Non-irritating (Rabbit, predicted based on data on components). Not expected to be a primary eye irritant.
Corrosivity	OECD 404: Non corrosive (Rabbit, predicted based on data on components)
Sensitization	None known
Chronic Toxicity	No known effect
Carcinogenicity	This product contains no ingredients with a concentration of 0.1% or more which are known to be carcinogenic.
Other Adverse Effects	None known.

12. ECOLOGICAL INFORMATION

Ecotoxicity	Ecotoxicity and biodegradability of this complete mixture have not been evaluated. Consequently, this material should be kept out of sewage and drainage systems and all bodies of water and should not be considered readily biodegradable. If information is available on any of the individual components listed in Section 3, it will appear in a table below.
Persistence/Degradability	No additional remarks.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method	Dispose of in accordance with Federal, state and local regulations.

14. TRANSPORT INFORMATION

DOT	Not regulated.
TDG	Not regulated.
IATA	Not regulated.
IMDG/IMO	Not regulated.
ADR/RID	Not regulated.

15. REGULATORY INFORMATION

U.S. Regulations & Inventories No regulatory requirements found. All components of this product are either listed on the TSCA inventory or are exempt from listing requirements.

Canada Regulations & Inventories No regulatory requirements found. All components of this product are either listed on applicable inventories or are exempt from listing requirements.
This product has been classified in accordance with the hazard criteria of the Canadian CPR (Controlled Products Regulations) and the MSDS contains all the information required by the CPR.
Product Classification: Not hazardous

16. OTHER INFORMATION

Regulatory Lists Searched & Other Sources of Information

ACGIH - American Converence of Governmental Industrial Hygienists
ADN - European Agreement for International Carriage of Dangerous Goods by Inland Waterways
ANSI - American National Standards Institute
CAS - Chemical Abstract Services
CHINA - China Inventory
DOT - United States Department of Transportation
EINECS - European Union (EU) European Inventory of Existing Commercial Chemical Substances
IARC - International Agency for Research on Cancer
ICAO - International Civil Aviation Organization
MARTK - Massachusetts Right To Know List
NFPA - United States National Fire Protection Association
NJRTK - New Jersey Right To Know List
OSHA - United States Occupational Safety & Health Administration
PICCS - Philippines Inventory of Chemicals and Chemical Substances
RID - European Agreement for International Carriage of Dangerous Goods by Rail
SARA - United States Superfund Amendments & Reauthorization Act
TSCA - US Toxic Substances Control Act
AICS - Australian Inventory of Chemical Substances
ADR - European Agreement for International Carriage of Dangerous Goods by Road
CAP65 - California Proposition 65 Hazard List
CERCLA - Comprehensive Environmental Response, Compensation & Liability Act
CPR - Canadian Controlled Products Regulations
DSL - Canada Domestic Substances List
ENCS - Japan Existing and New Chemical Substances
IATA - International Air Transport Association
IMDG - International Maritime Dangerous Goods Code
NDSL - Canada Non-Domestic Substances List
NIOSH - United States National Institute for Occupational Safety & Health
NTP - United States National Toxicology Program
PARTK - Pennsylvania Right To Know List
RCRA - United States Resources Conservation & Recovery Act
RIHSL - Rhode Island Hazardous Substance List
TDG - Canada Transportation of Dangerous Goods Act
WHMIS - Canada Workplace Hazardous Materials Information System

Definitions

EC50 - Effective Concentration (Concentration of a compound where 50% of the expected effect is observed.)
LC50 - Lethal Concentration (The concentration in water that will kill 50% of the test animals within a specific period of time, usually 96 hours.)
LD50 - Lethal Dose (The single dose that will kill 50% of the test animals by any route other than inhalation such as by ingestion or skin contact.)
OEL - Occupational Exposure Limit
PEL - Permissible Exposure Limits
STEL - Short Term Exposure Limit
TLV - Threshold Limit Value
TWA - Time Weighted Average
TWAEV - Time Weighted Average Exposure Value

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

Revision Date	05-12-2010
Revision Number	3

End of MSDS

5-8-12

Material Safety Data Sheet

1 - Chemical Product and Company Identification

Manufacturer: WD-40 Company
Address: 1061 Cudahy Place (92110)
P.O. Box 80607
San Diego, California, USA
92138 –0607

Telephone:
Emergency only: 1-888-324-7596 (PROSAR)
Information: 1-888-324-7596
Chemical Spills: 1-800-424-9300 (Chemtrec)
1-703-527-3887 (International Calls)

Chemical Name: Organic Mixture

Trade Name: WD-40 Aerosol

Product Use: Lubricant, Penetrant, Drives Out Moisture, Removes and Protects Surfaces From Corrosion

MSDS Date Of Preparation: 3/11/10

2 – Hazards Identification

Emergency Overview:
DANGER! Flammable aerosol. Contents under pressure. Harmful or fatal if swallowed. If swallowed, may be aspirated and cause lung damage. May cause eye irritation. Avoid eye contact. Use with adequate ventilation. Keep away from heat, sparks and all other sources of ignition.

Symptoms of Overexposure:
Inhalation: High concentrations may cause nasal and respiratory irritation and central nervous system effects such as headache, dizziness and nausea. Intentional abuse may be harmful or fatal.
Skin Contact: Prolonged and/or repeated contact may produce mild irritation and defatting with possible dermatitis.
Eye Contact: Contact may be irritating to eyes. May cause redness and tearing.
Ingestion: This product has low oral toxicity. Swallowing may cause gastrointestinal irritation, nausea, vomiting and diarrhea. This product is an aspiration hazard. If swallowed, can enter the lungs and may cause chemical pneumonitis, severe lung damage and death.
Chronic Effects: None expected.
Medical Conditions Aggravated by Exposure: Preexisting eye, skin and respiratory conditions may be aggravated by exposure.

Suspected Cancer Agent:
Yes No X

3 - Composition/Information on Ingredients

Ingredient	CAS #	Weight Percent
Aliphatic Hydrocarbon	64742-47-8	45-50
Petroleum Base Oil	64742-58-1 64742-53-6 64742-56-9 64742-65-0	<25
LVP Aliphatic Hydrocarbon	64742-47-8	12-18
Carbon Dioxide	124-38-9	2-3
Surfactant	Proprietary	<2
Non-Hazardous Ingredients	Mixture	<10

4 – First Aid Measures

Ingestion (Swallowed): Aspiration Hazard. DO NOT induce vomiting. Call physician, poison control center or the WD-40 Safety Hotline at 1-888-324-7596 immediately.
Eye Contact: Flush thoroughly with water. Remove contact lenses if present after the first 5 minutes and continue flushing for several more minutes. Get medical attention if irritation persists.

Skin Contact: Wash with soap and water. If irritation develops and persists, get medical attention.
Inhalation (Breathing): If irritation is experienced, move to fresh air. Get medical attention if irritation or other symptoms develop and persist.

5 – Fire Fighting Measures

Extinguishing Media: Use water fog, dry chemical, carbon dioxide or foam. Do not use water jet or flooding amounts of water. Burning product will float on the surface and spread fire.
Special Fire Fighting Procedures: Firefighters should always wear positive pressure self-contained breathing apparatus and full protective clothing. Cool fire-exposed containers with water. Use shielding to protect against bursting containers.
Unusual Fire and Explosion Hazards: Contents under pressure. Keep away from ignition sources and open flames. Exposure of containers to extreme heat and flames can cause them to rupture often with violent force. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back.

6 – Accidental Release Measures

Wear appropriate protective clothing (see Section 8). Eliminate all sources of ignition and ventilate area. Leaking cans should be placed in a plastic bag or open pail until the pressure has dissipated. Contain and collect liquid with an inert absorbent and place in a container for disposal. Clean spill area thoroughly. Report spills to authorities as required.

7 – Handling and Storage

Handling: Avoid contact with eyes. Avoid prolonged contact with skin. Avoid breathing vapors or aerosols. Use only with adequate ventilation. Keep away from heat, sparks, pilot lights, hot surfaces and open flames. Unplug electrical tools, motors and appliances before spraying or bringing the can near any source of electricity. Electricity can burn a hole in the can and cause contents to burst into flames. To avoid serious burn injury, do not let the can touch battery terminals, electrical connections on motors or appliances or any other source of electricity. Wash thoroughly with soap and water after handling. Keep containers closed when not in use. Keep out of the reach of children. Do not puncture, crush or incinerate containers, even when empty.
Storage: Store in a cool, well-ventilated area, away from incompatible materials Do not store above 120°F or in direct sunlight. U.F.C (NFPA 30B) Level 3 Aerosol.

8 – Exposure Controls/Personal Protection

Chemical	Occupational Exposure Limits
Aliphatic Hydrocarbon	1200 mg/m3 TWA (manufacturer recommended)
Petroleum Base Oil	5 mg/m3 TWA, 10 mg/m3 STEL ACGIH TLV 5 mg/m3 TWA OSHA PEL
LVP Aliphatic Hydrocarbon	1200 mg/m3 TWA (manufacturer recommended)
Carbon Dioxide	5000 ppm TWA (OSHA/ACGIH), 30,000 ppm STEL (ACGIH)
Surfactant	None Established
Non-Hazardous Ingredients	None Established

The Following Controls are Recommended for Normal Consumer Use of this Product
Engineering Controls: Use in a well-ventilated area.
Personal Protection:
Eye Protection: Avoid eye contact. Always spray away from your face.
Skin Protection: Avoid prolonged skin contact. Chemical resistant gloves recommended for operations where skin contact is likely.
Respiratory Protection: None needed for normal use with adequate ventilation.

For Bulk Processing or Workplace Use the Following Controls are Recommended
Engineering Controls: Use adequate general and local exhaust ventilation to maintain exposure levels below that occupational exposure limits.

Personal Protection:
Eye Protection: Safety goggles recommended where eye contact is possible.
Skin Protection: Wear chemical resistant gloves.
Respiratory Protection: None required if ventilation is adequate. If the occupational exposure limits are exceeded, wear a NIOSH approved respirator. Respirator selection and use should be based on contaminant type, form and concentration. Follow OSHA 1910.134, ANSI Z88.2 and good Industrial Hygiene practice.
Work/Hygiene Practices: Wash with soap and water after handling.

9 – Physical and Chemical Properties

Boiling Point:	361 - 369°F (183 - 187°C)	Specific Gravity:	0.8 – 0.82 @ 60°F
Solubility in Water:	Insoluble	pH:	Not Applicable
Vapor Pressure:	95-115 PSI @ 70°F	Vapor Density:	Greater than 1
Percent Volatile:	70-75%	VOC:	412 grams/liter (49.5%)
Coefficient of Water/Oil Distribution:	Not Determined	Appearance/Odor	Light amber liquid/mild odor
Flash Point:	122°F (49°C) Tag Open Cup (concentrate)	Flammable Limits: (Solvent Portion)	LEL: 0.6% UEL: 8.0%
Pour Point:	-63°C (-81.4°F) ASTM D-97	Kinematic Viscosity:	2.79-2.96cSt @ 100°F

10 – Stability and Reactivity

Stability: Stable
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Avoid heat, sparks, flames and other sources of ignition. Do not puncture or incinerate containers.
Incompatibilities: Strong oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide and carbon dioxide.

11 – Toxicological Information

The oral toxicity of this product is estimated to be greater than 5,000 mg/kg based on an assessment of the ingredients. This product is not classified as toxic by established criteria. It is an aspiration hazard. None of the components of this product is listed as a carcinogen or suspected carcinogen or is considered a reproductive hazard.

12 – Ecological Information

No data is currently available.

13 - Disposal Considerations

If this product becomes a waste, it would be expected to meet the criteria of a RCRA ignitable hazardous waste (D001). However, it is the responsibility of the generator to determine at the time of disposal the proper classification and method of disposal. Dispose in accordance with federal, state, and local regulations.

14 – Transportation Information

DOT Surface Shipping Description: Consumer Commodity, ORM-D
IMDG Shipping Description: Un1950, Aerosols, 2.1, LTD QTY

15 – Regulatory Information

U.S. Federal Regulations:

CERCLA 103 Reportable Quantity: This product is not subject to CERCLA reporting requirements, however, oil spills are reportable to the National Response Center under the Clean Water Act and many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.
SARA TITLE III:
Hazard Category For Section 311/312: Acute Health, Fire Hazard, Sudden Release of Pressure
Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III Section 313 Reporting requirements: None
Section 302 Extremely Hazardous Substances (TPQ): None
EPA Toxic Substances Control Act (TSCA) Status: All of the components of this product are listed on the TSCA inventory.
California Safe Drinking Water and Toxic Enforcement Act (Proposition 65): This product does not contain chemicals regulated under California Proposition 65.
VOC Regulations: This product complies with the consumer product VOC limits of CARB, the US EPA and states adopting the OTC VOC rules.
Canadian Environmental Protection Act: One of the components is listed on the NDSL. All of the other ingredients are listed on the Canadian Domestic Substances List or exempt from notification.
Canadian WHMIS Classification: Class B-5 (Flammable Aerosol)
This MSDS has been prepared according to the criteria of the Controlled Products Regulation (CPR) and the MSDS contains all of the information required by the CPR.

16 – Other Information:

HMIS Hazard Rating:
Health – 1 (slight hazard), Fire Hazard – 4 (severe hazard), Reactivity – 0 (minimal hazard)

SIGNATURE: Peter P. Lee TITLE: Director of Global Quality Assurance

REVISION DATE: March 2010 SUPERSEDES: August 2009

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY *(As Used on Label and List)*	Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.
WIDELL TAPS & DIES	

Section I

Manufacturer's Name **Widell Industries, Inc**	Emergency Telephone Number (727) 848-1811
Address *(Number, Street, City, State, and ZIP Code)*	Telephone Number for Information (727) 848-1811
6622 INDUSTRIAL AVE	Date Prepared APRIL 29, 2004
PORT RICHEY, FL 34668	Signature of Preparer *(optional)*

Section II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	%*(optional)*
Aluminum (AL) 7429-90-5	-	10 dust 5 Fume		
Carbon (C) 7440-44-0	3.5	3.5		
Chromium (CR) 7440-47-3	1.0	0.5		
Cobalt (CO) 7440-48-4	0.1	0.05 Fume		
Copper (CU) 7440-50-8	0.2 (1.0 dust)	0.2 Fume 1.0 Dust		
Lead (Pb) 7439-92-1	0.05	0.15		
Manganese (Mn) 7439-96-5	5.0	5.0 dust 1.0 Fume		
Molybdenum (Mo) 7439-98-7	15.0	10.0		
Nickle (Ni) 7440-02-0	1.0	1.0		
Phosphrous (P) 7723-14-0	0.1	0.1		
Silicon (Si) 7440-21-3	-	10.0		
Sulfur (S) 7704-34-9	13.0	5.0		

	-	5.0	
sten (W) 7440-33-7	0.5 dust	0.1 fume 0.05	
adium (V) 7440-62-2	5.0 fume	5.0 fume	
c (ZN) 1314-13-2			

ion III - Physical/Chemical Characteristics

oiling Point	5000° F	Specific Gravity (H_2O = 1)	7.8 - 8.2 (60° F)
apor Pressure (mm Hg)	N/A	Melting Point	2500° F
Vapor Density (AIR = 1)	N/A	Evaporation Rate(Butyl Acetate = 1)	N/A
Solubility in Water - INSOLUBLE			
Appearance and Odor - Various Shapes, Gray-Black Solid, Odorless Metal			

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used) None	Flammable Limits - None	LEL - N/A	UEL - N/A
Extinguishing Media - N/A			
Special Fire Fighting Procedures - N/A			
Unusual Fire and Explosion Hazards - N/A			

OSHA 174, Sept. 1985

(Reproduce locally)

Section V - Reactivity Data

Stability- Stable	Conditions to Avoid - Grinding, Abrading, Melting, Welding, Cutting or Processing may produce potentially hazardous dust.
Incompatibility *(Materials to Avoid)* - Reacts with strong acids to generate Hydrogen Gas	
Hazardous Decomposition or Byproducts - Metallic Oxides	
Hazardous Polymerization -Will Not Occur	Conditions to Avoid - N/A

Section VI - Health Hazard Data

Route(s) of Entry: Inhalation? Yes Skin? Yes Ingestion? Yes
Health Hazards *(Acute and Chronic)*: Acute: Fume fever - symptoms consist of chills & fever, metallic taste in mouth, dryness and irritation of throat. Chronic: Ulceration or cancer in respiratory system, nose, throat and lungs.

Carcinogenicity: Chromium NTP? Yes IARC Monographs? Yes OSHA Regulated? Yes
Nickel NTP? Yes IARC Monographs? Yes OSHA Regulated? Yes
Signs and Symptoms of Exposure: Chills & fever, metallic taste in mouth, dryness and irritation of throat.
Medical Conditions Generally Aggravated by Exposure: Ulceration or Cancer in Respiratory System, Nose, Throat and Lungs.
Emergency and First Aid Procedures - Inhalation: Remove to fresh air, consult Physician. Skin Contact: Wash area with soap and water. Eye Contact: Flush well with running water. Ingestion: Seek medical help if large quantities of material have been ingested.

Section VII - Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled - N/A
Waste Disposal Method -Dust, etc.: Follow Federal, State & Local Regulations. Solids: sale as scrap for reuse.
Precautions to Be taken in Handling and Storing - Use good housekeeping practices to prevent accumulation of dusts. Keep airborne dust concentration to a minimum.
Other Precautions: Tools are possibly contaminated with coatings such as oils for preservatives and other contaminats. Use thermal or mechanical process and wear personal protective equipment when handling, cutting and/or heating or melting.

Section VIII - Control Measures

Respiratory Protection*(Specify Type)* Dust Fume Respirator (NIOSH Approved) if TLVs in Section II are exceeded.
Ventilation - Local Exhaust: As required to maintain low dust & fume levels. Special : - Mechanical: Recommended to keep dust & fumes below ACGIH TLVS. Other: TLV
Protective Gloves - As Required
Eye Protection - Safety Glasses or

Goggles Other Protective Clothing or Equipment: As required.
Work/Hygienic Practices - Maintain adequate ventilation and exhaust systems, wear protective equipment, avoid breathing fumes or dust, remove excessive dust & wash area well.

* U.S.G.P.O.: 1986 - 491 - 529/45775

5-8-12

Material Safety Data Sheet
according to ANSI Z400.1- 2004 and 29 CFR 1910.1200

SC Johnson
A FAMILY COMPANY

WINDEX® ORIGINAL GLASS CLEANER

Version 1.0
Revision Date 01/06/2010

* Print Date 02/18/2011

MSDS Number 350000014153
SITE_FORM Number
3000000000000010965.001

1. PRODUCT AND COMPANY IDENTIFICATION

Product information

Trade name	:	WINDEX® ORIGINAL GLASS CLEANER
Use of the Substance/Mixture	:	Hard Surface Cleaner
Company	:	S.C. Johnson & Son, Inc. 1525 Howe Street Racine WI 53403-2236
Emergency telephone	:	24 Hour Transport & Medical Emergency Phone (866) 231-5406 24 Hour International Emergency Phone (952) 852-4647

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance / Odor	:	blue / liquid / pleasant
Immediate Concerns	:	Avoid contact with skin, eyes and clothing.

Potential Health Effects

Exposure routes	:	Eye, Skin, Inhalation, Ingestion.
Eyes	:	None known.
Skin	:	None known.
Inhalation	:	None known.
Ingestion	:	None known.
Aggravated Medical Condition	:	None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Weight percent
Water	7732-18-5	60.00 - 100.00

4. FIRST AID MEASURES

Eye contact	:	Rinse with plenty of water. Get medical attention if irritation develops and persists.

Advice on protection against fire and explosion	:	Keep away from heat and sources of ignition.

Storage

Requirements for storage areas and containers	:	Keep container closed when not in use. Keep in a dry, cool and well-ventilated place. Do not freeze.
Other data	:	Stable under normal conditions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

ACGIH or OSHA exposure limits have not been established for this product or reportable ingredients unless noted in the table above.

Personal protective equipment

Respiratory protection

Industrial setting	:	No personal respiratory protective equipment normally required.
Household setting	:	No personal respiratory protective equipment normally required.

Hand protection

Industrial setting	:	not required under normal use
Household setting	:	not required under normal use

Eye protection

Industrial setting	:	No special requirements.
Household setting	:	No special requirements.
Hygiene measures	:	Use only with adequate ventilation. Wash thoroughly after handling. Wear suitable protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	:	liquid

Color	:	blue
Odor	:	pleasant
pH	:	10.7
Boiling point	:	no data available
Freezing point	:	no data available
Flash point	:	85 °C Method: ASTM D 56
Flash point	:	185 °F Method: ASTM D 56
Evaporation rate	:	no data available
Flammability (solid, gas)	:	Does not sustain combustion.
Autoignition temperature	:	no data available
Lower explosion limit	:	no data available
Upper explosion limit	:	no data available
Vapour pressure	:	no data available
Density	:	0.997 g/cm3 at 20 °C
Water solubility	:	soluble
Viscosity, dynamic	:	no data available
Viscosity, kinematic	:	no data available
Volatile Organic Compounds (California Air Resource Board – CARB) Total VOC (wt. %)	:	0.5 % - does not include any applicable regulatory exemptions

10. STABILITY AND REACTIVITY

Conditions to avoid	:	None known.
Materials to avoid	:	Strong oxidizing agents
Hazardous decomposition	:	When exposed to fire, produces normal products of

products		combustion.
Hazardous reactions	:	Stable

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	LD50 estimated > 5,000 mg/kg
Acute inhalation toxicity	:	LC50 estimated > 2.58 mg/l
Acute dermal toxicity	:	no data available
Chronic effects Carcinogenicity	:	no data available
Mutagenicity	:	no data available
Reproductive effects	:	no data available
Teratogenicity	:	no data available
Sensitisation	:	Not known to be a sensitizer.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects	:	no data available

13. DISPOSAL CONSIDERATIONS

Industrial setting	:	Observe all applicable Federal, Provincial and State regulations and Local/Municipal ordinances regarding disposal.
Household setting	:	Consumer may discard empty container in trash, or recycle where facilities exist.

14. TRANSPORT INFORMATION

Land transport

- **U.S. DOT and Canadian TDG Surface Transportation:**

UN-Number	None.
Proper shipping name	not regulated
Class:	None.
Packaging group	None.

Sea transport

- *IMDG:*

UN-Number:	None.
Packaging group:	None.
Proper shipping name	not regulated
Class:	None.

Air transport

- *ICAO/IATA:*

Class:	None.
Packaging group:	None.
Proper shipping name	not regulated
UN/ID No.:	None.

15. REGULATORY INFORMATION

Notification status	:	All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.
Notification status	:	All ingredients of this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).
California Prop. 65	:	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.
Canada Regulations	:	This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

16. OTHER INFORMATION

HMIS Ratings

WINDEX® ORIGINAL GLASS CLEANER

Version 1.0
Revision Date 01/06/2010

Print Date 02/18/2011

MSDS Number 350000014153
SITE_FORM Number
30000000000000010965.001

Health	0
Flammability	2
Reactivity	0

NFPA Ratings

Health	0
Fire	2
Reactivity	0
Special	

Further information
This document has been prepared using data from sources considered to be technically reliable. It does not constitute a warranty, expressed or implied, as to the accuracy of the information contained herein. Actual conditions of use are beyond the seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

Prepared by:	SC Johnson Global Safety Assessment & Regulatory Affairs (GSARA)

Material Safety Data Sheet

THE WORKS® DISINFECTANT TOILET BOWL CLEANER

Version: 1.1 | Revision Date: 09/26/2011 | Print Date: 05/08/2012

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name:	*THE WORKS® DISINFECTANT TOILET BOWL CLEANER*
Product Use Description:	Home Care Product
Registration number:	5185-494-80306
Company:	HomeCare Labs, Inc. P.O. Box 491150 Lawrenceville, GA 30049-1002 Telephone: (800) 949-7946
Emergency telephone number:	CHEMTREC: (24 hours) 800-424-9300, 703-527-3887 Poison Control Center (Medical) :: (877) 800-5553 For additional emergency telephone numbers see section 16 of the Safety Data Sheet.
Prepared by: 09/26/2011	Product Safety Department (US) +1 866-430-2775 +011-886-2-2712-5668 MSDSRequest@chemtura.com

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Danger

Form: clear liquid Colour: blue Odour: pleasant

Hazard Summary	: Causes skin burns. Corrosive - causes irreversible eye damage. Harmful if swallowed. Harmful if absorbed through skin. May cause respiratory tract irritation. Do not get in eyes, on skin, or on clothing. Avoid breathing vapors. Do not ingest.
OSHA Hazards	: THIS MATERIAL IS HAZARDOUS UNDER THE CRITERIA OF THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD 29CFR 1910.1200.

Potential Health Effects

Primary Routes of Entry : Skin contact
Inhalation

Ingestion
Eye contact

Inhalation : May cause irritation of respiratory tract.

Skin : Causes skin burns.

Eyes : Corrosive - causes irreversible eye damage.

Ingestion : Harmful if swallowed.

Chronic Exposure : None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components

Component / CAS-No.	Weight percent
hydrogen chloride 7647-01-0	20 %

SECTION 4. FIRST AID MEASURES

First aid procedures

Inhalation : Remove to fresh air.
Give oxygen or artificial respiration if needed.
Call a POISON CENTER or doctor/ physician.

Skin contact : Remove contaminated clothing and shoes.
Rinse immediately with plenty of water for at least 15 minutes.
Call a POISON CENTER or doctor/ physician.

Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Remove contact lenses, if present, after 5 minutes, then continue rinsing eye.
Call a POISON CENTER or doctor/ physician.

Ingestion : Call a physician or poison control centre immediately.
Do NOT induce vomiting.
Have person sip a glass of water if able to swallow.
Do not give anything by mouth to an unconscious person.

Notes to physician

Treatment : Probable mucosal damage may contraindicate the use of gastric lavage.

SECTION 5. FIRE-FIGHTING MEASURES

Flammable properties

Flash point : Remarks: not applicable

Fire fighting

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Protective equipment and precautions for firefighters

Specific hazards during fire fighting : Although not flammable, a latent fire or explosion hazard exists when product is in contact with certain metals or metallic surfaces, due to the formation of flammable hydrogen gas.

Special protective equipment for fire-fighters : In the event of fire, wear self-contained breathing apparatus.
Thoroughly decontaminate fire fighting equipment including all fire fighting wearing apparel after the incident.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Methods for containment / Methods for cleaning up : Using appropriate protective clothing and safety equipment, contain spilled material.
Soak up with inert absorbent material.
Using clean dedicated equipment, sweep and scoop all spilled material, contaminated soil, and other contaminated material and place into clean dry containers for disposal.

Additional advice : Treat recovered material as described in the section "Disposal considerations".

SECTION 7. HANDLING AND STORAGE

Handling

Handling procedures : Avoid contact with skin, eyes and clothing.
Avoid breathing vapors.
Mix only with water.
Do not mix with other chemicals.
Wash thoroughly after handling.
Do not handle until all safety precautions have been read and understood.

Storage

Requirements for storage areas and containers : Store in original container.
Keep tightly closed in a dry, cool and well-ventilated place.
Keep out of reach of children.
Keep away from animals.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Components with workplace control parameters

Components / CAS-No.	Value / Basis / Update	Control parameters	Further information
hydrogen chloride 7647-01-0	C	2 ppm	

	ACGIH 2007-01-01		
	C OSHA P1 2006-02-28	5 ppm 7 mg/m3	
	C OSHA P0 1989-01-19	5 ppm 7 mg/m3	

Engineering measures

Engineering measures : Ensure that eyewash stations and safety showers are close to the workstation location.
Use with adequate ventilation.

Personal protective equipment

Eye protection : Goggles

Hand protection : Wear rubber gloves.

Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment.

Hygiene measures : Remove and wash contaminated clothing before re-use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form : clear liquid
Colour : blue

Odour : pleasant

Safety data

Flash point : Note: not applicable

pH : < 1

Freezing point : < -40 °F (-40 °C)

Boiling point/boiling range : > 214.9 °F (101.6 °C)

Vapour pressure : < 2.7 hPa (270.0 mmHg)

Specific Gravity : 1.092 - 1.106 at 21 °C

Water solubility : Note: completely miscible

Relative vapour density	: Note: Not Available
Evaporation rate	: >1 Note: (Butyl acetate = 1)

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid	: Remarks: Poor ventilation. High temperatures. Contamination
Materials to avoid	: Remarks: Although not flammable, a latent fire or explosion hazard exists when product is in contact with certain metals or metallic surfaces, due to the formation of flammable hydrogen gas. Do not mix with other chemicals. Do not mix with chlorine-type bleaches or other household chemicals.
Hazardous decomposition products	: Note: Hydrogen, by reaction with metals Other hazardous decomposition products may be formed.
Hazardous reactions	: Hazardous polymerisation does not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	: LD50: 900 mg/kg Species: rabbit Remarks: Information refers to the main component.
Acute inhalation toxicity	: LC50: Exposure time: 1 h Species: rat Remarks: Information refers to the main component.
Skin irritation	: Remarks: Causes skin burns.
Eye irritation	: Remarks: Causes eye burns.

12. ECOLOGICAL INFORMATION

Further information on ecology

Additional ecological information	: May be toxic to fish. May be toxic to aquatic organisms.

SECTION 13. DISPOSAL CONSIDERATIONS

Further information	: Dispose of waste material in compliance with all federal, state, and local regulations.

Contaminated packaging : Do not re-use empty containers.
Rinse thoroughly before discarding in trash.
Offer rinsed packaging material to local recycling facilities.

SECTION 14. TRANSPORT INFORMATION

DOT

UN number	: 3264
Description of the goods	: Corrosive liquid, acidic, inorganic, n.o.s.
	: (Hydrochloric Acid Solution)
Class	: 8
Packing group	: II
ERG Code	: 154

IATA

UN number	: 3264
Description of the goods	: Corrosive liquid, acidic, inorganic, n.o.s.
	(Hydrochloric Acid Solution)
Class	: 8
Packing group	: II
Labels	: 8
Environmentally hazardous	: no

IMDG

UN number	: 3264
Description of the goods	: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
	(Hydrochloric Acid Solution)
Class	: 8
Packing group	: II
Labels	: 8
EmS Number 1	: F-A
EmS Number 2	: S-B
Marine pollutant	: no
Environmentally hazardous	: no

Not recommended for shipment by air
Limited Quantity exemption possible
ORM-D Consumer Commodity exemption possible

SECTION 15. REGULATORY INFORMATION

OSHA Hazards : This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

SARA 311/312 Hazards : Acute Health Hazard

EPCRA - EMERGENCY PLANNING COMMUNITY RIGHT - TO - KNOW

The components of this product are reported in the following inventories:
TSCA

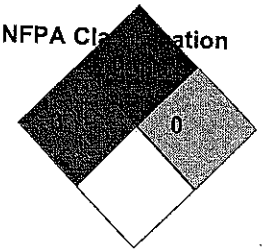
Note: Listed

SECTION 16. OTHER INFORMATION

Further information

HMIS Classification : Health hazard: 3
Flammability: 0
Physical hazards: 0
PPI:Ask supervisor or safety specialist for handling instructions

NFPA Classification :



Health hazard: 3
Fire Hazard: 0
Reactivity Hazard: 0

Other Emergency Phone Number

Latin America:	Brazil	+55 113 711 9144
	All other countries	+44 (0) 1235 239 670
Mexico:		+52 555 004 8763

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

08'
2-18-11
5-8-12

Material Safety Data Sheet

Owen Edwards Company, LLC

24-Hour Emergency Phone Number (812) 824-7744

Prepared 04/26/00

1. Product Identification

Product Name:	X10
Chemical Formula	Mixture
CAS Number:	None

2. Hazardous Ingredients/Identity Information

Chemical Name	%	CAS No.	TLV	PEL
Sodium Hydroxide	>1	1310-73-2	2mg/m³	2mg/m³
Sodium Carbonate	>1	497-19-8	NONE	NONE
Sodium Tripolyphosphate	>1	7758-29-4	NONE	NONE

3. Physical Data

Boiling Point:	N/A	Vapor Pressure (mmHg):	N/A
Specific Gravity: (H20=1)	N/A	Solubility in water:	Complete
pH:	N/A	Appearance and Odor:	White granular/ No odor
Vapor Density: (Air=1)	N/A		
Evaporation Rate: (vs. H20)	N/A		

4. Fire and Explosion Hazard Data

Flash Point (TCC):	N/A	Special fire fighting procedures:	Water solutions are highly alkaline. Wear protective clothing.
Flammable Limits:	N/A		
Extinguishing Media:	N/A		

5. Reactivity Data

Stability:	Stable
Incompatibility:	Acids, aluminum, magnesium, lead, zinc.
Hazardous Decomposition:	Reacts with food sugars to generate carbon dioxide.

6. Health Hazard Data:

KEEP OUT OF REACH OF CHILDREN

Carcinogenicity: No

Potential Health Effects:	Causes severe burns. Harmful if swallowed.
Eyes:	Destructive on contact
Skin:	Destructive on contact
Inhalation:	Destructive on contact
Ingestion:	Harmful if swallowed.
First aid measures:	
Eyes:	Immediately flush with water for at least 15 Minutes. Get medical attention.
Skin:	Flush with water.
Inhalation:	Remove to fresh air.
Ingestion:	Do not induce vomiting. Give large amounts of water. Get medical attention.
Medical conditions aggravated by exposure:	

7. Precautions for Safe Handling and Use:

Spill procedures:	Material should be swept up for salvage or disposal.
Waste disposal method:	Liquid waste acceptable for POTW. Solids acceptable for landfill.
Precautions to be taken in handling and storage:	Store in a cool dry area in a closed container.

8. Control Measures

Respiratory protection:	Not required under normal use.
Ventilation:	Normal ventilation.
Protective gloves:	Rubber, Neoprene, Plastic.
Eye protection	Eye goggles.
Other protection:	None required.
Hygienic practices	Wash thoroughly after handling.

Sealed Air
Protective Packaging
10 Old Sherman Turnpike
Danbury, CT 06810
203-791-3500 Fax: 203-791-3618

MATERIAL SAFETY DATA SHEET

EMERGENCY NUMBERS:

Sealed Air Corporation (US): (203) 791-3500 *For emergency and general information*
8:30am-5:00pm, (Eastern Time) Monday-Friday

CHEMTREC: (800) 424-9300 *For Chemical Emergency - spill, leak, fire, exposure or accident*
24 hours

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Product Name:	INSTAPAK QUICK® RT COMPONENT "A"
Chemical Name:	Polymethylene Polyphenylisocyanate
Trade Name:	Polymeric MDI
Chemical Family:	Aromatic Isocyanates
CAS No.:	9016-87-9

SECTION 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Health Hazards: Irritating to skin, respiratory system and eyes. Repeated inhalation of aerosols at levels above the occupational exposure limit could cause respiratory sensitization and risk of serious damage to respiratory system. The onset of the respiratory symptoms may be immediate or delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of MDI may develop in sensitized persons. Sensitized persons should not be exposed to any mixture containing unreacted MDI. Respiratory sensitizer. Skin sensitizer.

Medical Conditions Aggravated by Exposure: Respiratory disorders, asthma, skin allergies and eczema.

Physical Hazards: Closed containers may rupture under extreme heat or when contents have been contaminated with water. Use cold water spray to cool fire-exposed containers to minimize risk of rupture.

Appearance: Dark brown liquid with slightly aromatic or musty odor.

Note: Read the entire MSDS for a more thorough evaluation of the hazard information on this product.

SECTION 3 - COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Components:	CAS No.	Wt.%	OSHA-PEL	ACGIH-TLV
Polymeric Diphenylmethane Diisocyanate (polymeric MDI or PMDI)	9016-87-9	100	Not Listed	Not Listed
Contains:				
4,4'-Diphenylmethane diisocyanate (4,4'-MDI; approx. 45%)	101-68-8		0.02 ppm (Ceiling)	0.005 ppm (TWA)
Other MDI isomers and oligomers	Not Listed		Not Listed	Not Listed

This product is classified as hazardous under OSHA Hazard Communication Standard (29 CFR 1910.1200).

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SECTION 4 - FIRST AID MEASURES

Eye Contact: Immediately flush eyes with copious amounts of water for a minimum of 15 minutes, holding lids open with fingers. If irritation persists, repeat flushing. Refer individual to a physician for immediate follow-up.

Skin Contact: Remove contaminated clothing and/or shoes. Immediately wash affected area thoroughly with soap and water. Some organic materials such as corn oil or propylene glycol can aid in the removal of PMDI from the skin when applied immediately. Contaminated clothing should be thoroughly cleaned before reuse. If irritation, redness, or a burning sensation develops and persists, obtain medical advice.

Inhalation: Remove patient from further exposure and obtain medical attention. Treatment is symptomatic for primary irritation or difficulty in breathing. If breathing is labored, qualified personnel should administer oxygen. Apply artificial respiration if breathing has ceased or shows signs of failing. Asthmatic-like symptoms, if manifested, may develop immediately, or be delayed for up to several hours.

Ingestion: Do NOT induce vomiting. Provided the patient is conscious, wash mouth out with water. Refer person to medical personnel for immediate attention.

Note to Physicians: Symptomatic and supportive therapy as indicated. Following severe exposure, medical follow-up should be monitored for at least 48 hours.

SECTION 5 – FIRE FIGHTING MEASURES

Flash Point: 390°F (199°C) [Pensky-Martens Closed Cup]
Flammable Limits (lower): Not available
Flammable Limits (upper): Not available

Extinguishing Media: Water, carbon dioxide (CO_2), dry chemical, or appropriate foam. If water is used, large quantities are required. Reaction between water and hot isocyanate may be vigorous. Contain run-off water with temporary barriers.

Fire Fighting Procedures: Firefighters should wear NFPA compliant protective equipment including a self-contained breathing apparatus, helmet, hood, boots and gloves. Avoid contact with product. Decontaminate equipment and protective clothing prior to reuse. During a fire, isocyanate vapors and other irritating, toxic gases may be generated by thermal decomposition or combustion. Exposure to heated diisocyanate should be avoided.

Fire and Explosion Hazards: Pouches containing chemical may burst under intense heat or pressure. Due to reaction with water, a hazardous build-up of pressure could result if pouches contaminated with moisture are placed in a sealed container.

NFPA Hazard Code:

Health	2
Flammability	1
Reactivity	1
Special Hazard	None

0=Minimal 1=Slight 2=Moderate 3=High 4=Extreme

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SECTION 6 - ACCIDENTAL RELEASE MEASURES

Clear the area surrounding the spilled material and prevent further spillage, leakage or entry into drains. Eye and skin protection should be worn during spill cleanup and ventilation maintained. If the potential for airborne concentrations of MDI above the PEL exists, then respiratory protection should be worn. Contain and cover spill with loose absorbent (earth, sand, sawdust or other absorbent material), or absorbent pillows, pads or socks. Collect absorbed material in open containers or plastic bags, and treat with deactivating solution (90% water, 8% concentrated ammonia, 2% detergent). Allow to stand uncovered for 48-72 hours to permit carbon dioxide to escape and solidification to occur. Wash spill area with deactivating solution and let stand for 30 minutes or longer. Dispose of absorbed and neutralized material properly.

SECTION 7 - HANDLING AND STORAGE

Storage Temperature: Min. 50°F (10°C) Max. 100°F (38°C)

Average Shelf Life: 12 months (when stored in original, unopened, sealed containers).

Special Sensitivity: Reacts with moisture to produce carbon dioxide gas.

Precautions to be Taken in Handling and Storage: Do not store product uncovered outdoors. Do not place pouches contaminated with moisture in a sealed container. Do not breathe vapors or allow skin contact. To prevent possible leakage from pouches, do not store heavy items on top of this product.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:
OSHA-PEL: 4,4'-Diphenylmethane diisocyanate; Ceiling = 0.02 ppm
ACGIH-TLV: 4,4'-Diphenylmethane diisocyanate; TWA = 0.005 ppm

HMIS Hazard Code:

Health	2*
Flammability	1
Reactivity	1
PPE	B

(Personal Protective Equipment) (B= safety glasses and gloves)

0=Minimal 1=Slight 2=Moderate 3=High 4=Severe *=chronic health hazard

Exposure Guidelines: Medical supervision of employees who come into contact with respiratory sensitizers is recommended. Persons with asthmatic-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrent skin eczema or sensitization should be excluded from working with this product. Once a person is sensitized, no further exposure to the material that caused the sensitization should be permitted. Avoid inhalation of mists and vapors. Avoid skin contact.

Respiratory Protection: Due to the low vapor pressure of this material, the PEL is not likely to be exceeded under normal conditions. If the material is heated or spilled in a confined area, respiratory protection should be worn. An approved air purifying respirator equipped with an organic vapor cartridge and a HEPA (P100) particulate filter may be used when an appropriate cartridge change-out schedule has been developed in accordance with the OSHA respiratory protection standard (29 CFR 1910.134). Where concentrations exceed the level for which an air-purifying respirator is effective, use a positive pressure, supplied air respirator.

Eye Protection: Safety glasses with side shields or goggles.

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SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION (continued)

Protective Clothing: Chemical resistant butyl rubber, nitrile rubber, neoprene, or other suitable protective gloves.

Ventilation: Use local exhaust ventilation if necessary to maintain levels below the PEL. For guidance on engineering controls refer to the ACGIH publication "Industrial Ventilation."

Other: Eyewash station, safety shower, and deactivating solution (see Section 6) should be available. Refer to the "Instapak Quick® RT User's Guide" for additional information.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Color: Dark brown
Odor: Slightly aromatic (musty)
Vapor Density (Air = 1): 8.5
Molecular Weight: Approx. 350
Melting Point: Not established.

Boiling Point: 406°F (208°C)
Vapor Pressure: $< 10^{-5}$ mm Hg at 25°C (for Polymeric MDI)
Specific Gravity: 1.24 at 25°C
Bulk Density: 10.3 lbs/gal
% Volatile by Volume: Nil
Solubility in Water: Not soluble. Reacts slowly to liberate CO_2 gas.

SECTION 10 - STABILITY AND REACTIVITY

Stability: Stable under normal conditions. Avoid temperatures above 110°F (43°C) or below 40°F (4°C).

Polymerization: May occur at elevated temperatures in the presence of moisture, alkalies, tertiary amines and metal compounds.

Conditions to Avoid: Contact with moisture and other materials that contain active hydrogen.

Incompatible Materials: Water, amines, strong bases, copper alloys and alcohols. The reaction with water is slow at temperatures less than 120°F (49°C) but is accelerated at higher temperatures.

Hazardous Decomposition Products: Highly unlikely under normal industrial use. Exposure to fire or extreme heat may generate oxides of carbon, oxides of nitrogen, and traces of hydrogen cyanide.

SECTION 11 - TOXICOLOGICAL INFORMATION

Toxicity Data:

LD_{50} Oral:	>2,000 mg/kg (rat) for polymeric MDI
LD_{50} Dermal:	>10,000 mg/kg (rabbit) for monomeric MDI
LC_{50} Inhalation:	>2,240 mg/m^3/1 hour (rat) for an aerosol of monomeric MDI
	370-490 mg/m^3/4 hour (rat) for polymeric MDI

Primary Route(s) of Exposure: Skin contact from liquid. Inhalation. However, due to the low vapor pressure, overexposure is not expected under normal conditions unless material is heated or used in a poorly ventilated area.

Inhalation: This product is a respiratory irritant and respiratory sensitizer. Inhalation of vapor or aerosol at levels above the occupational exposure limit can cause respiratory sensitization. Symptoms may include irritation to the eyes, nose, throat, and lungs, possibly combined with dryness of the throat, tightness of chest and difficulty in breathing. The onset of respiratory symptoms may be delayed for several hours after exposure.

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SECTION 11 - TOXICOLOGICAL INFORMATION (continued)

A hyper-reactive response to even minimal concentrations of MDI may develop in sensitized persons. Sensitized persons should be removed from any further exposure. Persons with asthma-type conditions or other chronic respiratory diseases should be excluded from working with MDI. Like many other non-specific asthmatic responses, there are reports that a sensitized individual can experience symptoms upon exposure to dust, cold air or other irritants. In a single evaluation of 5 men occupationally exposed to MDI and hydrocarbon solvent vapors under conditions where adequate ventilation or other safety precautions were not used, neuropsychologic findings were attributed to MDI.

Skin Contact: Skin irritant and sensitizer. May cause irritation or rash. Can cause skin discoloration. Repeated and/or prolonged contact may result in skin sensitization. Individuals who have skin sensitization can develop symptoms (e.g., reddening swelling, rash) from contact with liquid or vapors. There is limited evidence from laboratory tests that skin contact may play a role in respiratory sensitization. This data reinforces the need to prevent direct skin contact and the importance of protective gloves.

Eye Contact: Liquid can cause eye irritation, tearing, reddening and swelling. Permanent corneal injury is unlikely. Exposure to MDI vapors in excess of 0.02 ppm may cause irritation.

Ingestion: Ingestion is unlikely. Based on the acute oral LD_{50}, this product is considered practically non-toxic by ingestion. Ingestion can cause irritation and corrosive action in the mouth, stomach and digestive tract.

Chronic Effects: A study was conducted where groups of rats were exposed for 6 hours/day, 5 days/week for a lifetime to atmospheres of respirable polymeric MDI aerosol either at concentrations of 0, 0.2, 1, or 6 mg/m^3. No adverse effects were observed at 0.2 mg/m^3 concentrations. At the 1 mg/m^3 concentration, minimal nasal and lung irritant effects were seen. Only at the highest concentration (6 mg/m^3) was there an increased incidence of benign tumor of the lung (adenoma) and one malignant tumor (adenocarcinoma). MDI administration to rats in this study did not change the distribution and incidence of tumors from those seen in control animals. The increased incidence of lung tumors is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumor formation will occur.

Carcinogenicity: The ingredients of this product (>0.1%) are not classified as carcinogenic by ACGIH or IARC, not regulated as carcinogens by OSHA and not listed as carcinogens by NTP.

Mutagenicity: There is no substantial evidence of mutagenic potential.

Reproductive Effects: No adverse reproductive effects are anticipated.

Teratogenicity and Fetotoxicity: No birth defects were seen in two independent animal (rat) studies. Fetotoxicity was observed at doses that were extremely toxic (including lethal) to the mother. The dose that produced this effect (1.2 ppm) is 60 times higher than the OSHA-PEL. Fetotoxicity was not observed at doses that were not maternally toxic. The doses used in these studies were maximal, respirable concentrations well in excess of the defined occupational exposure limits.

SECTION 12 - ECOLOGICAL INFORMATION

Environmental Fate and Distribution: It is unlikely that significant environmental exposure in the air or water will arise, based on consideration of the production and use of the substance.

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SECTION 12 - ECOLOGICAL INFORMATION (continued)

Persistence and Degradation: Immiscible with water, but will react with water to produce carbon dioxide, and inert and non-biodegradable solids.

Aquatic Toxicity:

LC_{50}: >1,000 mg/l (Zebra fish, 96 hrs)
LC_{50}: >3,000mg/l (Killifish, 96 hrs)
EC_{50} >1,000 mg/l (Daphnea magna, 24 hrs)
EC_{50}: >100 mg/l (Activated sludge microorganisms, 3 hrs)

SECTION 13 - DISPOSAL CONSIDERATIONS

Incinerate or dispose of in accordance with existing federal, state and local environmental control regulations. This material is not a hazardous waste under RCRA 40 CFR 261 when disposed of in its purchased form. Small quantities should be treated with deactivation solution outlined in Section 6. Chemical waste, regardless of quantity, should never be poured into drains, sewers or waterways.

SECTION 14 - TRANSPORT INFORMATION

DOT: Single containers less than 5,000 pounds are not regulated.

IMO: Not regulated.

IATA/ICAO Class: Not regulated.

Reportable Quantity (RQ): 5,000 lbs. for Methylene diphenyl diisocyanate (4,4'-MDI), CAS #101-68-8 (≈ 45% of product).

SECTION 15 - REGULATORY INFORMATION

TSCA Status: All ingredients are listed or are not required to be listed.

CERCLA Status: Discarded product is not a hazardous waste under RCRA, 40 CFR 261, when disposed of in its purchased form.

SARA 302 Extremely Hazardous Substances: None

SARA 311/312 Hazard Categories: Immediate (acute) Health Hazard
Delayed (chronic) Health Hazard

SARA 313 Listed Ingredients: This product contains the following chemicals subject to reporting requirements: 100% Diisocyanate compounds (Category Code N120).

This product contains a trace (ppm) amount of monochlorobenzene (CAS# 108-90-7) as an impurity.

SECTION 16 - OTHER INFORMATION

Other Regulations/Legislation which apply to this product: Massachusetts Right-to-Know, New Jersey Right-to-Know, Pennsylvania Right-to-Know [Methylene bisphenyl isocyanate (4,4'-MDI), CAS#101-68-8].

To the best of our knowledge, this product does not contain any of the listed chemicals which the state of California has found to cause cancer, birth defects or other reproductive harm.

Section(s) Revised: Company logo updated. Sections 2, 3, 5, 8, 11, 12 and 16 revised.

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Sealed Air
Protective Packaging
10 Old Sherman Turnpike
Danbury, CT 06810
203-791-3500 Fax: 203-791-3618

MATERIAL SAFETY DATA SHEET

2-16-11
4-11-12

EMERGENCY NUMBERS:

Sealed Air Corporation (US): (203) 791-3500 *For emergency and general information*
8:30am-5:00pm, (Eastern Time), Monday-Friday

CHEMTREC: (800) 424-9300 *For Chemical Emergency - spill, leak, fire, exposure or accident*
24 hours

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Product Name:	INSTAPAK QUICK® RT COMPONENT "B"
Chemical Name:	Polyurethane Foam Resin
Trade Name:	Polyol
Chemical Family:	N.A.
CAS No.:	N.A.

SECTION 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Health Hazards: Irritating to eyes and skin. Inhalation may result in irritation.

Physical Hazards: No immediate hazard.

Medical Conditions Aggravated by Exposure: None known.

Appearance: Liquid can be a straw to amber color and have a clear to cloudy appearance. A slight amine odor may be present.

Note: Read the entire MSDS for a more thorough evaluation of the hazard information on this product.

SECTION 3 - COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Components	CAS No.	Wt. %	OSHA-PEL	ACGIH-TLV
Amine Catalyst	Proprietary	≈ 5	Not Established	Not Established

This product is classified as hazardous under OSHA Hazard Communication Standard (29 CFR 1910.1200).

SECTION 4 - FIRST AID MEASURES

Eye Contact: Flush with copious amounts of water for at least 15 minutes, holding lids open with fingers.

Skin Contact: Wash area thoroughly with soap and water. Launder contaminated clothing before reuse.

Inhalation: Remove patient from further exposure and obtain medical attention. Administer oxygen if necessary.

Ingestion: Drink water to dilute and obtain medical attention.

Note to Physicians: Symptomatic and supportive care as indicated.

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SECTION 5 - FIRE FIGHTING MEASURES

Flash Point: Product as supplied does not have a flash point. [Pensky-Martens Closed Cup]
Flammable limits (lower): Not applicable.
Flammable limits (upper): Not applicable.

Extinguishing Media: Carbon dioxide (CO_2), chemical foam, dry chemical, water spray.

Fire Fighting Procedures: Firefighters should wear NFPA compliant protective equipment including a self-contained breathing apparatus, helmet, hood, boots and gloves. Avoid contact with product. Decontaminate equipment and protective clothing prior to reuse.

Fire and Explosion Hazards: Pouches containing chemical may burst under intense heat or pressure.

NFPA Hazard Code:

Health	2
Flammability	1
Reactivity	0
Special Hazard	None

0=Minimal 1=Slight 2=Moderate 3=High 4=Extreme

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Clear the area surrounding the spilled material and prevent further leakage, spillage or entry into drains. Eye and skin protection should be worn during spill cleanup and ventilation maintained. Contain and cover spill with loose absorbent (earth, sand, sawdust or other absorbent material) or absorbent pillows, pads or socks. Collect absorbed material in open containers or plastic bags. Dispose of spilled material according to federal, state and local regulations.

SECTION 7 - HANDLING AND STORAGE

Storage Temperature: Min. 35°F (2°C) Max. 110°F (43°C)

Average Shelf Life: 12 months (when stored in original, unopened, sealed containers).

Special Sensitivity: None.

Precautions to be Taken in Handling and Storage: To prevent possible leakage from pouches, do not store heavy items on top of this product.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits: OSHA-PEL: Not Established

ACGIH-TLV: Not Established

HMIS Hazard Code:

Health	2
Flammability	0
Reactivity	0
PPE	B

(Personal Protective Equipment) (B= safety glasses and gloves)

0=Minimal 1=Slight 2=Moderate 3=High 4=Severe

This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Sealed Air Corporation (US). The data on this sheet relates to the specific material designated. Sealed Air Corporation (US) assumes no legal responsibility for use or reliance upon these data.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION (continued)

Respiratory Protection: The use of respiratory protection should not be needed under normal use and handling conditions. If protection is chosen, an air purifying respirator, equipped with organic vapor cartridges, is appropriate.

Eye Protection: Safety glasses with side shields or goggles.

Protective Clothing: Chemical resistant butyl rubber, nitrile rubber, neoprene, or other suitable protective gloves.

Ventilation: Good general ventilation. For guidance on engineering controls refer to the ACGIH publication "Industrial Ventilation."

Other: Eyewash station and safety shower should be available. Refer to the "Instapak Quick® RT User's Guide" for additional information.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Color: Light straw or amber
Odor: Slight amine
Vapor Density (Air = 1): > 1
Molecular Weight: Not applicable
Melting Point: <-3°F (<-20°C)

Boiling Point: >201°F (94°C)
Vapor Pressure: Not established (low)
Specific Gravity: 1.055 at 25°C
Bulk Density: 8.5 lbs/gal
% Volatile by Volume: Nil
Solubility in Water: Soluble

SECTION 10 - STABILITY AND REACTIVITY

Stability: Stable.

Polymerization: Will not occur.

Conditions to Avoid: None.

Incompatible Materials: Contact with isocyanates, unless mixed at the proper ratio, should not occur.

Hazardous Decomposition Products: By fire or extreme heat, oxides of carbon and nitrogen.

SECTION 11 - TOXICOLOGICAL INFORMATION

Toxicity Data:

LD_{50} Oral:	Not Established
LD_{50} Dermal:	Not Established
LC_{50} Inhalation:	Not Established

Primary Route(s) of Exposure: Skin contact from liquid. Inhalation. However, overexposure is not expected under normal conditions.

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SECTION 11 - TOXICOLOGICAL INFORMATION (continued)

Inhalation: Vapors may be irritating if hot.

Skin Contact: Repeated contact may be irritating.

Eye Contact: Can cause eye irritation. Permanent corneal injury is unlikely.

Ingestion: Ingestion is unlikely. Large quantities could cause irritation of mouth and stomach.

Chronic Effects: No applicable data.

Carcinogenicity: The ingredients of this product (>0.1%) are not classified as carcinogenic by ACGIH or IARC, not regulated as carcinogens by OSHA, and not listed as carcinogens by NTP.

Mutagenicity: No applicable data.

Reproductive Effects: No applicable data.

Teratogenicity and Fetotoxicity: No applicable data.

SECTION 12 - ECOLOGICAL INFORMATION

No applicable data for this section.

SECTION 13 - DISPOSAL CONSIDERATIONS

Incinerate or dispose of in accordance with existing federal, state and local environmental control regulations. This material is not a hazardous waste under RCRA 40 CFR 261 when discarded in its purchased form. Chemical waste, regardless of quantity, should never be poured into drains, sewers or waterways.

SECTION 14 - TRANSPORT INFORMATION

DOT: Not regulated.

IMO: Not regulated.

IATA/ICAO Class: Not regulated.

Reportable Quantity (RQ): Not applicable.

This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Sealed Air Corporation (US). The data on this sheet relates to the specific material designated. Sealed Air Corporation (US) assumes no legal responsibility for use or reliance upon these data.

Sealed Air
Protective Packaging
10 Old Sherman Turnpike
Danbury, CT 06810
203-791-3500 Fax: 203-791-3618

SECTION 15 - REGULATORY INFORMATION

TSCA Status: All ingredients are listed or are not required to be listed.

CERCLA Status: Discarded product is not a hazardous waste under RCRA, 40 CFR 261, when disposed of in its purchased form.

SARA 302 Extremely Hazardous Substances: None.

SARA 311/312 Hazard Categories: Immediate (acute) Health Hazard.

SARA 313 Listed Ingredient(s): None.

SECTION 16 - OTHER INFORMATION

Other Regulations/Legislation which apply to this product: Substances used to manufacture this product do not require listing under Massachusetts, New Jersey or Pennsylvania Right-to-Know regulations.

To the best of our knowledge, this product does not contain any of the listed chemicals which the state of California has found to cause cancer, birth defects or other reproductive harm.

Section(s) Revised: Company logo updated. Sections 2, 3, 5 and 8 revised.

This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Sealed Air Corporation (US). The data on this sheet relates to the specific material designated. Sealed Air Corporation (US) assumes no legal responsibility for use or reliance upon these data.

2-17-11
3-29-12
4-3-14

1 Product and company identification

· **Product details**

· **Product name:** **IonoPlus 3000 ET** -- EDM Fluid

· **Product code:** 50102

· **Application of the substance / the preparation** Industrial use

· **Manufacturer/Supplier:**
oelheld GmbH
Ulmer Str. 135-139
70188 Stuttgart
GERMANY
Tel.: +49-(0)711-16863-0
Fax.: +49-(0)711-16863-40
E-Mail: hutec@oelheld.de
Internet: www.oelheld.de

· **Information department:** Department of application
+49-(0)711-16863-71

· **Emergency information:**
during hours of business see above
out of office hours in German (or English):
Mr. Rehbein Tel. +49 71 11 68 63-991
Dr. Storr Tel. +49 71 11 68 63-992
(private +49 71 11 68 63-993)
Mr. Speth Tel. +49 71 11 68 63-994
Mr. Martin Storr Tel. +49 71 11 68 63-995
see above or contact a Poison Control Center

2 Composition/information on ingredients

· **Chemical characterization**

· **Description:** Mixture of synthetic aliphatic hydrocarbons and active substances.

· **Dangerous components:** Void

· **Additional information:** For the wording of the listed risk phrases refer to section 16.

3 Hazards identification

· **Hazard description:** see below

· **WHMIS classification** B3 - Combustible liquid
WHMIS: workplace hazardous materials information system (Canadian)

· **Information pertaining to particular dangers for man and environment:** Please note the information of this Material Safety Data Sheet.

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**

Health = 1
Fire = 2
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = 1
Fire = 2
Reactivity = 0

· **Additional information:**
NFPA: National Fire Protection Association
HMIS: Hazardous Material Identification System
The NFPA- and the HMIS-ratings range from 0 (least severe hazard) to 4 (most severe hazard).
NFPA and HMIS are regulations in the USA.

4 First-aid measures

· **General information:** Remove any clothing soiled by the product.
In case of occuring of symptoms or in doubt consult a doctor.
If a doctor is consulted show this material safety data sheet.

· **After inhalation:** Supply fresh air; consult doctor in case of complaints.

· **After skin contact:** Wash with water and soap and rinse thoroughly.

· **After eye contact:** Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

· **After ingestion:** Do not induce vomiting; immediately call for medical help.

5 Fire-fighting measures

· **Suitable extinguishing media:** CO2, extinguishing powder or water spray. Fight larger fire with alcohol resistant foam.

(Contd. on page 2)

(Contd. of page 1)

· **For safety reasons unsuitable extinguishing media:** Water with full jet

· **Special hazards caused by the material, its products of combustion or resulting gases:** In certain fire conditions, traces of other toxic gases cannot be excluded, e.g.: Carbon monoxide (CO)

· **Protective equipment:** Wear self-contained respiratory protective device.

· **Additional information** Cool endangered receptacles with water spray.
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

6 Accidental release measures

· **Person-related safety precautions:** Ensure adequate ventilation
Particular danger of slipping on leaked/spilled product.

· **Measures for environmental protection:** Do not allow to enter sewers/ surface or ground water.
Do not allow to penetrate the ground/soil.
Keep contaminated washing water and dispose of appropriately.

· **Measures for cleaning/collecting:** Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to item 13.
Remove from the water surface (e.g. skim or suck off).

· **Additional information:** See Section 8 for information on personal protection equipment.

7 Handling and storage

· **Handling:**

· **Information for safe handling:** Ensure good ventilation/exhaust at the workplace.
Open and handle receptacle with care.
Recommendation: Level of dielectric over the place of erosion min. 40 mm.

· **Information about protection against explosions and fires:** Fumes can combine with air to form an explosive mixture above the flash point.

· **Storage:**

· **Requirements to be met by storerooms and receptacles:** Store only in the original receptacle.

· **Information about storage in one common storage facility:** Not required.

· **Further information about storage conditions:** Store in cool, dry conditions in well sealed receptacles.
Protect from heat, direct sunlight and UV-rays.
Storage stability under the described conditions: 24 months.

8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **Components with limit values that require monitoring at the workplace:**	
Synthetic aliphatic hydrocarbons	
RCP-TWA (VAPOR.)	1200 mg/m³, 171 ppm

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Personal protective equipment:**

· **General protective and hygienic measures:** The usual precautionary measures for handling chemicals should be followed.
Wash hands before breaks and at the end of work.
Avoid close or long term contact with the skin.

· **Breathing equipment:** Not necessary if room is well-ventilated.

· **Protection of hands:** Protective gloves or protective skin cream

· **Material of gloves** Nitrile rubber, NBR

· **Penetration time of glove material** At a glove thickness of about 0,4 mm the value of the permeation breakthrough in accordance with EN 374 is for chemically similar products according to the manufacturer: >480 min. (Degradation EN 374 rating class 6)
These statements are based on laboratory test methods which could not simulate working conditions exactly. The responsibility rests with the end user for choosing the right gloves for his application.

· **Eye protection:** Goggles recommended during refilling.

· **Body protection:** Protective work clothing

(Contd. on page 3)

(Contd. of page 2)

9 Physical and chemical properties

· **General Information**

Form:	Fluid
Color:	Fluorescent green
Odor:	Mild
· **Change in condition**	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	185°C (365°F)
· **Pour point**	< -40°C (< -40°F)
· **Flash point:**	63°C (145°F)
· **Ignition temperature:**	> 200°C (> 392°F)
· **Auto igniting:**	Product is not selfigniting.
· **Danger of explosion:**	Product is not explosive. However formation of explosive air/vapour mixtures above the flash point or in case of strong misting is possible.
· **Explosion limits:**	
Lower:	0.5 Vol %
Upper:	6.5 Vol %
· **Vapor pressure at 20°C (68°F):**	0.5 hPa
· **Density at 15°C (59°F):**	0.77 g/cm³
· **Solubility in / Miscibility with Water:**	Not miscible or difficult to mix.
· **pH-value:**	Not applicable.
· **Viscosity:**	
Kinematic at 20°C (68°F):	1.8 mm²/s
Kinematic at 40°C (104°F):	1.4 mm²/s
· **Solvent content:**	
Organic solvents:	~ 100 %
· **Additional information**	The data of the explosion limits are based on the base oil.

10 Stability and reactivity

· **Thermal decomposition / conditions to be avoided:**	No decomposition if used according to specifications.
· **Materials to be avoided:**	Strong oxidizing agents
· **Dangerous reactions**	No dangerous reactions known.
· **Hazardous decomposition products:**	No dangerous decomposition products known.

11 Toxicological information

· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**		
Synthetic aliphatic hydrocarbons		
Oral	LD50	> 10 000 mg/kg (rat)
Dermal	LD50	> 3000 mg/kg (rabbit)
Inhalative	LC50 / 4h	> 5.1 mg/l (rat)

· **Primary irritant effect:**	
· **on the skin:**	Repeated/long exposure may cause skin dryness and in consequence skin irritations.
· **on the eye:**	No irritating effect.
· **Sensitization:**	No sensitizing effects known.
· **Additional toxicological information:**	When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

12 Ecological information

· **Information about elimination (persistence and degradability):**	Not easily biodegradable
· **Ecotoxical effects:**	

· **Acquatic toxicity:**	
Synthetic aliphatic hydrocarbons	
LL50 / 96h	> 100 mg/l (Amphipoda)

(Contd. on page 4)

USA

(Contd. of page 3)

· **Behavior in sewage processing plants:** The product can be mechanically separated.
· **Additional ecological information:**
· **General notes:** Water hazard class 1 (Self-assessment): slightly hazardous for water
Do not allow product to reach ground water, water course or sewage system.

13 Disposal considerations

· **Product:**
· **Recommendation:** Delivery of waste oil to offically authorized collectors only.

· European waste catalogue	
12 01 07	mineral-based machining oils free of halogens (except emulsions and solutions)

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

· **DOT regulations:**
· **Hazard class:** -
· **Remarks:** DOT IDENTIFICATION: Not regulated in volumes of less than 119 gallons.

Volumes greater than 119 gallons (≈ 450 liter):
Combustible Liquid, N.O.S. (NAME of the hazard-determining components), NA 1993, PG III
and must have a worded "COMBUSTIBLE" or numeric "1993" placard on two opposing sides of the unit.

· **Land transport ADR/RID (cross-border):**
· **ADR/RID class:** -

· **Maritime transport IMDG:**
· **IMDG Class:** -
· **Marine pollutant:** No

· **Air transport ICAO-TI and IATA-DGR:**
· **ICAO/IATA Class:** -

15 Regulatory information

· **Sara**

· **Section 355 (extremely hazardous substances):**
None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**
None of the ingredients is listed.

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**
None of the ingredients is listed.

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**
None of the ingredients is listed.

· **IARC (International Agency for Research on Cancer)**
None of the ingredients is listed.

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

· **TLV (Threshold Limit Value established by ACGIH)**
None of the ingredients is listed.

(Contd. on page 5)

(Contd. of page 4)

· AGW (German Maximum Workplace Concentration)	
Synthetic aliphatic hydrocarbons	600 mg/m³
· NIOSH-Ca (National Institute for Occupational Safety and Health)	
None of the ingredients is listed.	
· OSHA-Ca (Occupational Safety & Health Administration)	
None of the ingredients is listed.	

· **Product related hazard informations:** Observe the general safety regulations when handling chemicals.

· **Hazard-determining components of labelling:** Synthetic aliphatic hydrocarbons

· **Special labeling of certain preparations:** for bulk-containers there is the CFR 29 valid that means that then a labelling is needed as following:
NA 1993, Combustible liquid, n.o.s. (NAME of the hazard-determining components), PG III

· **National regulations:**

· **Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Reasons for alterations** General revision.

· **Department issuing MSDS:** Department of application
+49-(0)711-16863-71

· * Data compared to the previous version altered.

LPS® All-Purpose Anti-Seize

4-11-12

Revision Date: 5/26/2010 **Supercedes: 11/25/2009**

Section 1 – Identification

Product Name:	LPS® All-Purpose Anti-Seize
Part Number:	04108, 4110, C04108, C04110
Chemical Name:	Petroleum Hydrocarbon Mixture
Product Use:	An all-purpose, anti-seize lubricant designed to prevent seizure and galling, and resist settling and hardening of welding.
Manufacturer Information:	LPS Laboratories, 4647 Hugh Howell Rd., Tucker, GA, USA 30084
TEL:	1 770-243-8800
Emergency Telephone Number:	1-800-424-9300 Chemtrec; Outside U.S.: (703) 527-3887
FAX:	1 770-243-8899
Website:	http://www.lpslabs.com

PLAIN LANGUAGE HAZARD SUMMARY

Material Safety Data Sheets can be confusing. Federal and State laws require us to include a great deal of technical information that probably won't help the non-professional. LPS includes this "PLAIN LANGUAGE HAZARD SUMMARY" to address the questions and concerns of the average worker. If you have additional health, safety or product questions, don't hesitate to call us at 800/241-8334.

Worker Toxicity

LPS® All-Purpose Anti-Seize is an anti-seize lubricant designed to prevent seizure and galling, and resist settling and hardening of welding. It contains petroleum distillates and mineral oils that can be irritating to skin. Avoid extended exposure to unprotected skin. Don't get it in your eyes (it stings) and may cause irritation. Do not breathe the spray or vapor; the viscous nature may block breathing passages. Vapors from heated LPS® All-Purpose Anti-Seize can make you dizzy and even sick. For more exposure and first aid information, refer to MSDS Sections 2, 8 and 11.

Flammability

LPS® All-Purpose Anti-Seize is nonflammable with a flashpoint greater than 430°F.

Disposal

LPS® All-Purpose Anti-Seize is not hazardous for disposal; however, if it becomes contaminated with another substance, the resulting mixture may fall under a hazardous classification. See section 13 for more details.

Section 2 – Hazards identification

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Emergency Overview:
Bulk: CAUTION: Harmful if Swallowed.

Primary route(s) of entry: Skin and Eye contact.

Potential Acute Health Effects:

Eyes: Irritating to eyes

Skin: Repeated exposure may cause skin dryness or cracking.

Inhalation: Excessive inhalation of vapors can cause irritation of the respiratory tract, nausea, dizziness or headache.

Ingestion: Product has a low order of acute oral toxicity, but ingestion of large quantities may cause nausea, vomiting, and gastrointestinal irritation. May cause injury if aspirated into lungs.

Potential Chronic Health Effects:

Carcinogenic Effects: NTP: No **OSHA:** No **ACGIH:** No

Mutagenic Effects: None

Teratogenic Effects: None

Medical conditions aggravated by exposure:
Persons with pre-existing central nervous system (CNS) disease, neurological conditions, skin disorders, chronic respiratory diseases, or impaired liver or kidney function should avoid exposure.

Signs and Symptoms:
Stinging in eyes. Repeated or prolonged skin contact can cause redness, irritation, and scaling of the skin (dermatitis). Breathing of high vapor concentrations may cause headaches, stupor, irritation of throat and eyes, and kidney effects.

Section 3 – Composition / Information on Ingredients

Component	CASRN	Weight Percent
Petroleum Oil	64741-52-5	30 - 60%
Residual Oil	64742-01-4	10 - 30%

Note: The remaining ingredients of this preparation are not classified as hazardous per 29 CFR 1910.1200 Subpart Z

Section 4 – First Aid Measures

Eyes: Check for and remove contact lenses. If irritation or redness develops, flush eyes with cool, clean, low-pressure water for at least 15 minutes. Hold eyelids apart to ensure complete irrigation of the eye and eyelid tissue. Do not use eye ointment. Seek medical attention immediately.

Skin: Remove contaminated shoes and clothing. Clean affected area thoroughly with mild soap and water. Do not use ointments. Seek medical attention if irritation persists.

Inhalation: Immediately move victim to fresh air. If victim is not breathing, immediately begin rescue breathing. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). If breathing is difficult, seek medical attention immediately.

Ingestion: Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If spontaneous vomiting is about to occur, place victim's head below knees. If victim is drowsy or unconscious, place on the left side with head down. Do not leave victim unattended. Seek medical attention immediately.

Section 5 – Fire Fighting Measures

Products of Combustion: Carbon monoxide and carbon dioxide.

Firefighting media: Use dry chemical powder, CO_2, water spray, fog or foam. Cool containing vessels with water jet in order to prevent pressure build-up, auto ignition or explosions.

Sensitivity to Impact: None. **Sensitivity to Static Discharge:** None.

Protection Clothing (Fire): Firefighters must use full bunker gear including NIOSH-approved positive pressure self-contained breathing apparatus to protect against potential hazardous combustion or decomposition products and oxygen deficiencies. Evacuate area and fight the fire from a maximum distance or use unmanned hose holders or monitor nozzles.

Section 6 – Accidental Release Measures

Containment Procedures: Contain and recover spilled liquid when possible.

Clean-Up Procedures:

- **Small Spill and Leak:** Absorb with an inert material and dispose of properly.
- **Large Spill and Leak:** Secure the area and control access. Dike far ahead of a liquid spill to ensure complete collection. Pick up free liquid for disposal using absorbent pads, sand, or other inert non-combustible absorbent materials. Place into appropriate waste containers for later disposal.

Evacuation Procedures: Ventilate area of leak or spill. Keep unnecessary and unprotected people away.

Special Procedures: Ventilate area. Wear appropriate protective equipment during cleanup.

Section 7 – Handling and Storage

Handling: Do not allow material to come into contact with eyes or skin. Wear appropriate protective equipment during handling. Keep container closed. Do not breathe vapors. Wash thoroughly after handling.

Storage: Keep container in a cool, well-ventilated area. Avoid all sources of ignition (spark or flame). Store below 120°F.

Precautions to be taken in handling and storage: Store all materials in dry, well-ventilated area. Avoid breathing vapors.

Section 8 – Exposure Controls / Personal Protection

Exposure Guidelines:

Component	CASRN	OSHA TWA-PEL	OSHA STEL	ACGIH-TLV	ACGIH-STEL	NIOSH REL
Petroleum Oil	64741-52-5	5 mg/m^3 (oil mist)*	10 mg/m^3 (oil mist)*	Not Established	Not Established	Not Established
Residual Oil	64742-01-4	5 mg/m^3 (oil mist)*	10 mg/m^3 (oil mist)*	Not Established	Not Established	Not Established

* Supplier Recommendation

Engineering measures Provide general and/or local exhaust ventilation to keep exposures below the exposure guidelines listed above.

Personal protective equipment

Eye protection Safety glasses with side shields conforming to appropriate regulations. Eye wash fountain and emergency shower facilities are recommended.

Hand protection Normally no hand protection is required; however, if product will be used for an extended period, contact to skin may occur. If so, use chemical resistant gloves (i.e., nitrile, neoprene, buna) conforming to appropriate regulations. Please observe the instructions regarding permeability and breakthrough time that are provided by the supplier of the gloves.

Respiratory protection Typical use of this product under normal conditions does not require the use of respiratory protection. If airborne concentrations are above the applicable exposure limits (listed above), use NIOSH approved respiratory protection (i.e., organic vapor cartridge).

General Hygiene Considerations Wash throughly after handling. Have eye-wash facilities immediately available.

Section 9 – Physical and Chemical Properties

Appearance:	Paste	**Color:**	Steel Blue
Odor/Taste:	Slight Petroleum	**Vapor Pressure:**	<0.07 mmHg
Solubility Description:	Nil	**Evaporation Rate:**	<0.01 (BuAc=1)
Boiling Point:	>274°C (525°F)	**Flash Point:**	221°C(430°F)
Specific Gravity (Water=1):	1.0 – 1.2 @ 20 °C	**Flash Point Method:**	Cleveland Open Cup
Vapor Density (air=1):	> 4.8	**Auto Ignition Temperature:**	>260°C(500°F)
Flammable limits (estimated):	LOWER: 0.9% UPPER: 7%	**Partition Coefficient (octanol/water):**	Not Established
pH:	Neutral	**Viscosity:**	Not Established
Decomposition Temperature	Not Determined	**Odor threshold**	Not Determined

Section 10 – Chemical Stability and Reactivity

Chemical Stability:	Product is stable under recommended storage conditions.
Conditions to Avoid:	Keep away from ignition sources.
Incompatibility:	Reactive or incompatible with oxidizing agents.
Hazardous Decomposition:	These products are carbon oxides (CO, CO2)
Hazardous Polymerization:	Will not occur.

Section 11 – Toxicological Information

A: General Product Information

An acute toxicity study of this product has not been conducted. Information given in this section relates only to individual constituents contained in this preparation.

B: Component Analysis

Ingredients	CASRN	LC-50	LD-50
Petroleum Oil	64742-52-5	2.18 mg/L/rat/4hr	>5000 mg/kg/oral/rat >2000 mg/kg/dermal/rabbit
Residual Oil	64742-01-4	2.18 mg/L/rat/4hr	>5000 mg/kg/oral/rat >2000 mg/kg/dermal/rabbit

Section 12 – Ecological Information

Mobility:	Partially absorbed into soil.	**Persistence and degradability:**	Slightly biodegradable.
Bioaccumulative potential:	Minimal bioaccumulation potential	**Other adverse effects:**	None known.

Ecological studies have not been conducted for this product. The following information is available for component(s) of this product.

Ecotoxicology:

Effect on Organisms	Component	CASRN	Test	Species	Results
Acute Toxicity on Fishes	Petroleum Oil	64742-52-5	96h-LC_{50}	Oncrohynchus mykiss	>5000 mg/L
	Residual Oil	64742-01-4	96h-LC_{50}	Oncrohynchus mykiss	>5000 mg/L
Acute Toxicity on Daphnia	Petroleum Oil	64742-52-5	48h-LC_{50}	Daphnia Magna	>1000 mg/L
	Residual Oil	64742-01-4	48h-LC_{50}	Daphnia Magna	>1000 mg/L
Bacterial inhibition	Petroleum Oil	64742-52-5	Bacterial Growth Inhibition	Pseudomonas fluorecens (Bacteria)	> 1000 mg/L
	Residual Oil	64742-01-4	Bacterial Growth Inhibition	Pseudomonas fluorecens (Bacteria)	> 1000 mg/L
Growth inhibition of algae	Petroleum Oil	64742-52-5	96h-EC_{50}	Algae	>1000 mg/L
	Residual Oil	64742-01-4	96h-EC_{50}	Algae	>1000 mg/L
Bioaccumulation in fish	No data Available				

Section 13 – Disposal Considerations

Waste Status: None.

Disposal: Waste must be disposed of in accordance with national, regional, provincial, and local environmental control regulations.

Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information inaccurate, incomplete, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive than federal laws and regulations.

Section 14 – Transportation Information

Bulk versions of this product are not regulated by any mode of transportation.

Section 15 – Regulatory Information

U.S. Federal Regulations

RCRA Hazardous Waste No.: None

Comprehensive Environmental Response and Liability Act of 1980 (CERCLA): None

Toxic Substances Control Act (TSCA):
All components of this product are TSCA inventory listed and/or are exempt.

Superfund Amendments and Reauthorization Act (SARA) Title III
SARA Section 311/312 (40 CFR 370) Hazard Categories:
Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard

This product contains the following toxic chemical(s) subject to reporting requirements of SARA Section 313 (40 CFR 372): None

Section 112 Hazardous Air Pollutants (HAPs): None

State Regulations

New Jersey RTK:
Petroleum Oil 64742-52-5 • Residual Oil 64742-01-4 • Aluminum Complex Soap 82980-54-9 • Molybdenum Disulfide 1317-33-5 • Graphite 7782-42-5 •

California: This product does **not** contain chemical(s) known to the State of California to cause cancer, birth defects or reproductive harm.

California and OTC States: This product is not regulated by consumer regulations.

International Regulations

Canadian Environmental Protection Act: All of the components of this product are included on the Canadian Domestic Substances list (DSL).

Canadian Workplace Hazardous Materials Information System (WHMIS):
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

WHMIS Classification: Bulk

NOT WHMIS Controlled

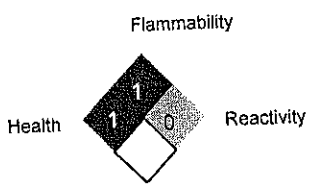
Other Regulations

Montreal Protocol listed ingredients:	None.
Stockholm Convention listed ingredients:	None.
Rotterdam Convention listed ingredients:	None.
RoHS Compliant:	Yes.

LPS® All-Purpose Anti-Seize

Revision Date: 5/26/2010 **Supercedes: 11/25/2009**

Section 16 • Other Information

	HMIS 1996		HMIS III		NFPA
MSDS# 14108 **Responsible Name:** **Clea George** **Regulatory Affairs Coordinator**	Health:	1	Health:	[/]1	
	Flammability:	1	Flammability:	1	
	Reactivity	0	Physical Hazard:	0	

Notice to Reader:
To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Clea George, Regulatory Affairs Coordinator
LPS Laboratories, A division of Illinois Tool Works

1-11-12

MATERIAL SAFETY DATA SHEET
LPS® ZeroTri®

Revision Date: January 12, 2012 **Supersedes:** August 17, 2010

Section 1 • Product and Company Identification

Product Name: LPS® ZeroTri®

Part Number(s): 03520 (aerosol), 03528, 03505, 03555, C03520 (aerosol), C03528, C03505, C03555

Chemical Name: Acetone / Aliphatic Hydrocarbon Mixture

Product Use: An industrial degreaser designed to remove oil, grease, wax, moisture, dirt or other contaminants from parts and equipments.

Manufacturer Information: LPS Laboratories, 4647 Hugh Howell Road, Tucker, GA, USA 30084
TEL: USA & Canada: 1 800 241-8334
Outside USA and Canada: +1 770 243-8800
FAX: USA & Canada: 1 800 543-1563
Outside USA and Canada: +1 770 243-8899

Emergency Telephone Number: Chemtrec: USA & Canada: 1 800 424-9300
Outside USA and Canada: +1 703 527-3887

Website: http://www.lpslabs.com

Section 2 • Hazards Identification

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Emergency Overview:

Aerosol: DANGER: Extremely flammable. Eye irritant. Vapor harmful. Contents under pressure. Harmful or fatal if swallowed.

Bulk: DANGER: Extremely flammable. Eye irritant. Vapor harmful. Harmful or fatal if swallowed.

Primary route(s) of entry: Skin and eye contact. Inhalation.

Potential Acute Health Effects:

Eyes: Irritating to eyes.

Skin: Repeated exposure may cause skin dryness or cracking.

Inhalation: Excessive inhalation of vapors can cause irritation of the respiratory tract, nausea, dizziness or headache.

Ingestion: Product has a low order of acute oral toxicity, but ingestion of large quantities may cause nausea, vomiting, and gastrointestinal irritation. May cause injury if aspirated into lungs.

Potential Chronic Health Effects:

Carcinogenic Effects: **NTP:** No **IARC:** No **OSHA:** No **ACGIH:** No

Mutagenic Effects: None

Teratogenic Effects: None

Target Organs: None

Medical conditions aggravated by exposure:
Persons with pre-existing central nervous system (CNS) disease, neurological conditions, skin disorders, chronic respiratory diseases, or impaired liver or kidney function should avoid exposure.

Signs and Symptoms
Stinging in eyes. Repeated or prolonged skin contact can cause redness, irritation, and scaling of the skin (dermatitis). Breathing of high vapor concentrations may cause headaches, stupor, irritation of throat and eyes, and kidney effects.

Section 3 • Composition / Information on Ingredients

Component	CASRN	Weight Percent
Acetone	67-64-1	25 - 40%
n-Heptane	142-82-5	25 - 40%
Methylcyclohexane	108-87-2	15 - 30%
Pentyl acetate	628-63-7	1 - 5%
Carbon Dioxide (aerosol only)	124-38-9	1 - 5%

Section 4 • First Aid Measures

Eyes: Check for and remove contact lenses. If irritation or redness develops, flush eyes with cool, clean, low pressure water for at least 15 minutes. Hold eyelids apart to ensure complete irrigation of the eye and eyelid tissue. DO NOT use eye ointment. Seek medical attention immediately.

Skin: Remove contaminated shoes and clothing. Clean affected area thoroughly with mild soap and water. DO NOT use ointments. Seek medical attention if irritation persists.

Inhalation: Immediately move victim to fresh air. If victim is not breathing, immediately begin rescue breathing. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). If breathing is difficult, seek medical attention immediately.

Ingestion: DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If spontaneous vomiting is about to occur, place victim's head below knees. If victim is drowsy or unconscious, place on the left side with head down. DO NOT leave victim unattended. Seek medical attention immediately.

Section 5 • Fire Fighting Measures

Products of Combustion: Carbon monoxide and carbon dioxide.

General Fire Hazards: Do not use on energized equipment. High heat will cause product to boil, evolving vapor that could cause explosive rupture of closed containers.

Firefighting media: SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use CO2, water spray, fog or foam. Cool containing vessels with water jet in order to prevent pressure build-up, auto-ignition or explosions.

Sensitivity to Impact: None **Sensitivity to Static Discharge:** Yes

Protection Clothing (Fire): Firefighters must use full bunker gear including NIOSH-approved positive pressure self-contained breathing apparatus to protect against potential hazardous combustion or decomposition products and oxygen deficiencies. Evacuate area and fight the fire from a maximum distance or use unmanned hose holders or monitor nozzles.

Special Remarks on Explosion Hazards:
Aerosols may explode upon heating, spread fire and overcome sprinkler systems.

Section 6 • Accidental Release Measures

Containment Procedures:

Small Spill and Leak: Eliminate ignition sources. Absorb with an inert material and dispose of properly.

Large Spill and Leak: Eliminate ignition sources. Secure the area and control access. Dike far ahead of a liquid spill to ensure complete collection. Pick up free liquid for disposal using absorbent pads, sand, or other inert non-combustible absorbent materials. Place into appropriate waste containers for later disposal.

Clean-Up Procedures: Recover free product and place in a suitable container for disposal.

Evacuation Procedures: Ventilate area of leak or spill. Keep unnecessary and unprotected people away.

Special Procedures: Remove all sources of ignition. Ventilate area. Wear personal protective equipment during cleanup.

Section 7 • Handling and Storage

Handling: DO NOT spray into or around ignition sources. DO NOT allow material to come in contact with eyes or skin. Wear appropriate protective equipment during handling. Keep container closed. Avoid breathing vapors or mists. Use only with adequate ventilation. Wash thoroughly after handling.

Storage: Keep container in a cool, well-ventilated area. Avoid all sources of ignition (spark or flame). Store between 40°F and 120°F (4.4°C and 49°C).

Precautions to be taken in handling and storage:
Store aerosols as Level 3 Aerosol (NFPA 30B). Store all materials in a dry, well-ventilated area. Avoid breathing vapors. Ground and bond containers before transferring materials.

Section 8 • Exposure Controls / Personal Protection

Exposure Guidelines:

Component	CASRN	OSHA	ACGIH	NIOSH	Supplier
Acetone	67-64-1	1000 ppm PEL	500 ppm TLV 750 ppm STEL	250 ppm TWA	None reported
n-Heptane	142-82-5	500 ppm PEL	400 ppm TLV 500 ppm STEL	85 ppm TWA	500 ppm STEL
Methylcyclohexane	108-87-2	500 ppm PEL	400 ppm TLV	400 ppm TWA	None reported
Pentyl acetate	628-63-7	100 ppm PEL	50 ppm TLV 100 ppm STEL	100 ppm TWA	None reported
Carbon Dioxide (aerosol only)	124-38-9	5000 ppm PEL	5000 ppm TLV 30000 ppm STEL	5000 ppm TWA 30000 ppm STEL	None reported

Engineering Controls: Provide general and/or local exhaust ventilation to keep exposures below the exposure guidelines listed above.

Personal protective equipment

Eye protection: Safety glasses with side shields conforming to appropriate regulations. Eye wash fountain and emergency shower facilities are recommended.

Hand protection: Use chemically resistant protective gloves. Please observe the instructions regarding permeability and breakthrough time that are provided by the supplier of the gloves. Take into consideration the specific local conditions under which the product is used, such as the danger of the cuts, abrasion and the contact time.

Respiratory protection: Typical use of this product under normal conditions does not require the use of respiratory protection. If airborne concentrations are above the applicable exposure limits (listed above), use NIOSH approved respiratory protection (i.e. organic vapor cartridge).

General Hygiene Considerations: Wash thoroughly after handling. Have eye-wash facilities immediately available.

Section 9 • Physical and Chemical Properties

Appearance:	Liquid	**Color:**	Clear, colorless
Odor:	Ether-like / Fruity	**Evaporation Rate:**	> 1 (BuAc = 1)
Solubility Description:	35% by weight	**Flash Point:**	-17°C (+1.4°F) - dispensed liquid
Boiling Point:	> 56°C (133°F)	**Flash Point Method:**	Tag-Closed Cup
Specific Gravity (H2O=1):	0.74 - 0.76 @ 20°C	**Decomposition Temperature:**	Not established
Vapor Density (air = 1):	~3	**Auto ignition temperature:**	Not established
Vapor Pressure:	> 75 mm Hg @ 20°C	**Flammable limits (estimated):**	LOWER: 1.2% UPPER: 12.8%
Rule 1171 PPc:	Not established	**Partition Coefficient (octanol/water):**	< 1
V.O.C. Content:	Aerosol: 62.4% per State & Federal Consumer Product Regulations; 470 g/L per SCAQMD Rule 102 Bulk: 65.0% per State & Federal Consumer Product Regulations; 489 g/L per SCAQMD Rule 102	**Odor Threshold:**	Not established
Melting Point:	Not established	**Viscosity:**	Not established
pH:	Not applicable	**Volatiles:**	100%
Heat of combustion:	Aerosol: > 30 kJ/g Bulk: > 30 kJ/g		

Section 10 • Stability and Reactivity

Chemical Stability: Product is stable under recommended storage conditions.

Conditions to Avoid: Keep away from heat and ignition sources.

Incompatibility: Reactive or incompatible with oxidizing agents.

Hazardous Decomposition: These products are carbon oxides (CO, CO2).

Hazardous Polymerization: Will not occur.

Section 11 • Toxicological Information

Acute and Chronic Toxicity

A: General Product Information
An acute toxicity study of this product has not been conducted. Information given in this section relates only to individual constituents contained in this preparation.

B: Component Analysis

Component	CASRN	LC-50	LD-50
Acetone	67-64-1	16000 ppm / rat / 4 hr*	5800 mg/kg / oral / rat* 20000 mg/kg / dermal / rabbit*
n-Heptane	142-82-5	103 g/m3 / rat / 4 hr	222 mg/kg / intravenous / mouse
Methylcyclohexane	108-87-2	15227 ppm / rabbit / 1 hr	> 3200 mg/kg / oral / rat > 86700 mg/kg / dermal / rabbit / 24 hr**
Pentyl acetate	628-63-7	> 3000 ppm / rat / 6 hr	> 1600 mg/kg / rat
Carbon Dioxide (aerosol only)	124-38-9	470000 ppm / rat / 30 minutes	Not appropriate

* Supplier Data
** RTECS LD50 not reported, this is a Lethal Dose (LD) value.

Section 12 • Ecological Information

Mobility: Volatile. May partially absorb to sediment. **Persistence / Degradability:** Partially biodegradable

Bioaccumulative potential: No bioaccumulation potential **Other adverse effects:** None known

Ecological studies have not been conducted for this product. The following information is available for component(s) of this product.

Ecotoxicity

Effects on Organisms	Component	CASRN	Test	Species	Results
Acute Toxicity on Fishes	Acetone	67-64-1	96-hr LC50	Alburnus Alburnus	11,000 mg/L
	Pentyl acetate	628-63-7	96-hr LC50	Gambusia Affinis	65,000 µg/L
Acute Toxicity on Daphnia	Acetone	67-64-1	48-hr EC50	Daphnia Magna	12,700 mg/L
	Methylcyclohexane	108-87-2	48-hr EC50	Daphnia Magna	15 mmol/m3
	Pentyl acetate	628-63-7	LC50	Daphnia Magna	210 mg/L
Bacterial Inhibition	No data available				
Growth Inhibition of algae					
Bioaccumulation in fish					

* Supplier Data

Section 13 • Disposal Considerations

Waste Status: Aerosol cans, if depressurized and emptied to less than 1 inch (2.54 cm) of fluid contents, are classified as non-hazardous waste under 40 CFR 261.7 (U.S.). If disposed of in its received form, the aerosol product carries the waste codes D001 and D003 (U.S.).

Disposal: Waste must be disposed of in accordance with any and all applicable environmental control rules and/or regulations.

Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information inaccurate, incomplete, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive than federal laws and regulations.

Section 14 • Transport Information

Aerosol

D.O.T. Ground	Shipping Name:	Consumer Commodity	UN No.:	NA
	Hazard Class:	ORM-D	Technical Name:	NA
	Subclass:	NA	Hazard Label:	ORM-D Already on box
	Packing Group:	NA		
Road/Rail - ADR/RID	UN No.:	1950	ADR Class:	2
	Packing Group:	NA	Classification Code:	5F
	Name and description:	AEROSOLS, flammable	Hazard ID No.:	NA
	Labeling:	2.1	Technical Name:	NA
IMDG-IMO	UN No.:	1950	Class:	2
	Shipping Name:	Aerosols	Subsidiary Risk:	2.1
	Labeling:	NA	Packing Group:	NA
	Packing Instructions:	NA	EmS:	F-D, S-U
	Marine pollutant:	No	Technical Name:	NA
IATA - ICAO:	UN No.:	1950	Class:	2.1
	Shipping Name:	Aerosols, flammable	Subclass:	NA
	Packing Instructions:	203, Y203 (Ltd. Qty.)	Packing Group:	NA
	Labeling:	Flammable Gas	Technical Name:	NA

Bulk

D.O.T. Ground	Shipping Name:	Flammable Liquid, n.o.s.	UN No.:	1993
	Hazard Class:	3	Technical Name:	Heptanes, Acetone
	Subclass:	NA	Hazard Label:	Flammable Liquid
	Packing Group:	NA		
Road/Rail - ADR/RID	UN No.:	1993	ADR Class:	3
	Packing Group:	II	Classification Code:	F1
	Name and description:	Flammable liquid, n.o.s.	Hazard ID No.:	33
	Labeling:	3	Technical Name:	Heptanes, Acetone
IMDG-IMO	UN No.:	1993	Class:	3
	Shipping Name:	Flammable liquid, n.o.s.	Subsidiary Risk:	NA
	Labeling:	3	Packing Group:	II
	Packing Instructions:	P001	EmS:	F-E, S-E
	Marine pollutant:	No	Technical Name:	Heptanes, Acetone
IATA - ICAO:	UN No.:	1993	Class:	3
	Shipping Name:	Flammable liquid, n.o.s.	Subclass:	NA
	Packing Instructions:	Y341 (Ltd. Qty.), 353, 364 (CAO)	Packing Group:	II
	Labeling:	Flammable Liquid	Technical Name:	Heptanes, Acetone

*Note: For air shipment only

1 gallon (3.78 liter) containers shipped in case quantity (4 to a case), must be shipped via "CARGO AIRCRAFT ONLY" (CAO).

5 gallon (18.93 liter) containers must be shipped via "CARGO AIRCRAFT ONLY" (CAO).
55 gallon (208 liter) drums CANNOT be shipped by air.

The preceding information is subject to change and must be verified prior to shipment. It is the responsibility of anyone offering hazardous materials for shipment to ensure compliance with all applicable regulations.

Section 15 • Regulatory Information

U.S. Federal Regulations

RCRA Hazardous Waste No.: D001, D003 (aerosols only)

Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA):
Acetone 67-64-1 5000 lbs
Pentyl Acetate 628-63-7 5000 lbs.

Toxic Substances Control Act (TSCA):
All components of this product are TSCA inventory listed and/or are exempt.

Superfund Amendments and Reauthorization Act (SARA) Title III SARA Section 311/312 (40 CFR 370) Hazard Categories:
Sudden Release of Pressure, Fire Hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard

This product contains the following toxic chemical(s) subject to reporting requirements of SARA Section 313 (40 CFR 372):
No individual section 313 component is present at or above 1%.

Section 112 Hazardous Air Pollutants (HAPs): None

State Regulations

California: This product does not contain chemical(s) known to the State of California to cause cancer, birth defects or other reproductive harm.

California and OTC States: This product is for manufacturing use only - not for retail sale.

New Jersey Right to Know:
Aerosol: Acetone 67-64-1 • n-Heptane 142-82-5 • Methylcyclohexane 108-87-2 • Carbon Dioxide 124-38-9 • Pentyl Acetate 628-63-7
Bulk: Acetone 67-64-1 • n-Heptane 142-82-5 • Methylcyclohexane 108-87-2 • Pentyl Acetate 628-63-7

International Regulations

Canadian Environmental Protection Act (CEPA):
All of the components of this product are included on the Canadian Domestic Substances list (DSL).

Canadian Workplace Hazardous Materials Information System WHMIS:
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

WHMIS Classification:
Aerosol: Class A, Class B5, Class D2B

WHMIS Classification:
Bulk: Class B2, Class D2B

Other Regulations:

Montreal Protocol listed ingredients:	None
Stockholm Convention listed ingredients:	None
Rotterdam Convention listed engredients:	None
RoHS Compliant:	Yes

MATERIAL SAFETY DATA SHEET
LPS® ZeroTri®

Revision Date: January 12, 2012 **Supersedes:** August 17, 2010

Section 16 • Other Information

MSDS#: 13520 MSDS Preparation Responsible Name: Elena Badiuzzi Compliance Manager Telephone: +1 770 243-8800	**HMIS 1996**		**HMIS III**		**NFPA** Flammability Health 1 0 Reactivity Special
	Health:	1	Health:	[/] 1	
	Flammability:	3	Flammability Aerosol: Flammability Bulk:	4 3	
	Reactivity:	0	Physical Hazard Aerosol: Physical Hazard Bulk:	2 0	

Notice to Reader:
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Elena Badiuzzi, Compliance Manager
LPS Laboratories, a division of Illinois Tool Works

3-29-12
4-3-14

Material Safety Data Sheet
May be used to comply with OSHA's Hazard Communication Standard 29 CFR 1910.1200 Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety & Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

Identity (as used on label & list)

EVANS STRIPCOAT - TYPE IV K-25 OR K-25S

Section I

Manufacturers Name EVANS COATINGS, LLC	Emergency Telephone Number 248-583-9890	HMIS / NFPA HAZARD ID SYSTEM PEEL COAT TYPE I-II-III-IV
Address (Number-Street City-State -Zip Code)	Telephone Number for Information 248-583-9890	HEALTH: 1
1330 SOUTER	Date Prepared 1 / 2012	FLAMMABILITY 1
TROY, MI 48083	Signature of Preparer (optional)	REACTIVITY: 0
		PERSONAL PROTECTION: B

Section II - Hazardous Ingredients / Identity Information

Hazardous Components (Specific Chemical: Common Names)	OSHA PEL	ACGIH TLV	Other Limits Recommended	% Optional

THIS PRODUCT CONTAINS NO KNOWN HAZARDOUS COMPONENTS AS DEFINED IN ACCORDANCE WITH 29 CFR 1910.1200. THE PRECISE COMPOSITION OF THIS MIXTURE IS PROPRIETARY INFORMATION. A MORE COMPLETE DISCLOSURE IS AVAILABLE IN THE EVENT OF A MEDICAL EMERGENCY.

CHEMICAL FAMILY = OIL MODIFIED BLOCK COPOLYMER RUBBER

CHEMICAL NAME =THERMOPLASTIC RUBBER

Section III - Physical / Chemical Characteristics

Boiling Point	OVER 700°F	Specific Gravity (H20 = 1)	1
Vapor Pressure (mm Hg)	N/A	Melting Point	OVER 200°F
Vapor Density (AIR = 1)	N/A	Evaporation Rate (Butyl Acetate = 1)	N/A
Solubility in Water	INSOLUBLE		
Appearance and Odor	100% SOLID THERMOPLASTIC - WAX LIKE - WITH OIL ODOR		

Section IV - Fire & Explosion Hazard Data

Flash Point (Method Used) - 395°F OPEN CUP	Flammable Limits - N/A	LEL - N/A	UEL - N/A

Extinguishing Media - WATER FOG - DRY CHEMICAL - FOAM & CO^2

Special Fire Fighting Procedures - TREAT AS AN OIL FIRE

Unusual Fire & Explosion Hazards - IF HEATED ABOVE THE FLASH POINT, THIS PRODUCT WILL RELEASE FLAMMABLE VAPORS WHICH CAN BURN OR BE EXPLOSIVE

Section V - Reactivity Data

Stability	Unstable		Conditions to Avoid: DIPPING IN EXCESS OF FLASH POINT
	Stable	X	

Incompatibility (Materials to Avoid): STRONG ACIDS AND ALKALIS

Hazardous Decomposition or Byproducts: NONE KNOWN

Hazardous Polymerization	May Occur		Conditions to Avoid: DIPPING IN EXCESS OF FLASH POINT
	Will Not Occur	X	

Section VI - Health Hazard Data

Route(s) of Entry: Inhalation - Skin - Ingestion
NO RESPIRATORY IRRITATION EXPECTED - MELTED COMPOUND CAN BURN - NON-HAZARDOUS AT ROOM TEMPERATURE

Health Hazards (Acute & Chronic)

Carcinogenicity: NTP ? IARC Monographs ? OSHA Regulated
?

N/A N/A N/A
N/A

Signs and Symptoms of Exposure: N/A

Medical Conditions Generally Aggravated by Exposure: N/A

Emergency and First Aid Procedures: APPLIED AT 350°F - IF IT COMES IN CONTACT WITH THE SKIN, TREAT AS AN OIL BURN

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled: N/A = SOLID

Waste Disposal Method: SAME AS WAX OR OIL = INCINERATION OR LANDFILL TO COMPLY WITH FEDERAL, STATE & LOCAL REGULATION

Precautions to be Taken in Handling and Storing: STORE IN A COOL / DRY AREA

Other Precautions: NONE

Section VIII - Control Measures

Respiratory Protection (Specify Type): NONE NEEDED

Ventilation	Local Exhaust: IF ODOR IS OBJECTIONABLE	Special: N/A
	Mechanical (General)	Other: N/A

Protective Gloves: WHILE DIPPING | Eye Protection: SPLASH GOGGLES

Other Protective Clothing or Equipment: NONE

Work / Hygienic Practices:	N/A

~~www.eagle-carbide.com~~

MATERIAL SAFETY DATA SHEET

REVISED: 08-14-03
CURRENT AS OF: 08-14-03

*MOST CURRENT AVAILABLE AS OF
10-31-07 2-16-11
1-7-09 5-16-12
4-4-14

GRINDKLEAN

EAGLE INTERNATIONAL, INC.
P.O. BOX 5639
STATESVILLE, NC 28687
TEL: 704-878-9583
FAX: 704-878-9585

FOR ADDITIONAL PRODUCT INFORMATION, CALL 704-878-9583 BETWEEN 8 AM AND 5 PM EST.

SECTION #1 - IDENTIFICATION

PRODUCT NAME: **GrindKlean**

PRODUCT USE: Metalworking grinding fluid

HAZARD RATING

HEALTH: 1
FLAMMABILITY: 0
REACTIVITY: 0

SECTION #2 - HAZARDOUS COMPONENTS

COMPONENT:	CAS NO:	PERCENT:	ACGIH TLV:	OSHA PEL:
None				

NOTE: OSHA requires only that hazardous components be listed in this section.

SECTION #3 - PHYSICAL DATA

APPEARANCE: Clear liquid

BOILING POINT: >212 Deg F

VAPOR DENSITY: >1

VAPOR PRESSURE: Unknown

pH: 9.3 (neat)

COLOR: Yellow

% VOLATILES BY VOL: 80 – 90

SOLUBILITY IN WATER: Complete

SPECIFIC GRAVITY: 1.01

EVAPORATION RATE: <1 where butyl acetate=1

ODOR: Mild

SECTION #4 - FIRE AND EXPLOSION DATA

FLASHPOINT (PMCC): None AUTOIGNITION: Unknown LEL: Unknown
UEL: Unknown

EXTINGUISHING MEDIA: Use water spray, dry chemical, foam or CO_2

FIRE AND EXPLOSION HAZARDS: Emits hazardous decomposition products, CO, CO_2 and NO_2.

SPECIAL FIRE FIGHTING INSTRUCTIONS: Wear full protective gear and positive pressure breathing apparatus.

SECTION #5 - EXPOSURE & EFFECT

ROUTES AND EFFECTS OF EXPOSURE:

SKIN CONTACT: Under normal use conditions irritation is not expected, however in certain individuals irritation may result.

EYE CONTACT: Excessive exposure may cause eye irritation.

INGESTION: Not considered a normal route of entry but may cause nausea.

INHALATION: In poorly ventilated areas or confined spaces, inhalation may cause irritation of the nose and throat.

EMERGENCY AND FIRST AID PROCEDURES:

SKIN: Remove contaminated clothing and flood skin with water for at least 15 minutes, then wash gently with mild soap and water. Do not put on clothing again until all chemicals have been thoroughly washed from them. Shoes and gloves soaked with chemicals should be discarded. Call a physician if pain, irritation or other symptoms persist.

EYES: Flush immediately with large amounts of water for at least 15 minutes. Consult a physician if pain, irritation or other problems persist.

INGESTION: Unless the patient is unconscious, having convulsions or cannot swallow, give water immediately. Do not make the patient vomit. Get medical attention.

INHALATION: Remove the person to fresh air. If irritation persists, call a physician.

SECTION #6 - REACTIVITY & POLYMERIZATION

STABILITY: Stable CONDITIONS TO AVOID (STABILITY): Storage in direct sunlight

INCOMPATIBLE MATERIALS: Strong oxidizers, magnesium after diluted

HAZARDOUS DECOMPOSITION PRODUCTS: CO, CO_2 and oxides of nitrogen.

CONDITIONS TO AVOID (POLYMERIZATION): None

HAZARDOUS POLYMERIZATION: Will not occur

SECTION #7 - SPILL, LEAK & DISPOSAL PROCEDURES

Wear protective clothing. Contain with oil-binding materials. Dispose of in waste management facility or in compliance with federal, state and local regulations. If spill is not contaminated, you may be able to dispose of it where normally used.

Report spills as required to appropriate authorities. U.S. Coast Guard regulations require immediate reporting of spills that could reach any waterway including intermittent dry creeks. The tool-free number is 800/8802. Prevent spills from entering storm sewers or drains and any contact with soil.

SECTION #8 - SPECIAL PROTECTIVE MEASURES

VENTILATION: Normal room ventilation.

SKIN PROTECTION: None required for normal use, however nitrile gloves may be used if needed.

EYE PROTECTION: Safety glasses.

OTHER: Plastic or rubber apron suggested.

RESPIRATORY PROTECTION: Inhalation of concentrated product is not expected to be a route of exposure. Inhalation of diluted mix can occur in applications where high mist levels are generated. Under these conditions, respiratory protection may be necessary.

WORK/HYGIENIC PRACTICES: Have eyewash and safety shower, ANSI Z358.1-1990 certified, in work area. Remove contaminated clothing. Wash contaminated clothing before reuse. If liquid is absorbed into shoes or gloves, discard. Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially when eating, drinking, smoking, using the restroom or applying cosmetics.

SECTION #9 - STORAGE & HANDLING INFORMATION

STORAGE AND HANDLING CONDITIONS: Keep container covered and sealed when not in use. Store in a cool, dry area. Do not add water or any other material to drum of product or otherwise contaminate it. Wash thoroughly after handling.

SECTION #10 - TRANSPORTATION INFORMATION

DOT SHIPPING NAME: Not applicable, not regulated

DOT HAZARD CLASS: N/A

UN/NA#: N/A

DOT LABEL REQUIRED: N/A

MATERIAL SAFETY DATA SHEET - **Grindklean**

SECTION #11 - REGULATORY INFORMATION

The concentrations shown are maximum or ceiling levels (weight %) to be used for calculations for regulations. Trade secrets are indicated by "TS".

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) TITLE III requires emergency planning based upon Threshold Planning Quantities (TPQ's) and release reporting based on Reportable Quantities (RQ's) in 40 CFR 355 (used for SARA 302, 304, 311, AND 312).

Components present in this product at the level which would require reporting under the statute are:

Substance	CAS No.	RQ	TPQ	Percent
None				

SARA 311/312: Sara hazard class: None

SARA Title III - Section 313 Supplier Notification:
This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 and of 40 CFR 372:

SUBSTANCE	CAS NO.	PERCENT IN MIXTURE
None		

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of hazardous substances equal to or greater than the reportable quantities (RQ's) in 40 CFR 302.4.
Components present in this product at the level which would require reporting under the statute are:

SUBSTANCE	CAS NO.	RQ	PERCENT
None			

****

ALTHOUGH REASONABLE CARE HAS BEEN TAKEN IN THE PREPARATION OF THIS DOCUMENT, WE EXTEND NO WARRANTIES AND MAKE NO REPRESENTATIONS AS TO THE ACCURACY OR COMPLETENESS OF THE INFORMATION CONTAINED HEREIN, AND ASSUME NO RESPONSIBILITY REGARDING THE SUITABILITY OF THIS INFORMATION FOR THE USER'S INTENDED PURPOSE OR FOR THE CONSEQUENCES OF ITS USE. EACH INDIVIDUAL SHOULD MAKE A DETERMINATION AS TO THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSE.

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4-11-12

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

(Prepared According to 29 CFR 1910.1200)

SECTION 1 IDENTIFICATION

Product Name:	**FORMULA 235883 MAVERICK**
Distributor's Name:	One Way Products
Distributor's Address:	433 E. Ransom Street - Kalamazoo, MI 49005
Distributor's Phone Number:	(269) 343-3772
Emergency Phone Number:	(800) 968-0777
Proper Shipping Name:	Not Regulated
Effective Date:	5/23/07

SECTION 2 IDENTITY INGREDIENTS AND INFORMATION

Chemical Name: **CAS No.:** **TLV:** **Carcinogen:**

This product contains no hazardous ingredients.

This product contains no ingredients subject to the reporting requirements of SARA title III, section 313.

SECTION 3 PHYSICAL DATA

Boiling Point:	>220° F	Specific Gravity :	1.0+.05
Solubility in Water:	Appreciable	pH (Concentrate):	6.5+.5
Physical Description:	Brown Viscous liquid with Mild Citrus Scent		

SECTION 4 FIRE AND EXPLOSION HAZARD DATA

Flash Point:	None			
Flammable Limits:	LEL:	Not Applicable	UEL:	Not Applicable
Extinguishing Media:	None			

Special Fire Fighting Procedures: Non-flammable

SECTION 5 REACTIVITY DATA

Stability:	Unstable_____ Stable __X___
Incompatability (Materials to Avoid):	None
Conditions to Avoid:	Keep from freezing
Hazardous Decomposition or Byproducts:	None
Hazardous Polymerization:	Will not occur

SECTION 6 STORAGE AND HANDLING INFORMATION

Precautions to be Taken in Handling and Storing: Empty containers retain product residue which should be treated in accordance with all precautions on this data sheet.

KEEP AWAY FROM CHILDREN
FOR USE BY TRAINED PERSONNEL ONLY
KEEP FROM FREEZING

FOR INDUSTRIAL AND INSTITUTIONAL USE ONLY
KEEP CONTAINER CLOSED DURING STORAGE
STORE BETWEEN 40°F AND 100°F

SECTION 7 HEALTH HAZARDS AND FIRST AID

Primary Routes of Entry: Not Hazardous.

First Aid Procedures:

EYES: Immediately flush with large quantities of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Seek medical attention if irritation persists.

INGESTION: DO NOT induce vomiting. Dilute by giving water or milk. Note: Never give anything by mouth to an unconscious or convulsing victim. Keep person warm and quiet. Get medical attention immediately.

SECTION 8 SPECIAL PROTECTION INFORMATION

Respiratory Protection: None required.
Ventilation: None required.
Protective Gloves: None required.
Eye Protection: None required.
Other Protective Equipment: Not applicable.

SECTION 9 SPILL OR LEAK PROCEDURE

Steps To Be Taken In Case Material Is Released or Spilled:

This product is biodegradable. Place the bulk of any spilled material into drums, then rinse any remaining material to sewage treatment facility, in accordance with any applicable regulations: Caution: Spill area may be slippery.

Waste Disposal Method:

Dispose drums of spilled material in a secure landfill, or other suitable means according to applicable regulations.

This information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition. We make no warranties, express or implied, and assume no liability in connection with any use of this information.

Material Safety Data Sheet

METAL ACTIVATOR SOLUTION

========== Product Identification ==========

Product ID:METAL ACTIVATOR SOLUTION
MSDS Date:01/11/2011

=== Responsible Party ===
Company Name:P & A SALES
Address:2420 HOLLY NECK BLVD
Box:City:BALTIMORE
State:MD
ZIP:21221
Country:US
Phone:631-236-9691
Emergency Phone Num:800-424-9300 (CHEMTREC)
CAGE: 6GW56
=== Contractor Identification ===
SAME

========== Composition/Information on Ingredients ==========

Ingred Name:SODIUM BISULFITE (1:1) (SASA III) (CERCLA)
CAS:7631-90-5
RTECS #:VZ2000000
Fraction by Wt: 7%
OSHA PEL:5 MG/M3
ACGIH TLV:5 MG/M3; 9495
EPA Rpt Qty:5000 LBS
DOT Rpt Qty:5000 LBS

Ingred Name:POTASSIUM IODIDE
CAS:7681-11-0
RTECS #:TT2975000
Fraction by Wt: <2%
OSHA PEL:N/K
ACGIH TLV:N/K

Ingred Name:Proprietary. <1%
RTECS #:NA

Ingred Name:AMMONIUM BIFLUORIDE
CAS:1341-49-7
RTECS #:BQ9200000
Fraction by Wt: <1%
OSHA PEL:2.5 MG/CUM
ACGIH TLV:2.5 MG/CUM
EPA Rpt Qty:100 LBS
DOT Rpt Qty:100 LBS

Ingred Name: INERT MATERIAL & DI WATER (AS BUFFER)
Fraction by Wt: Balance
CAS: NA
RTECS #: NA

========== Hazards Identification ==========

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
Reports of Carcinogenicity: NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:ACUTE: INHAL: DUST MAY DAMAGE UPPER RESPIRATORY TRACT AND LUNG TISSUE WHICH MAY CAUSE CHEMICAL PNEUMONIA DEPENDING UPON SEVERITY OF EXPOSURE. INGESTION: CAN CAUSE SEVERE IRRITATION TO MOUTH, THROAT, E SOPHAGUS, AND STOMACH. SKIN: CAN CAUSE BURNS. EYES: CAN CAUSE SEVERE IRRITATION, DAMAGE TO EYES. (EFTS OF OVEREXP)
Effects of Overexposure: CHRONIC:REPEATED INGESTION MAY DAMAGE CENTRAL NERVOUS SYSTEM.

========== First Aid Measures ==========

First Aid:INHAL:REMOVE PERSON FROM CONTAMD AREA. IF BRTHG HAS STOPPED, RESUSCITATE & ADMINISTER OXYGEN IF AVAIL. SEEK IMMED MED ATTN. INGEST:NEVER GIVE ANYTHING BY MOUTH TO AN UNCON PERSON, OBTAIN IMMED MED ATTENTION. IF VOMIT OCCURS SPONTANEOUSLY, KEEP AIRWAY CLEAR. IF SWALLOWED DO NOT INDUCE VOMIT, GIVE LRG AMTS OF H*2O. SEEK IMMED MED ATTN. SKIN:IMMED WASH CONTAMD SKIN W/PLENTY OF H*2O.

========== Fire Fighting Measures ==========

Boiling Point: 220F
Extinguishing Media: NOT COMBUSTIBLE.
Fire Fighting Procedures: NIOSH APPROVED SCBA & PROTECTIVE EQUIPMENT .
Unusual Fire/Explosion Hazard:THERMAL DECOMPOSITION MAY YIELD TOXIC SULFUR OXIDES.

========== Accidental Release Measures ==========

Spill Release Procedures: AVOID CNTCT W/SKIN, EYES & CLTHG. WEAR PROT EQUIP. SWEEP/SHOVEL SPILLED MATL INTO CLEAN STEEL DRUM & COVER. CAREFULLY FLUSH SPILL AREA W/H*2O & NEUT DILUTE RESIDUE W/ALKALI SUCH AS SODA AS, LIME/LIMES TONE & RECOVER RESULTANT SOLUTION/SLURRY (ING 4)
Neutralizing Agent: SODA ASH, LIME OR LIMESTONE.

========== Handling and Storage ==========

Handling and Storage Precautions: STORE IN COOL, DRY PLACE. KEEP AWAY FROM ALKALIS. LOOSEN COVER CAUTIOUSLY WHEN OPENING.

========== Exposure Controls/Personal Protection ==========

Respiratory Protection: USE NIOSH APPROVED RESPIRATOR WHEN AIR CONCENTRATION IS GREATER THAN THE TLV OR PEL. USE CARTRIDGE FILTER
Ventilation: LOCAL EXHAUST RECOMMENDED.
Protective Gloves: NEOPRENE, NATURAL RUBBER GLOVES.
Eye Protection: ANSI APPROVED CHEM WORKERS GOGGS .
Other Protective Equipment: ANSI APPRVD EMER EYE WASH & DELUGE SHOWER . CHEMICALLY RESISTANT COVERALLS, HAT, AND SHOES OR BOOTS.
Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.
Supplemental Safety and Health
FIRST AID PROC: CONTAMINATED CLOTH & FOOTWEAR. WASH BEFORE REUSE.

DISCARD FOOTWEAR IF IT CANNOT BE DECONTAMINATED. IF IRRITATION CONTINUES, SEEK MED ATTN. EYES:IMMED FLUSH W/PLENTY OF H*2O FOR AT LEAST 15 MIN HOLDING LIDS APART TO ENSURE FLUSHING OF ENTIRE SURF. WASHING EYES WITHIN SEVERAL SECONDS OF EXPOSURE (ING 3)

========== Physical/Chemical Properties ==========

Solubility in Water: TOTAL
Appearance and Odor: OFF-WHITE LIQUID

========== Stability and Reactivity Data ==========

Stability Indicator/Materials to Avoid: ALKALIS.
Stability Condition to Avoid: STABLE UNDER NORMAL CONDITIONS.
Hazardous Decomposition Products: TOXIC OXIDES OF SULFUR, IODIUM, IODINE

========== Disposal Considerations ==========

Waste Disposal Methods: DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

========== Transportation Data: ==========

TRANSPORTATION PER MFR'S MSDS: NOT DOT CONTROLLED MATERIAL

========== Haz Com Label ==========

Product ID: METAL ACTIVATOR SOLUTION
Company Name:P & A SALES
Address:2420 HOLLY NECK BLVD
Box:City:BALTIMORE
State:MD
ZIP:21221

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Product and company identification

Product name	Moly-Dee Tapping Fluid
MSDS #	452705
Historic MSDS #:	05086-BE BW
Code	452705-US03 US02
Product use	Lubricant For specific application advice see appropriate Technical Data Sheet or consult our company representative.
Manufacturer	Castrol Industrial North America, Inc. 150 W. Warrenville Road Naperville, IL 60563
Supplier	Castrol Industrial North America, Inc. 150 W. Warrenville Road Naperville, IL 60563 Product Information: 1-800-621-2661
EMERGENCY SPILL INFORMATION:	1 (800) 424-9300 CHEMTREC (USA)

2. Hazards identification

Physical state	Liquid.
Color	Green.
Emergency overview	CAUTION ! MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis. In accordance with good industrial hygiene and safety work practices, airborne exposures should be controlled to the lowest extent practicable. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
Routes of entry	Dermal contact. Eye contact. Inhalation. Ingestion.
Potential health effects	
Eyes	May cause eye irritation.
Skin	May cause skin irritation. Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis.
Inhalation	May cause respiratory tract irritation.
Ingestion	No known significant effects or critical hazards.

See toxicological information (section 11)

3. Composition/information on ingredients

Ingredient name	CAS #	%
Base oil - highly refined	Varies	10 - 15
C14-17 chlorinated paraffin	61788-76-9 / 85535-85-9	5 - 10

4. First aid measures

Eye contact	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if symptoms occur.
Skin contact	Immediately wash exposed skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.
...ıalation	If inhaled, remove to fresh air. Get medical attention if symptoms occur.
Ingestion	Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If potentially dangerous quantities of this material have been swallowed, call a physician immediately. Get medical attention if symptoms occur.

5. Fire-fighting measures

Flash point	Open cup: 143°C (289.4°F) [Cleveland.]
Fire/explosion hazards	In a fire or if heated, a pressure increase will occur and the container may burst.
Extinguishing media	
Suitable	Use an extinguishing agent suitable for the surrounding fire.
Not suitable	Do not use water jet.
Fire-fighting procedures	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Hazardous combustion products	Combustion products may include the following: halogenated compounds carbonyl halides carbon oxides (CO, CO_2) (carbon monoxide, carbon dioxide) sulfur oxides (SO_2, SO_3 etc.)
Protective clothing (fire)	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

...sonal precautions	No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. In accordance with good industrial hygiene and safety work practices, airborne exposures should be controlled to the lowest extent practicable. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
Environmental precautions	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Methods for cleaning up	
Large spill	Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.
Small spill	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

7. Handling and storage

Handling

Put on appropriate personal protective equipment (see section 8). Workers should wash hands and face before eating, drinking and smoking. Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate.

rage

Store in accordance with local regulations. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10). Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

Occupational exposure limits

Ingredient name	Occupational exposure limits
Base oil - highly refined	**ACGIH (United States).** STEL: 10 mg/m³ 15 minute(s). Form: Mineral oil, mist TWA: 5 mg/m³ 8 hour(s). Form: Mineral oil, mist **OSHA (United States).** TWA: 5 mg/m³ 8 hour(s). Form: Mineral oil, mist

While specific OELs for certain components may be shown in this section, other components may be present in any mist, vapor or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

Some states may enforce more stringent exposure limits.

Control Measures

Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.

Personal protection

es

Avoid contact with eyes. Safety glasses with side shields or chemical goggles.

Skin and body

Avoid contact with skin and clothing. Wear suitable protective clothing.

Respiratory

Use adequate ventilation. In accordance with good industrial hygiene and safety work practices, airborne exposures should be controlled to the lowest extent practicable.

Hands

The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

9. Physical and chemical properties

Physical state	Liquid.
Color	Green.
Odor	Hydrocarbon.
Flash point	Open cup: 143°C (289.4°F) [Cleveland.]
Density	1050 kg/m³ (1.05 g/cm³) at 15.6°C
Viscosity	Kinematic: 110 mm²/s (110 cSt) at 40°C
Solubility	insoluble in water.

10. Stability and reactivity

Stability and reactivity	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur.
nditions to avoid	Avoid all possible sources of ignition (spark or flame).
ıncompatibility with various substances	Reactive or incompatible with the following materials: oxidizing materials.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Hazardous polymerization	Under normal conditions of storage and use, hazardous polymerization will not occur.

11. Toxicological information

Other Toxicity Data

Chlorinated Paraffin: The specific chlorinated paraffin included in this product has not been tested or proven to cause adverse health effects. Other chlorinated paraffins have been tested and show evidence of carcinogenicity in laboratory animals via ingestion.

Other information

Potential chronic health effects

Carcinogenicity	No known significant effects or critical hazards.

12. Ecological information

Ecotoxicity

No testing has been performed by the manufacturer.

13. Disposal considerations

te information	The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

NOTE: The generator of waste has the responsibility for proper waste identification (based on characteristic(s) or listing), transportation and disposal

14. Transport information

International transport regulations

Regulatory information	UN number	Proper shipping name	Class	Packing group	Additional information
DOT Classification	Not regulated.	-	-	-	-
TDG Classification	Not regulated.	-	-	-	-

Information	number				
IMDG Classification	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (C14-17 chlorinated paraffin). Marine pollutant	9	III	Marine pollutant
ATA/ICAO Classification	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (C14-17 chlorinated paraffin)	9	III	**Remarks** Environmentally hazardous substance mark.

15. Regulatory information

U.S. Federal Regulations

United States inventory (TSCA 8b): All components are listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Chlorinated paraffins (>C17)
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Moly-Dee Tapping Fluid: Immediate (acute) health hazard

SARA 313

Form R - Reporting requirements: This product does not contain any hazardous ingredients at or above regulated thresholds.

Supplier notification: This product does not contain any hazardous ingredients at or above regulated thresholds.

CERCLA Sections 102a/103 Hazardous Substances (40 CFR Part 302.4): CERCLA: Hazardous substances.: No products were found.

State regulations

Massachusetts Substances: The following components are listed: MINERAL OIL, PETROLEUM DISTILLATES, HYDROTREATED LIGHT NAPHTHENIC

New Jersey Hazardous Substances: None of the components are listed.

Pennsylvania RTK Hazardous Substances: The following components are listed: OILS, LARD

California Prop. 65: **WARNING:** This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.
lead

Inventories

Canada inventory: All components are listed or exempted.

Europe inventory: All components are listed or exempted.

Australia inventory (AICS): At least one component is not listed.

China inventory (IECSC): All components are listed or exempted.

Japan inventory (ENCS): At least one component is not listed.

Korea inventory (KECI): All components are listed or exempted.

Philippines inventory (PICCS): At least one component is not listed.

16. Other information

Label requirements CAUTION !

MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.

HMIS® Rating :

Health	1
Flammability	1
Physical Hazard	0
Personal protection	B

National Fire Protection Association (U.S.A.)

History

Date of issue 04/14/2010.

Date of previous issue 04/14/2010.

Prepared by Product Stewardship

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from us.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken.

2-18-11
5-16-12

MATERIAL SAFETY DATA SHEET

Product Identification: **Moulder Bed Lube**

Manufactured for:
Woodtech Enterprises
PO Box 2226
Fairview, NC 28730
Telephone: (828) 628-4414

Emergency Telephone Number
Chem-Tel: 1 800 255 3924

Date Prepared: 06/11/08

Signature of Preparer:

SECTION II HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

INGREDIENTS COMPONENTS	CAS NUMBER	OSHA PEL
Petroleum Solvent	64742-48-9	300 ppm
Organo Modified Silicone	68037-76-3	

OSHA HAZARD: COMBUSTIBLE

HMIS RATING

FLAMMABILITY	REACTIVITY	HEALTH
2	0	1

HMIS Key
4- Severe
3- Serious
2- Moderate
1- Slight
0- Minimal

SECTION III PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	Initial 350°F
Specific Gravity (H2O=1)	.78
Vapor Pressure (mm Hg)@25°C	33
Vapor Density (Air = 1):	5.4
Evaporation Rate (Butyl Acetate = 1)	0.1
Melting Point	Less Than 0°F
Solubility in Water % by Wt,	Negligible

Appearance & Odor: Clear colorless liquid with a mild hydrocarbon odor

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SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flash Point: (Method Used) Closed Cup 120°F
Flammable Limits: LEL: 0.7 UEL: 6.5

Extinguishing Media: Foam, Dry Chemical, Water Spray or Fog
Special Fire Fighting Procedures: Avoid hard water streams

Unusual Fire & Explosion Hazards: NONE

SECTION V - REACTIVITY DATA

Stability:	Stable
Conditions to Avoid: NONE	
Hazard Polymerization:	Will Not Occur
Incompatibilities:	Strong Oxidizing Materials
Hazardous Decomposition:	NONE

SECTION VI HEALTH HAZARD DATA

Symptoms of Exposure: High vapor concentrations (>1000 ppm) are irritating to eyes and the respiratory tract, and may cause headaches, dizziness, anesthesia, drowsiness and other central nervous effects. Prolonged skin contact tends to remove skin oils, possibly leading to irritation or dermatitis. However, based on available toxicological data, this product is judged to be neither a "corrosive" nor an "irritant" by OSHA criteria.

Medical Conditions Aggravated: Skin contact may aggravate existing dermatitis.
Carcinogenicity: NTP? NO IARC Monographs? NO OSHA Regulated? NO
Primary Routes of Entry: Inhalation, Eye/Skin contact, Ingestion
Health Hazards: Health studies have shown petroleum solvents to have variable risks among individuals - Therefore exposure to liquids, vapors, mist and fumes should be minimized.

Emergency and First Aid Procedures:
Inhalation Remove to fresh air

Ingestion	Do not induce vomiting. Call Doctor.
Eye Contact	Flush eyes with clear water for a minimum of 15 minutes.
Skin Contact	Remove with soap and water.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Spill Response: Contain spill immediately - Scoop up excess if possible. Use absorbent clay or sand for remaining material. Ventilate area if indoors.

Waste Disposal Method: Incineration or chemical disposal if permitted by Local regulations.

Other Precautions: Avoid breathing vapors. Avoid prolonged and repeated contact with skin.

SECTION VIII - PROTECTION AND PRECAUTIONS

Ventilation: Local Exhaust - Preferred with face velocity 60 ppm
Special: Use with adequate ventilation
Other: Avoid sparks or open flames in area of use
Respiratory Protection: Hot vapors in a confined area - wear hydrocarbon vapor canister breathing mask.
Protective Gloves: Use vinyl or rubber gloves when handling product.
Eye Protection: Goggles.

Other Protective Equipment: Normally not needed.

Work Practices and Controls: Normal Precautions.

SECTION IX - DEPARTMENT OF TRANSPORTATION DATA

DOT Proper Shipping Name:	Petroleum Distillate N.O.S.
DOT Hazard Classification:	Combustible Liquid
DOT Identification Number:	UN1268
DOT Packing Group:	III
Technical Name:	Naphtha Solvent

**Note: In containers of 119 gallons capacity or less, this product is not regulated by DOT. **

CERCLA: If this product is accidentally spilled, it is not subject to any special reporting under the requirements of the Comprehensive Response, Compensation, and Liability Act (CERCLA). we recommend you contact local authorities to determine if there may be other local reporting requirements.

SARA TITLE III: Under the provisions of Title III, Sections 311/312 of the Superfund Amendments and Reauthorization Act, this product is classified into the following hazard categories:
Delayed Health, Fire.

DISCLAIMER

Information presented herein has been compiled from information provided to us by our suppliers and other sources considered to be dependable and is accurate and reliable to the best of our knowledge and belief but is not guaranteed to be so. We make no warranty as to the results to be obtained in using any material and since conditions of use are not under our control, we must necessarily disclaim all liability with respect to the use of any material supplied by us.

4-12-12

PRODUCT INFORMATION AND DATA SHEET

This product is a manufactured article as described in 29 CFR 1910.1200 and is not subject to OSHA's Hazard Communication Standard requirements for preparation of material safety data sheets (MSDS).

SANYO Batteries	**Manufacturer's Name**	**In case of emergency contact:**
SANYO Energy (USA) Corp. 2055 Sanyo Ave. San Diego, CA 92154 Telephone No.: (619) 661-4888 www.sanyobatteries.com	SANYO Electric Co., Ltd. Tokonabe-Cho Kasai-City Hyogo, 675-2332, Japan Telephone No.: 0790-43-2043	CHEMTREC at (800) 424-9300

Section I – Product Information

Product: Nickel Cadmium Battery **Designated for Recharge?** _X_ Yes ____ No

Trade Name: CADNICA **Chemical System:** Nickel Cadmium **Nominal Voltage**: 1.2V

Section II – Composition / Information on Ingredients

The ingredients are contained in a hermetically sealed case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, hazardous materials are fully contained inside the battery. The battery should not be opened or exposed to heat because exposure to the following ingredients contained within could be harmful under some circumstances. The following information is provided for the user's information only.

Chemical Name	CAS No.	%[1]	PEL	TLV
Cadmium	7440-43-9	11-26	0.005 TWA[2]	0.05 TWA
Cadmium hydroxide	21041-95-2	11-26	0.005 TWA	0.05 TWA
Nickel (powder)	7440-02-0	8-17	1 TWA	1 TWA
Nickel hydroxide	12054-48-7	5-12	1 TWA	1 TWA
Potassium hydroxide	1310-58-3	< 3	2 Ceiling	2 Ceiling
Nylon	N/A	< 2	N/A	N/A
Steel	N/A	12-13	N/A	N/A
Other	N/A	< 1	N/A	N/A
Total		100		

Notes: 1. Concentrations vary depending on the state of charge or discharge.
2. TWA is the time weighted average concentration over an 8-hour period.

Section III – Physical Data

Cadmium Melting point (°F): 610 Boiling point (°F): 1,407 % Volatile by Volume: Vapor Pressure (mm Hg): Evaporation Rate: Vapor Density (Air =1): Specific Gravity (H2O): 8.65 @77¡F Solubility in Water: Insoluble Appearance and Odor: Silver-white, blue-tinged, lustrous metal Electrolyte specific gravity : 1.29 g/cm^3 Electrolyte viscosity : 2.4 mPas (* mPas : milli-pascal second)	**Cadmium Hydroxide** Melting Point (°F): Boiling Point (°C): % Volatile by Volume: Vapor Pressure (mm Hg): Evaporation Rate: Vapor Density (Air =1): Specific Gravity(H2O): 4.79 Solubility in Water: Practically insoluble Appearance and Odor: Powder
Nickel Powder Melting point (°F): 2,831 Boiling point (°F): 5,134 % Volatile by Volume: Vapor Pressure (mm Hg): Evaporation Rate: Vapor Density (Air =1): Specific Gravity (H2O): 8.90 Solubility in Water: Insoluble Appearance and Odor: Powder	**Nickel Hydroxide** Melting point (°F): * Boiling Point (°F): % Volatile by Volume: Vapor Pressure (mm Hg): Evaporation Rate: Vapor Density (Air = 1): Specific Gravity (H2O): Solubility in Water: Insoluble Appearance and Odor: Apple green powder * Note: decomposes above 392¡F into NiO and H2O.
Potassium Hydroxide: Melting point (°F):* Boiling Point (°F): % Volatile by Volume: Vapor Pressure (mm Hg): Evaporation Rate: Vapor Density (Air =1): Specific Gravity (H2O): Solubility in Water: Soluble in 0.9 part water, 0.6 part in boiling water Appearance and Odor: White or slightly yellow * Note: Potassium hydroxide is present as a liquid or paste and acts as the electrolyte in the battery cell.	

Section IV – Fire and Explosion Hazard Data

Flash Point: NA Lower Explosive Limit: NA Upper Explosive Limit: NA	Extinguishing Media: Any class of extinguishing medium may be used on the batteries or their packing material.
Special Fire Fighting Procedures: Special Fire Fighting Procedures: Exposure to temperatures of above 212°F can cause evaporation of the liquid content of the potassium hydroxide electrolyte resulting in the rupture of the cell. Potential for exposure to cadmium fumes during fire; use self-contained breathing apparatus.	

Section V – Health Hazard Data

Threshold Limit Values: See Section II

Effects of a Single (Acute) Overexposure:

Inhalation: During normal use inhalation is an unlikely route of exposure due to containment of hazardous materials within the battery case. However, should the batteries be exposed to extreme heat or pressures causing a breach in the battery cell case, exposure to the constituents may occur. Inhalation of cobalt dusts may result in pulmonary conditions.

Ingestion: If the battery case is breached in the digestive tract, the electrolyte may cause localized burns.

Skin Absorption: No evidence of adverse effects from available data.

Skin Contact: Exposure to the electrolyte contained inside the battery may result in chemical burns. Exposure to nickel may cause dermatitis in some sensitive individuals.

Eye Contact: Exposure to the electrolyte contained inside the battery may result in severe irritation and chemical burns.

Carcinogenicity: Nickel has been identified by the National Toxicology Program (NTP) as reasonably anticipated to be a carcinogen. Cobalt has been identified by IARC as a 2B carcinogen.

Other Effects of Repeated (Chronic) Exposure: Chronic overexposure to nickel may result in cancer; dermal contact may result in dermatitis in sensitive individuals.

Medical Conditions Aggravated by Overexposure: A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure in unlikely to aggravate existing medical conditions.

Emergency and First Aid Procedures: Swallowing: Do not induce vomiting. Seek medical attention immediately.

Skin: If the internal cell materials of an opened battery cell comes into contact with the skin, immediately flush with water for at least 15 minutes.

Inhalation: If potential for exposure to fumes or dusts occurs, remove immediately to fresh air and seek medical attention.

Eyes: If the contents from an opened battery comes into contact with the eyes, immediately flush eyes with water continuously for at least 15 minutes. Seek medical attention.

Section VI – Reactivity Data

The batteries are stable under normal operating conditions.

Hazardous polymerization will not occur.

Hazardous decomposition products: oxides of nickel and cadmium.

Conditions to avoid: heat, open flames, sparks, and moisture.

Potential incompatibilities (i.e., materials to avoid contact with): The battery cells are encased in a non-reactive container; however, if the container is breached, avoid contact of internal battery components with acids, aldehydes, and carbamate compounds.

Section VII – Spill and Leak Procedures

Spill and leaks are unlikely because cells are contained in a hermetically sealed case. If the battery case is breached, don protective clothing that is impervious to caustic materials and absorb or pack spill residues in inert material. Dispose of as a hazardous waste in accordance with applicable state and federal regulations. Resultant spill residues may be characterized as D002 (caustic) and D006 (cadmium) pursuant to the federal Resource Conservation and Recovery Act (RCRA). See Section IV for response to fires or explosions.

Section VIII – Safe Handling and Use

Ventilation Requirements: Not required under normal use.
Respiratory Protection: Not required under normal use.
Eye Protection: Not required under normal use.
Gloves: Not required under normal use.

Section IX – Precautions for Safe Handling and Use

Storage: Store in a cool place, but prevent condensation on cell or battery terminals. Elevated temperatures may result in reduced battery life. Optimum storage temperatures are between -31°F and 95°F.

Mechanical Containment: If there are special encapsulation or sealing requirements, consult your SANYO Energy Corp. representative about possible cell hazard precautions or limitations.

Handling: Accidental short circuit will bring high temperature elevation to the battery as well as shorten the battery life. Be sure to avoid prolonged short circuit since the heat can burn attendant skin and even rupture of the battery cell case. Batteries packaged in bulk containers should not be shaken. Metal covered tables or belts used for assembly of batteries into devices can be the source of short circuits; apply insulating material to assembly work surface. If soldering or welding to the case of the battery is required, consult your Sanyo Energy Corp. representative for proper precautions to prevent seal damage or external short circuit.

Charging: This battery is designed for recharging. A loss of voltage and capacity of batteries due to self-discharge during prolonged storage is unavoidable. Charge battery before use. Observe the specified charge rate since higher rates can cause a rise in internal gas pressure that may result in damaging heat generation or cell rupture and/or venting.

Labeling: If normal label warnings are not visible, it is important to provide a device label stating: CAUTION: Do not dispose in fire, mix with other battery types, charge above specified rate, connect improperly, or short circuit, which may result in overheating, explosion or leakage of cell contents.

Soldering/welding: If soldering or welding to the case of the battery is required, consult your Sanyo Energy Corp. representative for proper precautions to prevent seal damage or external short circuit.

Section X – Recycling and Disposal

SANYO encourages battery recycling. Our nickel cadmium batteries are recyclable through the Rechargeable Battery Recycling Corporation's (RBRC) ***Charge Up to Recycle! Program.*** For information call 1-800-8-BATTERY or see their website at www.rbrc.org. Nickel cadmium batteries must be handled in accordance with all applicable state and federal laws and regulations.

DO NOT INCINERATE or subject battery cells to temperatures in excess of 212 F. Such treatment can vaporize the liquid electrolyte causing cell rupture. Incineration may result in cadmium emissions.

Section XI – Transportation

SANYO sealed Nickel Cadmium batteries are considered to "dry cell" batteries and not subject to hazardous materials (dangerous goods) regulations for the purpose of transportation by the U.S. Department of Transportation (DOT), the International Civil Aviation Organization (ICAO), the International Air Transport Association (IATA) or the International Maritime Organization (IMO).

The only DOT requirement for shipping Nickel Cadmium batteries are contained in Special Provision 130 which states, "*Batteries, dry" are not subject to the requirements of this subchapter when they are securely packaged and offered for transportation in a manner that prevents the dangerous evolution of heat (for example, by the effective insulation of exposed terminals) and protects against short circuits.*" A similar requirement is contained in 49 CFR 173.21(c) of the U.S. DOT hazardous materials regulations.

The IATA Dangerous Goods Regulations contain a similar requirement in Special Provision A123 that states, "*This entries applies to Batteries, electric storage, not otherwise listed in Subsection 4.2 – List of Dangerous Goods. Examples of such batteries are alkali-manganese, zinc-carbon, nickel-metal hydride, and nickel cadmium batteries. Any electrical battery or battery powered device having the potential of dangerous evolution of heat that is not prepared so as to prevent a short-circuit (e.g. in the case of batteries, by the effective insulation of exposed terminals; or, in the case of equipment, by disconnection of the battery and protection of exposed terminals) is forbidden from transport.*"

Failure to comply with these requirements may result in substantial civil penalties.

The information and recommendations set forth are made in good faith and believed to be accurate as of the date of preparation. SANYO ENERGY CORP. makes no warranty, expressed or implied, with respect to this information and disclaims all liabilities from reliance on it.

WALLCOLMONOY
HI TEMP BRAZING ALLOYS

3-26-14

NICROBRAZ® LM
Brazing Filler Metals

Section 1: Identification

Product Name:	**Nicrobraz® LM**
MSDS Issue Date:	October 24, 2013 (supersedes all previous issues)
Synonyms:	AWS A5.8 BNi-2, AMS 4777, Nicrobraz LM-665, LMP, AMS 4777-1S
CAS Number(s):	See section 3.
Product Usage:	Brazing Filler Metal Powder

Manufacturer: **Wall Colmonoy Corporation**
101 W. Girard
Madison Heights, MI 48071-1880

Phone: 800-521-2412
Fax: 248-585-7960
E-Mail: wcc@wallcolmonoy.com
Web Site: www.wallcolmonoy.com

Transportation Emergency Number: CHEMTREC 800-424-9300
International 703-527-3887

Section 2: Hazard(s) Identification

Health – Environmental – Physical		
Respiratory and Skin Sensitization	GHS Category 1	Danger
Target Organ Systemic Toxicity (single exposure)	GHS Category 1 (respiratory apparatus, kidney)	
Target Organ Systemic Toxicity (repeated exposure)	GHS Category 1 (respiratory apparatus)	
Carcinogenicity	GHS Category 2 (suspected of causing cancer)	
Aquatic Toxicity (chronic)	Category 4 (may cause long lasting harmful effects to aquatic life)	

This product is intended for industrial use by trained individuals. Keep away from children.

Section 3: Composition / Information on Ingredients

Components of mixture*	CAS Number	Weight percentage**
Nickel	7440-02-0	60 – 100
Chromium	7440-47-3	5 – 10
Boron	7440-42-8	1 – 5
Iron	7439-89-6	1 – 5
Silicon	7440-21-3	3 – 7

* This material is a homogenous metallic alloy of the components listed above.
** This is a general reporting range and is not a product specification.

Exposure limits: See Section 8.

Section 4: First Aid Measures

Exposure Route	Acute	Chronic (delayed)
Eye contact	Eye irritation. Flush with water for 15 minutes or until all particles are removed.	If irritation persists seek medical attention.
Skin contact	Itching, irritation or rash. Remove contaminated clothing. Wash skin with mild soap and water.	If irritation or rash persists seek medical attention.
Inhalation	Difficulty breathing, coughing, metal fume fever. Remove exposed person to fresh air. If not breathing administer CPR.	If symptoms persist seek medical attention.
Ingestion	Rinse mouth. If large amount, induce vomiting. Seek medical advice.	Seek medical attention.

Never give anything by mouth to an unconscious person. Treat symptomatically and supportively.

Section 5: Firefighting Measures

Suitable Extinguishing Media: Material is not readily combustible. Do not use water on metal fires, use dry chemical, dry sand or carbon dioxide to smother fire.

Specific Hazards during a Fire: Material may break down in fire and may produce toxic decomposition products associated with ingredients. Extreme oxidizing conditions may cause formation of metal oxides. These oxides may be carcinogens.

Protective Equipment: SCBA and full protective gear is recommended for fire fighting.

Section 6: Accidental Release Measures

- Stay out of spill, floor may be slippery.
- Do not create airborne dust.
- Do not allow spill to enter floor drains or storm drains.
- Wear PPE: Respirator and Safety Goggles.
- Take up with damp sweeping compound or vacuum. Vacuum should be equipped with HEPA filter on exhaust. Transfer into disposal container(s). Dispose by recycling.
- A spill of greater than 100 lbs (Nickel RQ 100 lbs, <106µm) which enters the environment requires reporting per OSHA CFR Title 40 Part 372 paragraph 372.4 CERCLA hazardous substance release.

Section 7: Handling and Storage

- General and/or point ventilation system with dust collection is recommended to ensure exposure do airborne dust is maintained below allowable exposure limits.
- Wear PPE such as work gloves (or vinyl/latex gloves), safety glasses/goggles. Respiratory protection is recommended, but is required only when exposure limits are be exceeded.
- Wash hands after use before eating or smoking.
- Do not eat or smoke in area where material is being used.
- Store in tightly closed container. For best results, keep product above the ambient dew point temperature.
- Not a shelf life limited material.

Section 8: Exposure Controls / Personal Protection

Exposure Limits:

Components of mixture	CAS Number	OSHA PEL	ACGIH TLV
Nickel	7440-02-0	1.0 mg/m³	1.5 mg/m³
Chromium	7440-47-3	1.0 mg/m³	0.5 mg/m³
Boron	7440-42-8	15 mg/m³ (5 mg/m³ respirable)	10 mg/m³ as boron oxide
Iron	7439-89-6	10 mg/m³ as oxide fume	5 mg/m³ as respirable oxide
Silicon	7440-21-3	15 mg/m³ (5 mg/m³ respirable)	Not listed

Engineering Controls:

- Local exhaust ventilation may be necessary to control air contaminants to their exposure limits.
- Provide mechanical ventilation for confined spaces or if method of use warrants.

Personal Protective Equipment:

- Gloves – work gloves or non-permeable gloves such as vinyl or latex.
- Eyes – safety glasses/goggles or face shield.
- Clothing – Cover-all, lab coat or normal work clothing.
- Respirator – NIOSH N-95 or N-100 filtering face-piece (dust mask) or equivalent alternative is recommended for up to 10 times the exposure limits.

Section 9: Physical and Chemical Properties

Physical State	Finely divided powder
Odor	None
Odor Threshold	Not available
PH	Not applicable
Melting Point / Freezing Point	>1500°F (>815°C)
Boiling Point	>3000°F (>1648°C)
Flash Point	None
Evaporation Rate (butyl acetate =1)	None
Flammability	Not applicable
LFL (LEL) lower flammability (explosive) limit	Not applicable
UFL (UEL) upper flammability (explosive) limit	Not applicable
Vapor Pressure	Not applicable
Vapor Density	Not applicable
Specific Gravity (Bulk Density)	~4 g/cc
Solubility	Not water soluble
Partition Coefficient (n-octanol/water)	Not available
Autoignition Temperature	Not available
Decomposition Temperature	Not available
% VOC's	0%

Section 10: Stability and Reactivity

- **Chemical Stability:** This material is stable.
- **Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.
- **Conditions to Avoid:** None
- **Incompatible Materials:** Strong acids and/or oxidizers.
- **Hazardous Decomposition Products**: Intense heat may produce carbon monoxide and/or carbon dioxide and oxidizing conditions may produce oxides of the ingredients shown in Section 3. Oxides of these ingredients may be carcinogenic.

Section 11: Toxicological Information

Likely Routes of Exposure: Skin contact, inhalation of dust.

Skin Contact: May cause sensitivity, dermatitis or allergic reaction.
Contact toxicity data not available. GHS Category 1

Inhalation of Dust: Prolonged inhalation of dust may cause pulmonary irritation, asthma, coughing, shortness of breath.

Ingestion of Dust or powder: Ingestion of dust or powder is an unlikely route of exposure.

Ingredient Name	Oral Toxicity (LD50)	Inhalation Toxicity (LC50)
Nickel (metallic)	Oral rat LDLo 5,000 mg/kg	*
Chromium (metallic)	*	*
Boron	Oral rat 650 mg/kg	*
Iron	Oral rat 30,000 mg/kg	*
Silicon	Oral rat 3,160 mg/kg	*

Carcinogenicity: GHS Category 2

Ingredient Name	NTP Status		IARC Category	OSHA	CA Prop. 65*
	Known	Anticipated			
Nickel (metallic)	No	Yes	2B	No	Yes
Chromium (metallic)	No	No	3	No	No
Boron	No	No	None	No	No
Iron	No	No	None	No	No
Silicon	No	No	None	No	No

*This product contains a chemical known to the State of California to cause cancer.

Section 12: Ecological Information

- **Aquatic Toxicity:** Acute - None, Chronic - GHS Category 4

Section 13: Disposal Consideration

- Material should be recycled to reclaim scrap metal value.
- If recycling is not possible dispose of in accordance with local, state, and federal regulations for industrial wastes of this form.

Section 14: Transport Information

DOT Classification	Not regulated unless greater than 100 lbs per inner container.
UN Identification Number	Not regulated unless greater than 100 lbs per inner container.
DOT Shipping Description	Not applicable unless greater than 100 lbs per inner container.

Section 15: Regulatory Information

Toxic Substances Control Act (TSCA)	All ingredients are listed on the TSCA inventory of chemical substances.
Superfund Amendments & Reauthorization Act (SARA)	This product contains Nickel and Chromium.
Resource Conservation & Recovery Act (RCRA)	This material is not a hazardous waste. It is Recyclable.
RoHS & REACH	None

Hazard Codification & Labeling Requirements
H317 – May cause an allergic skin reaction (nickel).
H351 – Suspected of causing cancer (nickel, chromium).
H370 - Target organ (acute), respiratory apparatus, kidney.
H372 – Target organ (chronic), respiratory apparatus.

Section 16: Other Information

NFPA Numbers (estimated)	Health: 2	Flammability: 0	Reactivity: 0

WHMIS Category: Class D, Division 2: Nickel and Chromium

The information supplied herein follows the guidelines of WHMIS, GHS and OSHA Hazard Communication Standard 29 CFR 1910.1200, and to the best of our knowledge, is accurate and complete. The recommended hygiene and handling practices are believed to be appropriate for the use of this material. However, it is up to the end user to review this information and establish their own procedures and guidelines, based upon their particular application(s). Wall Colmonoy Corporation assumes no responsibility for damage or injury resulting from the end use of this product.

4-12-12

The Clorox Company
1221 Broadway
Oakland, CA 94612
Tel. (510) 271-7000

Material Safety Data Sheet

I Product: ORIGINAL PINE-SOL® BRAND CLEANER 1

Description: CLEAR, AMBER, THIN LIQUID WITH CHARACTERISTIC PINE ODOR

Other Designations	Distributor	Emergency Telephone Nos.
EPA Reg. No. 5813-83	Clorox Sales Company 1221 Broadway Oakland, CA 94612	For Medical Emergencies, call 1-800-446-1014. For Transportation Emergencies, call 1-800-424-9300 (Chemtrec).

II Health Hazard Data

Causes substantial but temporary eye injury.

No medical conditions are known to be aggravated by exposure to this product.

FIRST AID:

EYE CONTACT: Hold eye open and rinse with water for 15-20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing eye. If irritation persists, call a doctor.

SKIN CONTACT: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. If irritation develops, call a doctor.

INGESTION: Call a poison control center or doctor immediately for treatment advice. Have person sip a glassful of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

INHALATION: Remove to fresh air. If breathing is affected, call a doctor.

III Hazardous Ingredients

Ingredient	Concentration	Worker Exposure Limit
Pine oil CAS # 8002-09-3	8 - 10%	Not established.
Alkyl alcohol ethoxylates CAS # 127036-24-2	3 - 7%	Not established.
Isopropyl alcohol CAS #67-63-0	1 - 5%	200 ppm - TLV-TWA[a] 400 ppm - PEL[b] 400 ppm - TLV-STEL[c]
Sodium petroleum sulfonate CAS # 68608-26-4	1 - 5%	Not established.

[a]TLV-TWA = ACGIH Threshold Limit Value - Time Weighted Average

[b]PEL = OSHA Permissible Exposure Limit - Time Weighted Average

[c]TLV-STEL = ACGIH Threshold Limit Value - Short Term Exposure Limit

None of the materials in this product are on the IARC, OSHA, or NTP carcinogen lists.

IV Special Protection and Precautions

Hygienic Practices: Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.

Engineering Controls: Use general ventilation or local exhaust to minimize exposure to vapor or mist.

Personal Protective Equipment: Wear safety glasses. Wear rubber or neoprene gloves if there is the potential for repeated or prolonged skin contact. In situations where exposure limits may be exceeded, a NIOSH-approved respirator is advised.

V Transportation and Regulatory Data

DOT: Not restricted per 49 CFR 173.120(a)(3) and Appendix H.

IMDG: Not restricted per IMDG Code Page 0016 Paragraph 5.1.3.1.1.

IATA: Not restricted per IATA D.G.R. Sections 3.3.1.2 and 3.3.5.

EPA - SARA Title III/CERCLA: This product is regulated under Sections 311/312. This product contains no chemicals which are regulated under Section 313 and contains benzoic acid (CAS #65-85-0, <1%) which is regulated under Section 304/CERCLA.

VI Spill Procedures/Waste Disposal

Spill Procedures: Absorb and containerize. Wash residual down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material.

Waste Disposal: Dispose of in accordance with all applicable federal, state, and local regulations.

VII Reactivity Data

Stable under normal use and storage conditions.

VIII Fire and Explosion Data

Flash Point: 121° F (Tag closed cup).

Fire Extinguishing Agents: Dry chemical, carbon dioxide (CO_2), foam, or water spray.

IX Physical Data

pH	3.0 - 4.0
Specific gravity	~1.0
Solubility in water	Appreciable

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DATA SUPPLIED IS FOR USE ONLY IN CONNECTION WITH OCCUPATIONAL SAFETY AND HEALTH

DATE PREPARED 6/05

4-12-1

MATERIAL SAFETY DATA SHEET

BIRCHWOOD CASEY®
OXYPRIME INDICATOR

DATE REVISED: 6/1/10
REVISION MSDS NO. 3

this is part of the Go/no GO Test kit in MSDS

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **OXYPRIME INDICATOR**

MANUFACTURED BY: BIRCHWOOD LABORATORIES, INCORPORATED
7900 Fuller Road
Eden Prairie, MN 55344 USA
Product Information Telephone Number: (952) 937-7900 (8:00-4:00pm C
Fax Number: (952) 937-7979
www.birchwoodcasey.com

24 HOUR TRANSPORTATION EMERGENCY NUMBER: CHEMTREC 800-424-9300 U.S. & CANADA
703-527-3887 INTERNATIONAL (Collect)
24 HOUR POISON CONTROL EMERGENCY NUMBER: 866-291-7152 U.S. & CANADA

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: **CAUTION!** Irritating to eyes, skin, upper respiratory tract. **Combustible liquid.** Keep away from sparks and open flames.

APPEARANCE/ODOR: Clear colorless liquid, solvent odor

EYE CONTACT: Irritation upon direct contact.

SKIN CONTACT: Irritation and possible dermatitis. May be absorbed through the skin in harmful amounts.

INGESTION: Irritation to the gastrointestinal tract.

INHALATION: Inhalation of high vapor concentrations may cause central nervous system effects, and symptoms such as headache, dizziness, disorientation.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Description	CAS #	Weight %	OSHA PEL* TWA	OSHA PEL STEL/C	ACGIH TLV TWA	ACGIH TLV STEL/C
Dipropylene Glycol Monomethyl Ether	34590-94-8	<59	100 ppm(Skin)	NE	100 ppm(Skin)	150 ppmSTEL
Thymolphthalein	1913-93-5	<1	NE	NE	NE	NE
Water	7732-18-5	<40	NE	NE	NE	NE

TWA – Time-weighted Average **STEL** – Short-term exposure limit **C** – Ceiling
(skin) – skin designation means that harmful amounts may be absorbed through the skin
* Certain States enforce PELs that were in place in 1989, but were later removed by the U.S. Supreme Court. Check with your State OSHA to determine which PEL is enforced in your State.
NE = not established **NA** = not applicable **NDA** = no data available

4. FIRST AID MEASURES

EYE CONTACT: Flush immediately with clean water. Continue for at least 15 minutes. Seek medical attention if necessary.

SKIN CONTACT: Remove contaminated clothing to avoid prolonged contact. Wash affected areas with water. Seek medical attention if irritation develops.

INGESTION: If conscious and alert, rinse mouth and drink 1-2 cups of milk or water. Call Poison Control Center immediately. Do not induce vomiting.

INHALATION: Remove from exposure. Seek medical attention if necessary if breathing is difficult.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASHPOINT: >212°F METHOD USED: Open Cup

FLAMMABLE LIMITS: LFL: NDA UFL: NDA

EXTINGUISHING MEDIA: Water spray or carbon dioxide.

FIRE & EXPLOSION HAZARDS: NDA

SPECIAL FIRE FIGHTING PROCEDURES: Firefighters should wear approved SCBA and full turn-out gear.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Wear recommended protective equipment. Eliminate ignition sources. Ventilate area. Absorb material on dry sorbent. Scoop up for disposal using non-sparking tools only.

Review current local, state and federal laws, codes, statutes, and regulations to determine appropriate agencies to be notified, and the conditions under which they are to be notified. (See Section 13 for waste disposal comments).

7. HANDLING AND STORAGE

HANDLING: Avoid breathing mists or vapor. Avoid eye and skin contact. Prohibit smoking in the area and exclude sources of spark or open flame. Avoid static discharge. Wear protective equipment when handling product. Keep out of the reach of children.

STORAGE: Store liquid in closed containers. Store in clean, fire-resistant storage area with good ventilation and not subject to high temperatures.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

RESPIRATORY PROTECTION: Use a NIOSH approved respirator (Full or half-face organic vapor cartridge type) if any of the occupational exposure limits in Section 3 may be exceeded.

EYE PROTECTION: safety glasses with side shields, or goggles

PROTECTIVE GLOVES: neoprene or butyl rubber

BODY PROTECTION: NDA

VENTILATION: Use general/dilution or local exhaust ventilation as needed to ensure that occupational exposure limits are not exceeded.

OTHER PROTECTIVE EQUIPMENT: Eyewash

NOTE: All PPE should be selected on the basis of an exposure assessment performed by a competent person.

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: >212°F
VAPOR PRESSURE: NDA
VAPOR DENSITY: (Air = 1): >1
SOLUBILITY IN WATER: Complete
APPEARANCE: Clear, colorless liquid

SPECIFIC GRAVITY: (Water = 1): 0.99
VOLATILE BY VOLUME: > 99 %
EVAPORATION RATE: (Ethyl Ether = 1): < 1
pH: 5.5
ODOR: solvent odor

10. STABILITY AND REACTIVITY

STABILITY: Stable.

CONDITIONS TO AVOID: Avoid high temperatures and ignition sources.

INCOMPATIBILITY (materials to avoid): Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may produce carbon monoxide, carbon dioxide.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

There is no product based toxicological information for this product. Toxicology information is provided based on individual ingredients.

LD_{50s}, oral, rat: 5130 mg/kg (Dipropylene Glycol Monomethyl Ether)

TARGET ORGANS: Eyes, skin, lungs (irritant). Animal studies have shown nominal effects to liver and kidneys. The relevance of these studies to humans is unknown.

Medical conditions that may be aggravated by exposure: Pre-existing skin, eye or respiratory disorders.

Carcinogenicity: IARC: None NTP: None OSHA: None

12. ECOLOGICAL INFORMATION

ECOTOXICITY: NDA

ENVIRONMENTAL FATE: NDA

13. DISPOSAL CONSIDERATIONS

Review current local, state and federal laws, codes, statutes and regulations to determine current status and appropriate disposal method for the ingredients listed in Section 2. Any disposal practice must be in compliance with local, state, and federal laws and regulations. Contact the appropriate agency for specific information. Treatment, transport, storage and disposal of hazardous waste must be dealt with by a licensed facility or waste hauler.

14. TRANSPORT INFORMATION

D.O.T. HAZARDOUS MATERIALS DESCRIPTION AND PROPER SHIPPING NAME:

Not regulated.

15. REGULATORY INFORMATION

TSCA (TOXIC SUBSTANCES CONTROL ACT): The materials in this product are listed on the TSCA Inventory.

CERCLA (Comprehensive Response compensation and Liability Act, 40 CFR 117, 302: Reportable Quantity - NDA

SARA TITLE III (Superfund Amendments and Authorization Act):

Section 311/312:
Immediate Health Effects: Yes
Delayed Health Effects: Yes
Fire Hazard: Yes
Sudden Release of Pressure Hazard: No
Reactivity Hazard: No
Section 313 Reportable Ingredients: None

STATE "RIGHT-TO-KNOW": This product may contain components cited on certain state lists. Consult with your individual State regarding this product's components.

16. OTHER INFORMATION

National Fire Protection Association (NFPA): Health: 1 Flammability: 1 Reactivity: 0

The data here is for hazard communication to our employees, our customers and their employees, and authorized regulatory agencies. For the intended purpose, this MSDS (Material Safety data Sheet) may be duplicated or the data transcribed to an alternative form.
NOTE: The information contained herein is provided in good faith and is believed to be correct as of the date hereof. However, Birchwood Laboratories, Inc. makes no representation as to the comprehensiveness or accuracy of the information. It is expected that individuals receiving the information will exercise their independent judgment in determining its appropriateness for a particular period. Accordingly, Birchwood Laboratories, Inc. will not be responsible for damages of any kind resulting from the use of or reliance upon such information. NO REPRESENTATIONS, OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER NATURE ARE MADE HEREUNDER TO WHICH THE INFORMATION REFERS. The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment.

FOR ASSISTANCE WITH PLACING ORDERS:

- Product Pricing / Payment Terms
- Shipping and Tracing of Shipments
- Sales Rep Locations

Call our Sales Department

1-800-328-6156 or Fax (952) 937-7979

FOR PRODUCT USAGE ASSISTANCE

- Questions on Operation of Products
- Solving Finishing Problems
- Operator Safety and Pollution Control

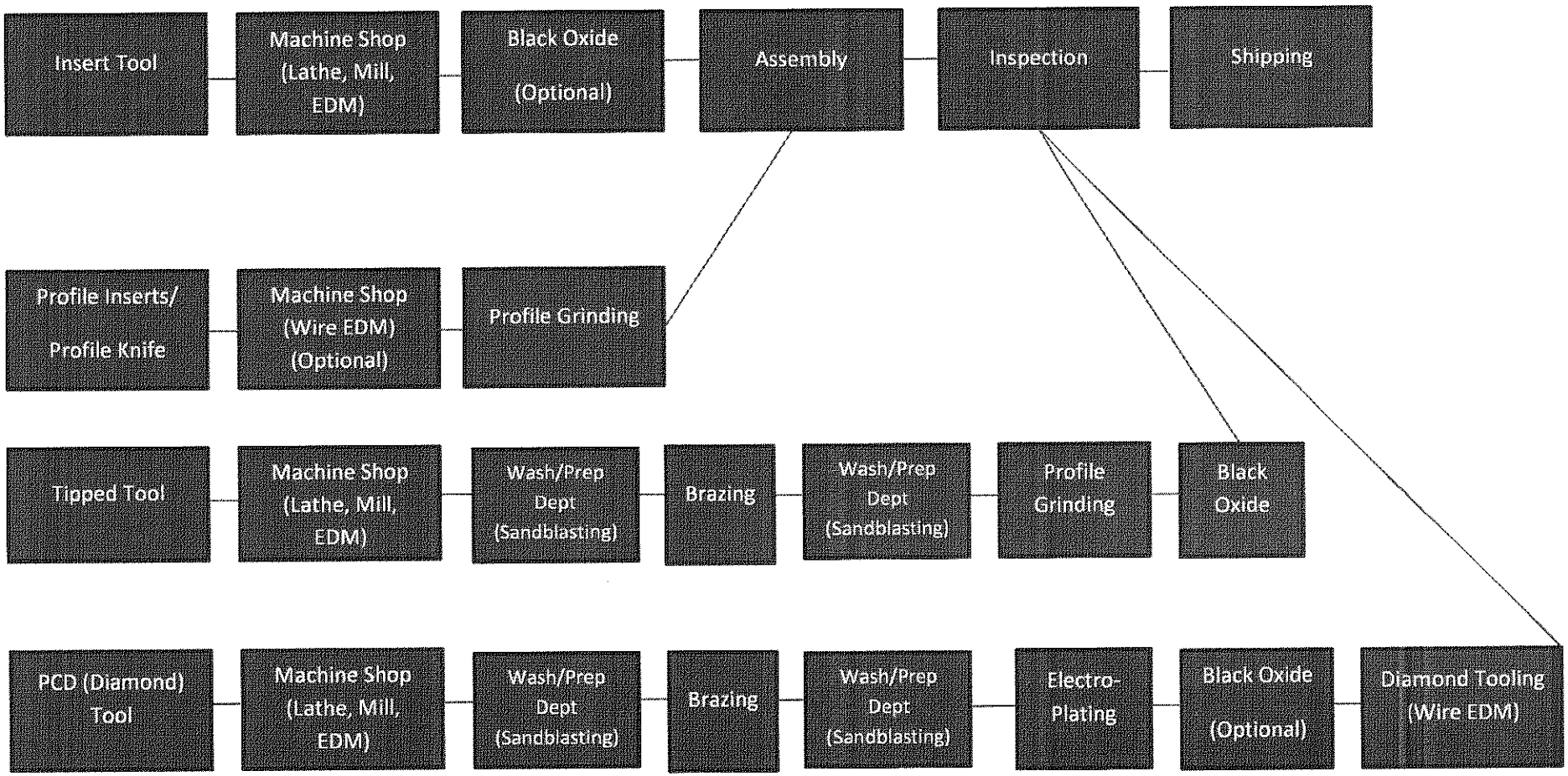
Call our Customer Service Desk (952) 937-7931

Or 1-800-328-6156 or Fax (952) 937-7979

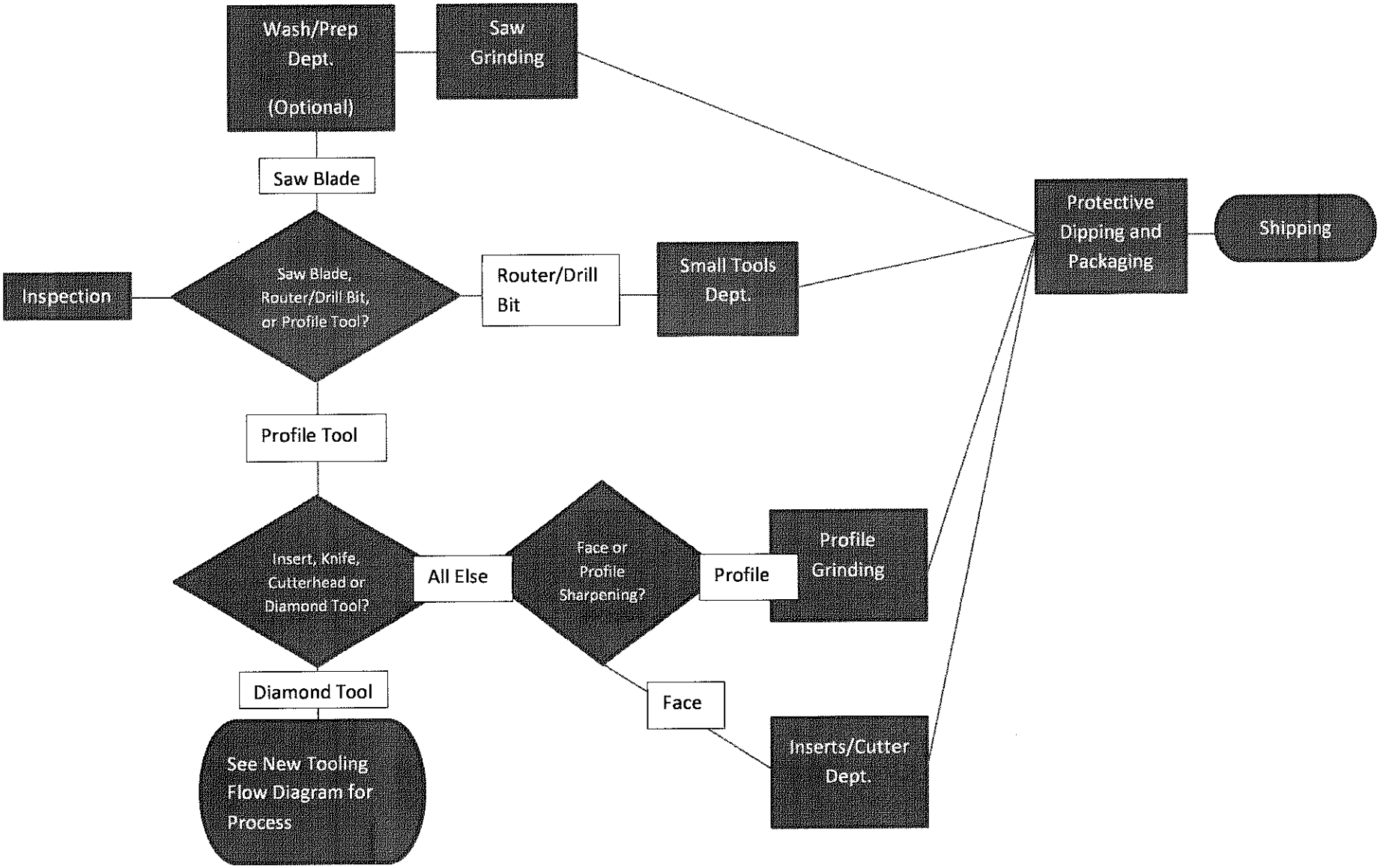
Riverside Tool Corp. Response
Attachment 3

Process Flow Diagrams

New Tooling Flow Diagram



Tool Servicing Flow Diagram



Exemption 4,
5 U.S.C. §552(b)(4)

Confidential Business Information

Riverside Tool Corp. Response
Attachment 4

Safety Kleen Systems, Inc Invoices

Riverside Tool Corp. Response
Attachment 5

Lab Analysis of Disposal Totes

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Pace Analytical Services, Inc.
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Indianapolis, IN 46268
(317)228-3100

June 26, 2014

Ron Migedt
Riverside Tool Corp
3504 Henke Street
Elkhart, IN 46514

RE: Project: Waste Analysis
Pace Project No.: 5099526

Dear Ron Migedt:
Enclosed are the analytical results for sample(s) received by the laboratory on June 19, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Lyle Cable
lyle.cable@pacelabs.com
Project Manager

Enclosures

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7726 Moller Road
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(317)228-3100

CERTIFICATIONS

Project: Waste Analysis
Pace Project No.: 5099526

Indiana Certification IDs
7726 Moller Road, Indianapolis, IN 46268
Illinois Certification #: 200074
Indiana Certification #: C-49-06
Kansas Certification #: E-10247

Kentucky UST Certification #: 0042
Louisiana/NELAP Certification #: 04076
Ohio VAP Certification #: CL-0065
West Virginia Certification #: 330

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Indianapolis, IN 46268
(317)228-3100

SAMPLE SUMMARY

Project: Waste Analysis
Pace Project No.: 5099526

Lab ID	Sample ID	Matrix	Date Collected	Date Received
5099526001	Coolant Waste	Water	06/18/14 13:45	06/19/14 10:28
5099526002	PlateW6/Oxide Waste	Water	06/18/14 13:15	06/19/14 10:28

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SAMPLE ANALYTE COUNT

Project: Waste Analysis
Pace Project No.: 5099526

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
5099526001	**Coolant Waste**	EPA 625	SN	63	PASI-I
		EPA 624	JLZ	39	PASI-I
5099526002	**PlateW6/Oxide Waste**	EPA 625	SN	63	PASI-I
		EPA 624	JLZ	39	PASI-I

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ANALYTICAL RESULTS

Project: Waste Analysis
Pace Project No.: 5099526

Sample: Coolant Waste **Lab ID: 5099526001** Collected: 06/18/14 13:45 Received: 06/19/14 10:28 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
625 MSSV	Analytical Method: EPA 625 Preparation Method: EPA 625							
Acenaphthene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	83-32-9	N2
Acenaphthylene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	208-96-8	N2
Anthracene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	120-12-7	N2
Benzidine	ND	ug/L	25000	10	06/24/14 10:38	06/24/14 21:50	92-87-5	N2
Benzo(a)anthracene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	56-55-3	N2
Benzo(a)pyrene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	50-32-8	N2
Benzo(b)fluoranthene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	205-99-2	N2
Benzo(g,h,i)perylene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	191-24-2	N2
Benzo(k)fluoranthene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	207-08-9	N2
4-Bromophenylphenyl ether	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	101-55-3	N2
Butylbenzylphthalate	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	85-68-7	N2
4-Chloro-3-methylphenol	ND	ug/L	10000	10	06/24/14 10:38	06/24/14 21:50	59-50-7	N2
bis(2-Chloroethoxy)methane	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	111-91-1	N2
bis(2-Chloroethyl) ether	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	111-44-4	N2
bis(2-Chloroisopropyl) ether	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	108-60-1	N2
2-Chloronaphthalene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	91-58-7	N2
2-Chlorophenol	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	95-57-8	N2
4-Chlorophenylphenyl ether	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	7005-72-3	N2
Chrysene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	218-01-9	N2
Dibenz(a,h)anthracene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	53-70-3	N2
1,2-Dichlorobenzene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	95-50-1	N2
1,3-Dichlorobenzene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	541-73-1	N2
1,4-Dichlorobenzene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	106-46-7	N2
3,3'-Dichlorobenzidine	ND	ug/L	10000	10	06/24/14 10:38	06/24/14 21:50	91-94-1	N2
2,4-Dichlorophenol	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	120-83-2	N2
Diethylphthalate	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	84-66-2	N2
2,4-Dimethylphenol	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	105-67-9	N2
Dimethylphthalate	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	131-11-3	N2
Di-n-butylphthalate	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	84-74-2	N2
4,6-Dinitro-2-methylphenol	ND	ug/L	25000	10	06/24/14 10:38	06/24/14 21:50	534-52-1	N2
2,4-Dinitrophenol	ND	ug/L	25000	10	06/24/14 10:38	06/24/14 21:50	51-28-5	N2
2,4-Dinitrotoluene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	121-14-2	N2
2,6-Dinitrotoluene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	606-20-2	N2
Di-n-octylphthalate	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	117-84-0	N2
1,2-Diphenylhydrazine	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	122-66-7	N2
bis(2-Ethylhexyl)phthalate	**5970**	ug/L	2500	10	06/24/14 10:38	06/24/14 21:50	117-81-7	N2
Fluoranthene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	206-44-0	N2
Fluorene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	86-73-7	N2
Hexachloro-1,3-butadiene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	87-68-3	N2
Hexachlorobenzene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	118-74-1	N2
Hexachlorocyclopentadiene	ND	ug/L	10000	10	06/24/14 10:38	06/24/14 21:50	77-47-4	N2
Hexachloroethane	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	67-72-1	N2
Indeno(1,2,3-cd)pyrene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	193-39-5	N2
Isophorone	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	78-59-1	N2
Naphthalene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	91-20-3	N2
Nitrobenzene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	98-95-3	N2
2-Nitrophenol	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	88-75-5	N2

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(317)228-3100

ANALYTICAL RESULTS

Project: Waste Analysis
Pace Project No.: 5099526

Sample: Coolant Waste **Lab ID: 5099526001** Collected: 06/18/14 13:45 Received: 06/19/14 10:28 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
625 MSSV	Analytical Method: EPA 625 Preparation Method: EPA 625							
4-Nitrophenol	ND	ug/L	25000	10	06/24/14 10:38	06/24/14 21:50	100-02-7	N2
N-Nitrosodimethylamine	ND	ug/L	10000	10	06/24/14 10:38	06/24/14 21:50	62-75-9	N2
N-Nitroso-di-n-propylamine	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	621-64-7	N2
N-Nitrosodiphenylamine	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	86-30-6	N2
Pentachlorophenol	ND	ug/L	25000	10	06/24/14 10:38	06/24/14 21:50	87-86-5	N2
Phenanthrene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	85-01-8	N2
Phenol	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	108-95-2	2d,N2, P3
Pyrene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	129-00-0	N2
1,2,4-Trichlorobenzene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	120-82-1	N2
2,4,6-Trichlorophenol	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 21:50	88-06-2	N2
Surrogates								
2-Fluorophenol (S)	0	%.	10-67	10	06/24/14 10:38	06/24/14 21:50	367-12-4	S4
Phenol-d5 (S)	0	%.	10-47	10	06/24/14 10:38	06/24/14 21:50	4165-62-2	S4
Nitrobenzene-d5 (S)	28	%.	29-126	10	06/24/14 10:38	06/24/14 21:50	4165-60-0	S4
2-Fluorobiphenyl (S)	43	%.	31-118	10	06/24/14 10:38	06/24/14 21:50	321-60-8	
2,4,6-Tribromophenol (S)	0	%.	31-161	10	06/24/14 10:38	06/24/14 21:50	118-79-6	S4
p-Terphenyl-d14 (S)	71	%.	28-129	10	06/24/14 10:38	06/24/14 21:50	1718-51-0	
624 Volatile Organics	Analytical Method: EPA 624							
Benzene	ND	ug/L	50.0	10		06/23/14 12:28	71-43-2	1d
Bromodichloromethane	ND	ug/L	50.0	10		06/23/14 12:28	75-27-4	
Bromoform	ND	ug/L	50.0	10		06/23/14 12:28	75-25-2	
Bromomethane	ND	ug/L	50.0	10		06/23/14 12:28	74-83-9	
Carbon tetrachloride	ND	ug/L	50.0	10		06/23/14 12:28	56-23-5	
Chlorobenzene	ND	ug/L	50.0	10		06/23/14 12:28	108-90-7	
Chloroethane	ND	ug/L	50.0	10		06/23/14 12:28	75-00-3	
2-Chloroethylvinyl ether	ND	ug/L	500	10		06/23/14 12:28	110-75-8	
Chloroform	ND	ug/L	50.0	10		06/23/14 12:28	67-66-3	
Chloromethane	ND	ug/L	50.0	10		06/23/14 12:28	74-87-3	
Dibromochloromethane	ND	ug/L	50.0	10		06/23/14 12:28	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	50.0	10		06/23/14 12:28	106-93-4	N2
1,2-Dichlorobenzene	ND	ug/L	50.0	10		06/23/14 12:28	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	50.0	10		06/23/14 12:28	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	50.0	10		06/23/14 12:28	106-46-7	
1,1-Dichloroethane	ND	ug/L	50.0	10		06/23/14 12:28	75-34-3	
1,2-Dichloroethane	ND	ug/L	50.0	10		06/23/14 12:28	107-06-2	
1,1-Dichloroethene	ND	ug/L	50.0	10		06/23/14 12:28	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	50.0	10		06/23/14 12:28	156-59-2	N2
trans-1,2-Dichloroethene	ND	ug/L	50.0	10		06/23/14 12:28	156-60-5	
1,2-Dichloropropane	ND	ug/L	50.0	10		06/23/14 12:28	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	50.0	10		06/23/14 12:28	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	50.0	10		06/23/14 12:28	10061-02-6	
Ethylbenzene	ND	ug/L	50.0	10		06/23/14 12:28	100-41-4	
Methylene Chloride	**2750**	ug/L	50.0	10		06/23/14 12:28	75-09-2	
Methyl-tert-butyl ether	ND	ug/L	50.0	10		06/23/14 12:28	1634-04-4	
Naphthalene	ND	ug/L	50.0	10		06/23/14 12:28	91-20-3	N2

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(317)228-3100

ANALYTICAL RESULTS

Project: Waste Analysis
Pace Project No.: 5099526

Sample: Coolant Waste **Lab ID: 5099526001** Collected: 06/18/14 13:45 Received: 06/19/14 10:28 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
624 Volatile Organics	Analytical Method: EPA 624							
1,1,2,2-Tetrachloroethane	ND	ug/L	50.0	10		06/23/14 12:28	79-34-5	
Tetrachloroethene	**2930**	ug/L	50.0	10		06/23/14 12:28	127-18-4	
Toluene	ND	ug/L	50.0	10		06/23/14 12:28	108-88-3	
1,1,1-Trichloroethane	ND	ug/L	50.0	10		06/23/14 12:28	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	50.0	10		06/23/14 12:28	79-00-5	
Trichloroethene	ND	ug/L	50.0	10		06/23/14 12:28	79-01-6	
Trichlorofluoromethane	ND	ug/L	50.0	10		06/23/14 12:28	75-69-4	
Vinyl chloride	ND	ug/L	20.0	10		06/23/14 12:28	75-01-4	
Xylene (Total)	ND	ug/L	100	10		06/23/14 12:28	1330-20-7	
Surrogates								
Dibromofluoromethane (S)	99	%.	79-116	10		06/23/14 12:28	1868-53-7	D4
4-Bromofluorobenzene (S)	92	%.	80-114	10		06/23/14 12:28	460-00-4	
Toluene-d8 (S)	103	%.	81-110	10		06/23/14 12:28	2037-26-5	

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ANALYTICAL RESULTS

Project: Waste Analysis
Pace Project No.: 5099526

Sample: PlateW6/Oxide Waste **Lab ID: 5099526002** Collected: 06/18/14 13:15 Received: 06/19/14 10:28 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
625 MSSV	Analytical Method: EPA 625 Preparation Method: EPA 625							
Acenaphthene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	83-32-9	N2
Acenaphthylene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	208-96-8	N2
Anthracene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	120-12-7	N2
Benzidine	ND	ug/L	25000	10	06/24/14 10:38	06/24/14 22:13	92-87-5	N2
Benzo(a)anthracene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	56-55-3	N2
Benzo(a)pyrene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	50-32-8	N2
Benzo(b)fluoranthene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	205-99-2	N2
Benzo(g,h,i)perylene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	191-24-2	N2
Benzo(k)fluoranthene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	207-08-9	N2
4-Bromophenylphenyl ether	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	101-55-3	N2
Butylbenzylphthalate	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	85-68-7	N2
4-Chloro-3-methylphenol	ND	ug/L	10000	10	06/24/14 10:38	06/24/14 22:13	59-50-7	N2
bis(2-Chloroethoxy)methane	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	111-91-1	N2
bis(2-Chloroethyl) ether	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	111-44-4	N2
bis(2-Chloroisopropyl) ether	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	108-60-1	N2
2-Chloronaphthalene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	91-58-7	N2
2-Chlorophenol	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	95-57-8	N2
4-Chlorophenylphenyl ether	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	7005-72-3	N2
Chrysene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	218-01-9	N2
Dibenz(a,h)anthracene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	53-70-3	N2
1,2-Dichlorobenzene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	95-50-1	N2
1,3-Dichlorobenzene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	541-73-1	N2
1,4-Dichlorobenzene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	106-46-7	N2
3,3'-Dichlorobenzidine	ND	ug/L	10000	10	06/24/14 10:38	06/24/14 22:13	91-94-1	N2
2,4-Dichlorophenol	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	120-83-2	N2
Diethylphthalate	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	84-66-2	N2
2,4-Dimethylphenol	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	105-67-9	N2
Dimethylphthalate	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	131-11-3	N2
Di-n-butylphthalate	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	84-74-2	N2
4,6-Dinitro-2-methylphenol	ND	ug/L	25000	10	06/24/14 10:38	06/24/14 22:13	534-52-1	N2
2,4-Dinitrophenol	ND	ug/L	25000	10	06/24/14 10:38	06/24/14 22:13	51-28-5	N2
2,4-Dinitrotoluene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	121-14-2	N2
2,6-Dinitrotoluene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	606-20-2	N2
Di-n-octylphthalate	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	117-84-0	N2
1,2-Diphenylhydrazine	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	122-66-7	N2
bis(2-Ethylhexyl)phthalate	**6320**	ug/L	2500	10	06/24/14 10:38	06/24/14 22:13	117-81-7	N2
Fluoranthene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	206-44-0	N2
Fluorene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	86-73-7	N2
Hexachloro-1,3-butadiene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	87-68-3	N2
Hexachlorobenzene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	118-74-1	N2
Hexachlorocyclopentadiene	ND	ug/L	10000	10	06/24/14 10:38	06/24/14 22:13	77-47-4	N2
Hexachloroethane	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	67-72-1	N2
Indeno(1,2,3-cd)pyrene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	193-39-5	N2
Isophorone	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	78-59-1	N2
Naphthalene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	91-20-3	N2
Nitrobenzene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	98-95-3	N2
2-Nitrophenol	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	88-75-5	N2

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7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: Waste Analysis
Pace Project No.: 5099526

Sample: PlateW6/Oxide Waste **Lab ID: 5099526002** Collected: 06/18/14 13:15 Received: 06/19/14 10:28 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
625 MSSV	Analytical Method: EPA 625 Preparation Method: EPA 625							
4-Nitrophenol	ND	ug/L	25000	10	06/24/14 10:38	06/24/14 22:13	100-02-7	N2
N-Nitrosodimethylamine	ND	ug/L	10000	10	06/24/14 10:38	06/24/14 22:13	62-75-9	N2
N-Nitroso-di-n-propylamine	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	621-64-7	N2
N-Nitrosodiphenylamine	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	86-30-6	N2
Pentachlorophenol	ND	ug/L	25000	10	06/24/14 10:38	06/24/14 22:13	87-86-5	N2
Phenanthrene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	85-01-8	N2
Phenol	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	108-95-2	2d,N2, P3
Pyrene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	129-00-0	N2
1,2,4-Trichlorobenzene	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	120-82-1	N2
2,4,6-Trichlorophenol	ND	ug/L	5000	10	06/24/14 10:38	06/24/14 22:13	88-06-2	N2
Surrogates								
2-Fluorophenol (S)	0	%.	10-67	10	06/24/14 10:38	06/24/14 22:13	367-12-4	S4
Phenol-d5 (S)	0	%.	10-47	10	06/24/14 10:38	06/24/14 22:13	4165-62-2	S4
Nitrobenzene-d5 (S)	21	%.	29-126	10	06/24/14 10:38	06/24/14 22:13	4165-60-0	S4
2-Fluorobiphenyl (S)	32	%.	31-118	10	06/24/14 10:38	06/24/14 22:13	321-60-8	
2,4,6-Tribromophenol (S)	0	%.	31-161	10	06/24/14 10:38	06/24/14 22:13	118-79-6	S4
p-Terphenyl-d14 (S)	48	%.	28-129	10	06/24/14 10:38	06/24/14 22:13	1718-51-0	
624 Volatile Organics	Analytical Method: EPA 624							
Benzene	ND	ug/L	50.0	10		06/23/14 13:01	71-43-2	1d
Bromodichloromethane	ND	ug/L	50.0	10		06/23/14 13:01	75-27-4	
Bromoform	ND	ug/L	50.0	10		06/23/14 13:01	75-25-2	
Bromomethane	ND	ug/L	50.0	10		06/23/14 13:01	74-83-9	
Carbon tetrachloride	ND	ug/L	50.0	10		06/23/14 13:01	56-23-5	
Chlorobenzene	ND	ug/L	50.0	10		06/23/14 13:01	108-90-7	
Chloroethane	ND	ug/L	50.0	10		06/23/14 13:01	75-00-3	
2-Chloroethylvinyl ether	ND	ug/L	500	10		06/23/14 13:01	110-75-8	
Chloroform	ND	ug/L	50.0	10		06/23/14 13:01	67-66-3	
Chloromethane	ND	ug/L	50.0	10		06/23/14 13:01	74-87-3	
Dibromochloromethane	ND	ug/L	50.0	10		06/23/14 13:01	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	50.0	10		06/23/14 13:01	106-93-4	N2
1,2-Dichlorobenzene	ND	ug/L	50.0	10		06/23/14 13:01	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	50.0	10		06/23/14 13:01	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	50.0	10		06/23/14 13:01	106-46-7	
1,1-Dichloroethane	ND	ug/L	50.0	10		06/23/14 13:01	75-34-3	
1,2-Dichloroethane	ND	ug/L	50.0	10		06/23/14 13:01	107-06-2	
1,1-Dichloroethene	ND	ug/L	50.0	10		06/23/14 13:01	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	50.0	10		06/23/14 13:01	156-59-2	N2
trans-1,2-Dichloroethene	ND	ug/L	50.0	10		06/23/14 13:01	156-60-5	
1,2-Dichloropropane	ND	ug/L	50.0	10		06/23/14 13:01	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	50.0	10		06/23/14 13:01	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	50.0	10		06/23/14 13:01	10061-02-6	
Ethylbenzene	ND	ug/L	50.0	10		06/23/14 13:01	100-41-4	
Methylene Chloride	ND	ug/L	50.0	10		06/23/14 13:01	75-09-2	
Methyl-tert-butyl ether	ND	ug/L	50.0	10		06/23/14 13:01	1634-04-4	
Naphthalene	ND	ug/L	50.0	10		06/23/14 13:01	91-20-3	N2

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7726 Moller Road
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(317)228-3100

ANALYTICAL RESULTS

Project: Waste Analysis
Pace Project No.: 5099526

Sample: PlateW6/Oxide Waste **Lab ID: 5099526002** Collected: 06/18/14 13:15 Received: 06/19/14 10:28 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
624 Volatile Organics	Analytical Method: EPA 624							
1,1,2,2-Tetrachloroethane	ND	ug/L	50.0	10		06/23/14 13:01	79-34-5	
Tetrachloroethene	**545**	ug/L	50.0	10		06/23/14 13:01	127-18-4	
Toluene	ND	ug/L	50.0	10		06/23/14 13:01	108-88-3	
1,1,1-Trichloroethane	ND	ug/L	50.0	10		06/23/14 13:01	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	50.0	10		06/23/14 13:01	79-00-5	
Trichloroethene	ND	ug/L	50.0	10		06/23/14 13:01	79-01-6	
Trichlorofluoromethane	ND	ug/L	50.0	10		06/23/14 13:01	75-69-4	
Vinyl chloride	ND	ug/L	20.0	10		06/23/14 13:01	75-01-4	
Xylene (Total)	ND	ug/L	100	10		06/23/14 13:01	1330-20-7	
Surrogates								
Dibromofluoromethane (S)	96	%.	79-116	10		06/23/14 13:01	1868-53-7	D3,p2
4-Bromofluorobenzene (S)	112	%.	80-114	10		06/23/14 13:01	460-00-4	
Toluene-d8 (S)	98	%.	81-110	10		06/23/14 13:01	2037-26-5	

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QUALITY CONTROL DATA

Project: Waste Analysis
Pace Project No.: 5099526

QC Batch: MSV/66033
QC Batch Method: EPA 624
Analysis Method: EPA 624
Analysis Description: 624 MSV
Associated Lab Samples: 5099526001, 5099526002

METHOD BLANK: 1116040
Matrix: Water
Associated Lab Samples: 5099526001, 5099526002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	5.0	06/23/14 11:23	
1,1,2,2-Tetrachloroethane	ug/L	ND	5.0	06/23/14 11:23	
1,1,2-Trichloroethane	ug/L	ND	5.0	06/23/14 11:23	
1,1-Dichloroethane	ug/L	ND	5.0	06/23/14 11:23	
1,1-Dichloroethene	ug/L	ND	5.0	06/23/14 11:23	
1,2-Dibromoethane (EDB)	ug/L	ND	5.0	06/23/14 11:23	N2
1,2-Dichlorobenzene	ug/L	ND	5.0	06/23/14 11:23	
1,2-Dichloroethane	ug/L	ND	5.0	06/23/14 11:23	
1,2-Dichloropropane	ug/L	ND	5.0	06/23/14 11:23	
1,3-Dichlorobenzene	ug/L	ND	5.0	06/23/14 11:23	
1,4-Dichlorobenzene	ug/L	ND	5.0	06/23/14 11:23	
2-Chloroethylvinyl ether	ug/L	ND	50.0	06/23/14 11:23	
Benzene	ug/L	ND	5.0	06/23/14 11:23	
Bromodichloromethane	ug/L	ND	5.0	06/23/14 11:23	
Bromoform	ug/L	ND	5.0	06/23/14 11:23	
Bromomethane	ug/L	ND	5.0	06/23/14 11:23	
Carbon tetrachloride	ug/L	ND	5.0	06/23/14 11:23	
Chlorobenzene	ug/L	ND	5.0	06/23/14 11:23	
Chloroethane	ug/L	ND	5.0	06/23/14 11:23	
Chloroform	ug/L	ND	5.0	06/23/14 11:23	
Chloromethane	ug/L	ND	5.0	06/23/14 11:23	
cis-1,2-Dichloroethene	ug/L	ND	5.0	06/23/14 11:23	N2
cis-1,3-Dichloropropene	ug/L	ND	5.0	06/23/14 11:23	
Dibromochloromethane	ug/L	ND	5.0	06/23/14 11:23	
Ethylbenzene	ug/L	ND	5.0	06/23/14 11:23	
Methyl-tert-butyl ether	ug/L	ND	5.0	06/23/14 11:23	
Methylene Chloride	ug/L	ND	5.0	06/23/14 11:23	
Naphthalene	ug/L	ND	5.0	06/23/14 11:23	N2
Tetrachloroethene	ug/L	ND	5.0	06/23/14 11:23	
Toluene	ug/L	ND	5.0	06/23/14 11:23	
trans-1,2-Dichloroethene	ug/L	ND	5.0	06/23/14 11:23	
trans-1,3-Dichloropropene	ug/L	ND	5.0	06/23/14 11:23	
Trichloroethene	ug/L	ND	5.0	06/23/14 11:23	
Trichlorofluoromethane	ug/L	ND	5.0	06/23/14 11:23	
Vinyl chloride	ug/L	ND	2.0	06/23/14 11:23	
Xylene (Total)	ug/L	ND	10.0	06/23/14 11:23	
4-Bromofluorobenzene (S)	%.	99	80-114	06/23/14 11:23	
Dibromofluoromethane (S)	%.	97	79-116	06/23/14 11:23	
Toluene-d8 (S)	%.	102	81-110	06/23/14 11:23	

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QUALITY CONTROL DATA

Project: Waste Analysis
Pace Project No.: 5099526

LABORATORY CONTROL SAMPLE: 1116041

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	20	17.8	89	69-126	
1,1,2,2-Tetrachloroethane	ug/L	20	18.2	91	46-157	
1,1,2-Trichloroethane	ug/L	20	19.1	96	52-150	
1,1-Dichloroethane	ug/L	20	18.5	93	59-155	
1,1-Dichloroethene	ug/L	20	17.3	87	1-234	
1,2-Dibromoethane (EDB)	ug/L	20	18.4	92	70-130	N2
1,2-Dichlorobenzene	ug/L	20	18.9	95	18-190	
1,2-Dichloroethane	ug/L	20	18.4	92	49-155	
1,2-Dichloropropane	ug/L	20	19.0	95	1-210	
1,3-Dichlorobenzene	ug/L	20	18.5	93	59-156	
1,4-Dichlorobenzene	ug/L	20	18.5	93	18-190	
2-Chloroethylvinyl ether	ug/L	20	ND	65	1-305	
Benzene	ug/L	20	20.6	103	37-151	
Bromodichloromethane	ug/L	20	18.2	91	35-155	
Bromoform	ug/L	20	19.8	99	45-169	
Bromomethane	ug/L	20	22.3	112	1-242	
Carbon tetrachloride	ug/L	20	19.9	100	70-140	
Chlorobenzene	ug/L	20	18.9	95	37-160	
Chloroethane	ug/L	20	21.1	106	14-230	
Chloroform	ug/L	20	18.8	94	51-138	
Chloromethane	ug/L	20	21.3	107	1-273	
cis-1,2-Dichloroethene	ug/L	20	18.0	90	75-123	N2
cis-1,3-Dichloropropene	ug/L	20	17.5	87	1-227	
Dibromochloromethane	ug/L	20	17.3	87	53-149	
Ethylbenzene	ug/L	20	19.0	95	37-162	
Methyl-tert-butyl ether	ug/L	40	34.6	87	66-130	
Methylene Chloride	ug/L	20	12.3	62	1-221	
Naphthalene	ug/L	20	19.8	99	57-135	N2
Tetrachloroethene	ug/L	20	18.9	95	64-148	
Toluene	ug/L	20	18.8	94	47-150	
trans-1,2-Dichloroethene	ug/L	20	18.2	91	54-156	
trans-1,3-Dichloropropene	ug/L	20	18.6	93	17-183	
Trichloroethene	ug/L	20	18.4	92	71-157	
Trichlorofluoromethane	ug/L	20	20.8	104	17-181	
Vinyl chloride	ug/L	20	22.8	114	1-251	
Xylene (Total)	ug/L	60	57.5	96	77-123	
4-Bromofluorobenzene (S)	%.			99	80-114	
Dibromofluoromethane (S)	%.			100	79-116	
Toluene-d8 (S)	%.			101	81-110	

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QUALITY CONTROL DATA

Project: Waste Analysis
Pace Project No.: 5099526

QC Batch: OEXT/36208
QC Batch Method: EPA 625
Analysis Method: EPA 625
Analysis Description: 625 MSS
Associated Lab Samples: 5099526001, 5099526002

METHOD BLANK: 1116341
Matrix: Water
Associated Lab Samples: 5099526001, 5099526002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	10.0	06/24/14 18:20	N2
1,2-Dichlorobenzene	ug/L	ND	10.0	06/24/14 18:20	N2
1,2-Diphenylhydrazine	ug/L	ND	10.0	06/24/14 18:20	N2
1,3-Dichlorobenzene	ug/L	ND	10.0	06/24/14 18:20	N2
1,4-Dichlorobenzene	ug/L	ND	10.0	06/24/14 18:20	N2
2,4,6-Trichlorophenol	ug/L	ND	10.0	06/24/14 18:20	N2
2,4-Dichlorophenol	ug/L	ND	10.0	06/24/14 18:20	N2
2,4-Dimethylphenol	ug/L	ND	50.0	06/24/14 18:20	N2
2,4-Dinitrophenol	ug/L	ND	10.0	06/24/14 18:20	N2
2,4-Dinitrotoluene	ug/L	ND	10.0	06/24/14 18:20	N2
2,6-Dinitrotoluene	ug/L	ND	10.0	06/24/14 18:20	N2
2-Chloronaphthalene	ug/L	ND	10.0	06/24/14 18:20	N2
2-Chlorophenol	ug/L	ND	10.0	06/24/14 18:20	N2
2-Nitrophenol	ug/L	ND	20.0	06/24/14 18:20	N2
3,3'-Dichlorobenzidine	ug/L	ND	50.0	06/24/14 18:20	N2
4,6-Dinitro-2-methylphenol	ug/L	ND	10.0	06/24/14 18:20	N2
4-Bromophenylphenyl ether	ug/L	ND	20.0	06/24/14 18:20	N2
4-Chloro-3-methylphenol	ug/L	ND	10.0	06/24/14 18:20	N2
4-Chlorophenylphenyl ether	ug/L	ND	50.0	06/24/14 18:20	N2
4-Nitrophenol	ug/L	ND	10.0	06/24/14 18:20	N2
Acenaphthene	ug/L	ND	10.0	06/24/14 18:20	N2
Acenaphthylene	ug/L	ND	10.0	06/24/14 18:20	N2
Anthracene	ug/L	ND	50.0	06/24/14 18:20	N2
Benzidine	ug/L	ND	10.0	06/24/14 18:20	N2
Benzo(a)anthracene	ug/L	ND	10.0	06/24/14 18:20	N2
Benzo(a)pyrene	ug/L	ND	10.0	06/24/14 18:20	N2
Benzo(b)fluoranthene	ug/L	ND	10.0	06/24/14 18:20	N2
Benzo(g,h,i)perylene	ug/L	ND	10.0	06/24/14 18:20	N2
Benzo(k)fluoranthene	ug/L	ND	10.0	06/24/14 18:20	N2
bis(2-Chloroethoxy)methane	ug/L	ND	10.0	06/24/14 18:20	N2
bis(2-Chloroethyl) ether	ug/L	ND	10.0	06/24/14 18:20	N2
bis(2-Chloroisopropyl) ether	ug/L	ND	5.0	06/24/14 18:20	N2
bis(2-Ethylhexyl)phthalate	ug/L	ND	10.0	06/24/14 18:20	N2
Butylbenzylphthalate	ug/L	ND	10.0	06/24/14 18:20	N2
Chrysene	ug/L	ND	10.0	06/24/14 18:20	N2
Di-n-butylphthalate	ug/L	ND	10.0	06/24/14 18:20	N2
Di-n-octylphthalate	ug/L	ND	10.0	06/24/14 18:20	N2
Dibenz(a,h)anthracene	ug/L	ND	10.0	06/24/14 18:20	N2
Diethylphthalate	ug/L	ND	10.0	06/24/14 18:20	N2
Dimethylphthalate	ug/L	ND	10.0	06/24/14 18:20	N2
Fluoranthene	ug/L				

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REPORT OF LABORATORY ANALYSIS

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Columbus, OH 43215
(614)486-5421

Pace Analytical Services, Inc.
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

QUALITY CONTROL DATA

Project: Waste Analysis
Pace Project No.: 5099526

METHOD BLANK: 1116341 Matrix: Water
Associated Lab Samples: 5099526001, 5099526002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluorene	ug/L	ND	10.0	06/24/14 18:20	N2
Hexachloro-1,3-butadiene	ug/L	ND	10.0	06/24/14 18:20	N2
Hexachlorobenzene	ug/L	ND	10.0	06/24/14 18:20	N2
Hexachlorocyclopentadiene	ug/L	ND	20.0	06/24/14 18:20	N2
Hexachloroethane	ug/L	ND	10.0	06/24/14 18:20	N2
Indeno(1,2,3-cd)pyrene	ug/L	ND	10.0	06/24/14 18:20	N2
Isophorone	ug/L	ND	10.0	06/24/14 18:20	N2
N-Nitroso-di-n-propylamine	ug/L	ND	10.0	06/24/14 18:20	N2
N-Nitrosodimethylamine	ug/L	ND	20.0	06/24/14 18:20	N2
N-Nitrosodiphenylamine	ug/L	ND	10.0	06/24/14 18:20	N2
Naphthalene	ug/L	ND	10.0	06/24/14 18:20	N2
Nitrobenzene	ug/L	ND	10.0	06/24/14 18:20	N2
Pentachlorophenol	ug/L	ND	10.0	06/24/14 18:20	N2
Phenanthrene	ug/L	ND	50.0	06/24/14 18:20	N2
Phenol	ug/L	ND	10.0	06/24/14 18:20	N2
Pyrene	ug/L	ND	10.0	06/24/14 18:20	N2
2,4,6-Tribromophenol (S)	%.	96	31-161	06/24/14 18:20	
2-Fluorobiphenyl (S)	%.	85	31-118	06/24/14 18:20	
2-Fluorophenol (S)	%.	30	10-67	06/24/14 18:20	
Nitrobenzene-d5 (S)	%.	91	29-126	06/24/14 18:20	
p-Terphenyl-d14 (S)	%.	86	28-129	06/24/14 18:20	
Phenol-d5 (S)	%.	17	10-47	06/24/14 18:20	

LABORATORY CONTROL SAMPLE: 1116342

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/L	100	77.9	78	44-142	N2
1,2-Dichlorobenzene	ug/L	100	81.5	81	32-129	N2
1,2-Diphenylhydrazine	ug/L	100	92.1	92	53-114	N2
1,3-Dichlorobenzene	ug/L	100	77.3	77	1-172	N2
1,4-Dichlorobenzene	ug/L	100	78.7	79	20-124	N2
2,4,6-Trichlorophenol	ug/L	100	87.5	88	37-144	N2
2,4-Dichlorophenol	ug/L	100	77.9	78	39-135	N2
2,4-Dimethylphenol	ug/L	100	72.3	72	32-119	N2
2,4-Dinitrophenol	ug/L	100	ND	13	1-191	N2
2,4-Dinitrotoluene	ug/L	100	103	103	39-139	N2
2,6-Dinitrotoluene	ug/L	100	103	103	50-158	N2
2-Chloronaphthalene	ug/L	100	87.4	87	60-118	N2
2-Chlorophenol	ug/L	100	62.8	63	23-134	N2
2-Nitrophenol	ug/L	100	84.0	84	29-182	N2
3,3'-Dichlorobenzidine	ug/L	100	118	118	1-262	N2
4,6-Dinitro-2-methylphenol	ug/L	100	89.3	89	1-181	N2
4-Bromophenylphenyl ether	ug/L	100	87.1	87	53-127	N2
4-Chloro-3-methylphenol	ug/L	100	71.3	71	22-147	N2

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Pace Analytical Services, Inc.
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

QUALITY CONTROL DATA

Project: Waste Analysis
Pace Project No.: 5099526

LABORATORY CONTROL SAMPLE: 1116342

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Chlorophenylphenyl ether	ug/L	100	85.6	86	25-158	N2
4-Nitrophenol	ug/L	100	ND	21	1-132	N2
Acenaphthene	ug/L	100	84.6	85	47-145	N2
Acenaphthylene	ug/L	100	87.6	88	33-145	N2
Anthracene	ug/L	100	88.2	88	27-133	N2
Benzidine	ug/L	100	ND	18	1-130	N2
Benzo(a)anthracene	ug/L	100	70.7	71	33-143	N2
Benzo(a)pyrene	ug/L	100	64.3	64	17-163	N2
Benzo(b)fluoranthene	ug/L	100	63.7	64	24-159	N2
Benzo(g,h,i)perylene	ug/L	100	65.5	65	1-219	N2
Benzo(k)fluoranthene	ug/L	100	67.7	68	11-162	N2
bis(2-Chloroethoxy)methane	ug/L	100	90.4	90	33-184	N2
bis(2-Chloroethyl) ether	ug/L	100	86.1	86	12-158	N2
bis(2-Chloroisopropyl) ether	ug/L	100	85.1	85	36-166	N2
bis(2-Ethylhexyl)phthalate	ug/L	100	73.7	74	8-158	N2
Butylbenzylphthalate	ug/L	100	86.4	86	1-152	N2
Chrysene	ug/L	100	70.4	70	17-168	N2
Di-n-butylphthalate	ug/L	100	92.0	92	1-118	N2
Di-n-octylphthalate	ug/L	100	67.5	68	4-146	N2
Dibenz(a,h)anthracene	ug/L	100	67.1	67	1-227	N2
Diethylphthalate	ug/L	100	99.7	100	1-114	N2
Dimethylphthalate	ug/L	100	98.1	98	1-112	N2
Fluoranthene	ug/L	100	84.9	85	26-137	N2
Fluorene	ug/L	100	88.9	89	59-121	N2
Hexachloro-1,3-butadiene	ug/L	100	72.6	73	24-116	N2
Hexachlorobenzene	ug/L	100	76.9	77	1-152	N2
Hexachlorocyclopentadiene	ug/L	100	36.7	37	32-86	N2
Hexachloroethane	ug/L	100	73.5	73	40-113	N2
Indeno(1,2,3-cd)pyrene	ug/L	100	65.3	65	1-171	N2
Isophorone	ug/L	100	64.1	64	21-196	N2
N-Nitroso-di-n-propylamine	ug/L	100	86.6	87	1-230	N2
N-Nitrosodimethylamine	ug/L	100	28.7	29	11-55	N2
N-Nitrosodiphenylamine	ug/L	100	95.5	95	58-123	N2
Naphthalene	ug/L	100	79.5	80	21-133	N2
Nitrobenzene	ug/L	100	90.4	90	35-180	N2
Pentachlorophenol	ug/L	100	88.1	88	14-176	N2
Phenanthrene	ug/L	100	88.9	89	54-120	N2
Phenol	ug/L	100	18.8	19	5-112	N2
Pyrene	ug/L	100	84.1	84	52-115	N2
2,4,6-Tribromophenol (S)	%.			102	31-161	
2-Fluorobiphenyl (S)	%.			93	31-118	
2-Fluorophenol (S)	%.			31	10-67	
Nitrobenzene-d5 (S)	%.			93	29-126	
p-Terphenyl-d14 (S)	%.			77	28-129	
Phenol-d5 (S)	%.			19	10-47	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Waste Analysis
Pace Project No.: 5099526

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.
ND - Not Detected at or above adjusted reporting limit.
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
MDL - Adjusted Method Detection Limit.
PQL - Practical Quantitation Limit.
RL - Reporting Limit.
S - Surrogate
1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Indicates the compound was analyzed for, but not detected.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
LOD - Limit of Detection.
LOQ - Limit of Quantitation.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

LABORATORIES

PASI-I	Pace Analytical Services - Indianapolis

ANALYTE QUALIFIERS

1d	Compound ND at an estimated RL of 5 ug/L, based on the MDL. JLZ 06/24/14.
2d	Due to the extract's physical characteristics, the analysis was performed at dilution. CEM 06/25/14
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
D4	Sample was diluted due to the presence of high levels of target analytes.
N2	The lab does not hold TNI accreditation for this parameter.
P3	Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
p2	Post-analysis pH measurement indicates pH > 2.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Waste Analysis
Pace Project No.: 5099526

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
5099526001	Coolant Waste	EPA 625	OEXT/36208	EPA 625	MSSV/15564
5099526002	PlateW6/Oxide Waste	EPA 625	OEXT/36208	EPA 625	MSSV/15564
5099526001	Coolant Waste	EPA 624	MSV/66033		
5099526002	PlateW6/Oxide Waste	EPA 624	MSV/66033		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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Page: of

1803988

Section A Required Client Information:

Company: RIVERSIDE TOOL CORP
Address: 3504 HENKE ST
ELKHART, IN 46514
Email To: RON@RIVERSIDETOOL.COM
Phone: 574-522-6098 Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: RON MIGEDT
Copy To:
Purchase Order No.:
Project Name: WASTE ANALYSIS
Project Number:

Section C Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

Matrix Codes MATRIX / CODE

Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Tissue	TS
Other	OT

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	~~COOLANT 1~~																			~~5099526~~ 001 6/19/14
2	~~COOLANT 2~~																			001
3	COOLANT WASTE	WW	G			6/18	3:45	80	9	X		X	X							001
4	PLATING/OXIDE WASTE	WW	G			6/18	3:15	80	9	X		X	X							002
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	JIM BAAD/RIVERSIDE TOOL CORP	6/18	4:45PM	[signature] PACE	6/19/14	1028	1.2	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: JIM BAAD

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 06/19/2014

ORIGINAL

Page 18 of 20

Fedex

Sample Condition Upon Receipt

Pace Analytical

Client Name: RIVERSIDE TOOL COLP Project # 5099526

Courier: [X] Fed Ex [ ] UPS [ ] USPS [ ] Client [ ] Commercial [ ] Pace Other _____

Tracking #: 8055 5144 9866

Custody Seal on Cooler/Box Present: [X] yes [ ] no Seals intact: [X] yes [ ] no

Date/Time 5035A kits placed in freezer: _____

Packing Material: [ ] Bubble Wrap [X] Bubble Bags [ ] None [ ] Other _____

Thermometer Used: 1 2 3 4 6 A B C D E

Type of Ice: Wet Blue None

[ ] Samples on ice, cooling process has begun

Cooler Temperature (Corrected, if applicable): 1.2°C

Ice Visible in Sample Containers: [ ] yes [X] no

Date and initials of person examining contents: 6/19/14 SJ

Temp should be above freezing to 6°C

		Comments:
Chain of Custody Present:	[X]Yes [ ]No [ ]N/A	1.
Chain of Custody Filled Out:	[X]Yes [ ]No [ ]N/A	2.
Chain of Custody Relinquished:	[X]Yes [ ]No [ ]N/A	3.
Sampler Name & Signature on COC:	[X]Yes [ ]No [ ]N/A	4.
Short Hold Time Analysis (<72hr):	[ ]Yes [X]No [ ]N/A	5.
Rush Turn Around Time Requested:	[ ]Yes [X]No [ ]N/A	6.
Containers Intact:	[X]Yes [ ]No [ ]N/A	7.
Sample Labels match COC: -Includes date/time/ID/Analysis	[X]Yes [ ]No [ ]N/A	8.
All containers needing acid/base pres. have been checked? exceptions: VOA, coliform, TOC, O&G. All containers needing preservation are found to be in compliance with EPA recommendation (<2, >9, >12) unless otherwise noted.	[X]Yes [ ]No [ ]N/A	9. (Circle) HNO3 H2SO4 NaOH HCl PLATING ≥13 COOLANT ≥7
Headspace in VOA Vials (>6mm):	[X]Yes [ ]No [ ]N/A	10. (ALL) PLATING (2) COOLANT
Trip Blank Present:	[ ]Yes [X]No [ ]N/A	11.
Trip Blank Custody Seals Present	[ ]Yes [ ]No [X]N/A	
Project Manager Review		
Samples Arrived within Hold Time:	[X]Yes [ ]No [ ]N/A	12.
Sufficient Volume:	[X]Yes [ ]No [ ]N/A	13.
Correct Containers Used:	[X]Yes [ ]No [ ]N/A	14.

Field Data Required? Y / N

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [signature] **Date:** 6-15-14

Sample Container Count

LIENT: RIVERSIDE TOOL CORP

)C PAGE 1 of 1

)C ID# _____

Project # 5089526

ample Line Item

Item	DG9H	AG1U	WGFU	AG0U	R 4/6	BP2N	BP2U	BP2S	BP3N	BP3U	BP3S	AG3S	AG1H	BP3C	BP1U	SPST	pH <2	pH>12	Comments
1																			
2																			
3	5	4							1										
4	3	3							1				1						
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			

Container Codes

DG9H	40mL HCL amber voa vial	AG0U	100mL unpreserved amber gl	BP1N	1 liter HNO3 plastic	DG9P	40mL TSP amber vial
AG1U	1liter unpreserved amber gla	AG1H	1 liter HCL amber glass	BP1S	1 liter H2SO4 plastic	DG9S	40mL H2SO4 amber vial
WGFU	4oz clear soil jar	AG1S	1 liter H2SO4 amber glass	BP1U	1 liter unpreserved plastic	DG9T	40mL Na Thio amber vial
R	terra core kit	AG1T	1 liter Na Thiosulfate amber g	BP1Z	1 liter NaOH, Zn, Ac	DG9U	40mL unpreserved amber vial
BP2N	500mL HNO3 plastic	AG2N	500mL HNO3 amber glass	BP2A	500mL NaOH, Asc Acid plastic	I	Wipe/Swab
BP2U	500mL unpreserved plastic	AG2S	500mL H2SO4 amber glass	BP2O	500mL NaOH plastic	JGFU	4oz unpreserved amber wide
BP2S	500mL H2SO4 plastic	AG2U	500mL unpreserved amber g	BP2Z	500mL NaOH, Zn Ac	U	Summa Can
BP3N	250mL HNO3 plastic	AG3U	250mL unpreserved amber g	AF	Air Filter	VG9H	40mL HCL clear vial
BP3U	250mL unpreserved plastic	BG1H	1 liter HCL clear glass	BP3C	250mL NaOH plastic	VG9T	40mL Na Thio. clear vial
BP3S	250mL H2SO4 plastic	BG1S	1 liter H2SO4 clear glass	BP3Z	250mL NaOH, Zn Ac plastic	VG9U	40mL unpreserved clear vial
AG3S	250mL H2SO4 glass amber	BG1T	1 liter Na Thiosulfate clear gl	C	Air Cassettes	VSG	Headspace septa vial & HCL
AG1S	1 liter H2SO4 amber glass	BG1U	1 liter unpreserved glass	DG9B	40mL Na Bisulfate amber vial	WGFX	4oz wide jar w/hexane wipe
BP1U	1 liter unpreserved plastic	BP1A	1 liter NaOH, Asc Acid plasti	DG9M	40mL MeOH clear vial	ZPLC	Ziploc Bag

Riverside Tool Corp. Response
Attachment 6

Wastewater Discharge Permit Application

City of Elkhart
Public Works & Utilities

CITY OF ELKHART PUBLIC WORKS & UTILITIES
INDUSTRIAL WASTEWATER DISCHARGE PERMIT APPLICATION

Unless otherwise stated, fill out completely.
If an item is not applicable, indicate by noting "NA".
Do Not Leave Any Blank Spaces.

Section 1 Applicant and Facility Description

1. Name of Facility Riverside Tool Corp.

2. Mailing Address P.O. Box 1425, Elkhart, IN 46515

3. Facility Address 3504 Henke St., Elkhart, IN 46514

4. I certify that I am familiar with the information contained in this application and that to the best of my knowledge and belief such information is true, complete and accurate.

Ronald Migedt	President
Printed Name of Signing Official	Title
Signature of Signing Official	Date

5. Applicant's Authorized Agent or Contact Official

Ronald Migedt	**President**
Name	Title

Mailing Address: **P.O. Box 1425, Elkhart, In 46515**

Telephone Number: **574 - 522 - 6798**

Email Address: **ron@riversidetool.com** Permit #NA (if applicable)

Section 2 Plant Operations

1. Provide a DETAILED written description of the manufacturing process or service activity provided on the premises (use additional sheets if necessary). *Include a flow diagram clearly identifying each process step.*

See Attached Document Titled Section 2

2. Principle raw materials used:

See Attached Document Titled Section 2

3. Chemicals and compounds used (include MSDS for each)

See Attached Document Titled Section 2

4. Hours of process discharge into the sewer system per day: **See Attached Document Titled Section 2**

5. List any environmental control permits held by or for the facility (including a discharge permit issued by the city). Please include all applications presently being reviewed by any regulatory agency. Please include all associated permit numbers.

NA

6. List all products manufactured or services provided by your facility along with the corresponding SIC number according to the Standard Industrial Classification Manual, Bureau of Budget, 1972 as amended:

Product or Service	SIC Code
Cutting Tools	3545
Electroplating	3471
NA	NA
NA	NA
NA	NA

Section 3 Water Usage and Discharge Information

1. List intake water sources and volume:

Municipal Water Service	521	gallons/day
Private Well	0	gallons/day
Surface Water	0	gallons/day
Other NA	NA	gallons/day
Total	521	gallons/day

2. List average volume of discharge or water loss:

City Sewer System	521	gallons / day
Natural Outlet (Pond, etc.)	0	gallons / day
Waste Hauler	11.26	gallons / day
Evaporation	3.55	gallons / day
Contained in Product	NA	gallons / day
Other NA	NA	gallons / day
Est. 30 Minute Peak Flow	NA	gallons / day
Total	535.81	gallons / day

3. List average water usage within the facility:

Process waste stream #1	2.73	gallons / day	Metered ☐Yes/☒No
Process waste stream #2	8.52	gallons / day	Metered ☐Yes/☒No
Process waste stream #3	NA	gallons / day	Metered ☐Yes/☐No
Process waste stream #4	NA	gallons / day	Metered ☐Yes/☐No
Contact cooling water	NA	gallons / day	Metered ☐Yes/☐No
Non-contact cooling water	NA	gallons / day	Metered ☐Yes/☐No
Sanitary water*	521	gallons / day	Metered ☐Yes/☒No
Boiler/Air Conditioner	NA	gallons / day	Metered ☐Yes/☐No

**Sanitary Flow may be estimated at 15 GPD per employee, unless a more accurate method is available.*

4. Describe how each waste stream listed above is generated:

#1 **SIC 3545 – Lubricants, Coolants, and Cleaning Solutions are re-circulated inside machinery until they need replacement. At that point, they are transferred to a designated container for later disposal with Safety Kleen Systems, Inc.**

#2 **SIC 3471 – De-ionized water used in the electroplating process is transferred to the designated container when replacement is needed. The waste is later disposed of by Safety Kleen Systems, Inc.**

#3 **NA**

#4 **NA**

Contact Cooling **NA**

5. Is discharge to the sewer Continuous ☐Yes/☒No Batch ☐Yes/☒No

If batch: Circle frequency of Discharge: _____ times per day / mo / yr

Volume: _____ gallons per batch

6. Attach a **detailed schematic process diagram of the facility** showing the locations of sewers referenced in Number 7 and the location of SIC processes referenced in sections 2-6. Show the locations of sampling points (both Federal Categorical and POTW) and the location of the pretreatment facility, if applicable.

7. List plant sewer outlets, size and flow (assign sequential reference number to each sewer starting with number 1; identify these on the schematic)

Reference Number	Sewer Size (inches)	Description of Sewer Location	Average Flow (GPD)
1	4"	**Southside Center of Building 1**	148.8
2	4"	**Southeast Corner Building 2**	150
3	4"	**Northeast Corner Building 2**	13.68
4	4"	**Southeast Corner Building 3**	208.32

8. Do you have any of the following currently in use or in future plans:

	Current	Planned
Flow Metering:	☐Yes/☒No	☐Yes/☒No
Sampling Equipment:	☐Yes/☒No	☐Yes/☒No
Monitoring Equipment: (pH, Temp., TOC, etc.)	☐Yes/☒No	☐Yes/☒No

List all potable water metering devices including manufacturer, model and locations: Southwest Corner of Building 2. Two municipal water meters are present. One for the lawn sprinklers, 1 ½" Neptune T-10 60146356. The other for the building water supply, 2" Neptune Trident 10 31865782.

List all wastewater metering devices including manufacturer, model and locations: NA

Use additional sheets if necessary.

Section 4 Pretreatment

1. If applicable, describe all Federal Categorical Pretreatment Standards that apply to all processes in your facility (40 CFR Part 403).

NA

2. If any Federal Pretreatment Standards apply to your facility for its processes, and such standards are not yet being met, please include a compliance schedule according to 40 CFR Part 403.12(b)(7).

NA

3. Describe any wastewater treatment equipment or process in use and identify its location on the schematic.

NA

4. Describe any additional pretreatment facilities and processes under consideration. Include a specific timetable for completion:

NA

5. Do you have a spill prevention, containment and control plan (SPCC) or RCRA contingency plan for your facility? ☐Yes/☒No – **Riverside Tool Corp. does not meet criteria (1,320 gallons of above-ground oil storage capacity) to be subject to SPCC regulations. However we have formed a plan to handle spills and have attached that document to this application.**

If yes, please include a copy.

6. Do you utilize the city sewer to dispose of solvents, sludges or hazardous materials: ☐Yes/☒No

If yes, describe the materials and provide an estimate for annual frequency and quantity disposed.

5. Are solvents, sludges or hazardous materials transported and disposed off-site: ☒Yes/☐No

If yes, explain: **All liquid waste from manufacturing processes is disposed of using Safety Kleen Systems, Inc.**

8. Please indicate on Table 1 Pollutants which, if any, may be found in your wastewater discharge as a result of a direct discharge from your pretreatment facility, process operation or from an accidental spill. – **All of the substances indicated are disposed of using Safety Kleen Systems, Inc.**

9. Please list names of Certified Operators currently employed by your facility. Include Certification Number, Classification and Expiration Date of Certification.

Name: NA Certification Number: NA

Class: NA Expiration Date: NA

Name: NA Certification Number: NA

Class: NA Expiration Date: NA

Section 5 Wastewater Characteristics

1. Attach the most recent laboratory data, which characterize the facility discharge to the sewer system. Indicate the sampling location, time and date of sample collection, and type of sample collected (grab or composite). All sampling and analysis shall be performed in accordance with section 5.4.3 of the City of Elkhart Sewer Use and Rate Ordinance No. 4866 (40 CFR Part 136) – **No waste from manufacturing processes is disposed of in the municipal sewer system. However, we have attached profile reports of our waste that is disposed of using Safety Kleen Systems, Inc.**

2. If no sampling data are available, testing MUST be performed on the discharge for any pollutant that may be present. The sample must be taken during normal production activity and be representative of typical wastewater flows and constituents. The parameters analyzed shall include all pollutants indicated on Table 1 that may be present in your waste stream (conventional, nonconventional and priority pollutants).

3. The City of Elkhart Public Works & Utilities reserves the right to require additional testing to characterize the facility discharge.

Section 6 Mailing Address

1. Please send completed application with all supporting attachments and enclosures to:

PUBLIC WORKS & UTILITIES
LABORATORY & PRETREATMENT DIVISION
1201 SOUTH NAPPANEE STREET
ELKHART, IN 46516
ATTN: LYNN BRABEC

2. For assistance in completing the application, call the LABORATORY & PRETREATMENT DIVISION, at (574) 293-2572.

Table 1 – Pollutants

Section 1 Priority Pollutants

A. Metals and Inorganics

- ☐ Antimony; Sb
- ☐ Arsenic; As
- ☐ Asbestos
- ☒ Beryllium; Be
- ☒ Cadmium; Cd
- ☒ Chromium; Cr
- ☒ Copper; Cu
- ☐ Cyanides; CN
- ☒ Lead; Pb
- ☒ Mercury; Hg
- ☒ Nickel; Ni
- ☐ Selenium; Se
- ☒ Silver; Ag
- ☐ Thallium; Tl
- ☒ Zinc; Zn

B. Toxic Organics: Ethers

- ☐ Ether, bis(2-chloroethyl)
- ☐ Ether, bis(2-chloroisopropyl)
- ☐ Ether, 2-chloroethyl vinyl
- ☐ Ether, 4-chlorophenyl phenyl
- ☐ Ether, 4-bromophenyl phenyl
- ☐ Bis (2-chloroethoxy) methane

C. Toxic Organics: Phthalates

- ☐ Phthalate, dimethyl; DMP
- ☐ Phthalate, diethyl; DEP
- ☐ Phthalate, di-n-butyl; DBP
- ☐ Phthalate, di-n-octyl; DOP
- ☐ Phthalate, bis (2-ethylhexyl); DEHP
- ☐ Phthalate, butyl benzyl; BBP

D. Toxic Organics: Nitrogen Compounds

- ☐ Nitrosamine, dimethyl
- ☐ Nitrosamine, diphenyl
- ☐ Nitrosamine, di-n-propyl
- ☐ Benzidine
- ☐ Benzidine, 3, 3'-dicholoro
- ☐ Hydrazine, 1,2-diphenyl
- ☐ Acrylonitrile

E. Toxic Organics: Phenols

- ☐ Phenol
- ☐ Phenol, 2-chloro
- ☐ Phenol, 2,4-dichloro; 2,4-DCP
- ☐ Phenol, 2,4,6-trichloro
- ☐ Phenol, pentachloro; PCP
- ☐ Phenol, 2-nitro
- ☐ Phenol, 4-nitro
- ☐ Phenol, 2,4-dinitro; 2,4-DNP
- ☐ Phenol, 2,4-dimethyl
- ☐ m-Cresol, p-chloro
- ☐ o-Cresol, 4,6-dinitro; DNOC

F. Toxic Organics: Aromatics

- ☒ Benzene
- ☐ Benzene, chloro
- ☐ Benzene, 1,2-dichloro
- ☐ Benzene, 1,3-dichloro
- ☐ Benzene, 1,4-dichloro
- ☐ Benzene, 1,2,4-trichloro
- ☐ Benzene, hexachloro; HCB
- ☒ Benzene, ethyl
- ☐ Benzene, nitro
- ☐ Toluene
- ☐ Toluene, 2,4-dinitro; DNT
- ☐ Toluene, 2,6-dinitro

G. Toxic Organics: Polynuclear Aromatic Hydrocarbons

- ☐ 2-Chloronaphthalene
- ☐ Benzo (a) anthracene
- ☐ Benzo (b) fluoranthene; B(b)F
- ☐ Benzo (k) fluoranthene; B(k)F
- ☐ Benzo (a) pyrene; BaP
- ☐ Ideno (1,2,3-cd) pyrene; IP
- ☐ Dibenzo (a,b) anthracene; DBA
- ☐ Acenaphthene
- ☐ Acenaphythylene
- ☐ Anthracene
- ☐ Chrysene
- ☐ Fluoranthene
- ☐ Fluorene
- ☒ Naphthalene
- ☐ Phenanthrene
- ☐ Pyrene

H. Toxic Organics: PCB's

- ☐ PCB-1016; Arochlor 1016
- ☐ PCB-1221; Arochlor 1221
- ☐ PCB-1232; Arochlor 1232
- ☐ PCB-1242; Arochlor 1242
- ☐ PCB-1248; Arochlor 1248
- ☐ PCB-1254; Arochlor 1254
- ☐ PCB-1260; Arochlor 1260

I. Toxic Organics: Halogenated Hydrocarbons Halogenated Aliphatics

- ☒ Methane Chloro; Methyl chloride
- ☒ Methane, Dichloro; Methylene chloride
- ☐ Methane, trichloro; Chloroform
- ☐ Methane, tetrachloro; Carbon tetrachloride
- ☐ Ethane, chloro
- ☐ Ethane, 1,1-dichloro
- ☐ Ethane, 1,2-dichloro
- ☐ Ethane, 1,1,1-trichloro
- ☐ Ethane, 1,1,2-trichloro
- ☐ Ethane, 1,1,2,2-tetrachloro
- ☐ Ethane, hexachloro
- ☐ Ethene, chloro; Vinyl chloride
- ☐ Propane, 1,2-dichloro
- ☐ Propene, 1,3-dichloro
- ☒ Butadiene, hexachloro; HCBD
- ☐ Cyclopentadiene, hexachloro; HCCPD
- ☐ Methane, bromo; Methyl bromide
- ☐ Methane, dichlorobromo
- ☐ Methane, chlorodibromo
- ☐ Methane, Tribromo; Bromoform
- ☐ Ethene, trichloro
- ☐ Ethene, 1,1-dichloro; 1,1-DCE
- ☐ Ethene, 1,2-trans-dichloro
- ☐ Ethene, tetrachloro

J. Toxic Organics: Pesticides

- ☐ alpha-Endosulfan
- ☐ Endosulfan sulfate
- ☐ beta-Endosulfan

Hexachlorocyclohexanes:

- ☐ alpha-BHC
- ☐ beta-BHC
- ☐ delta-BHC
- ☐ gamma-BHC; Lindane
- ☐ Aldrin; HHDN
- ☐ Dieldrin; HEOD
- ☐ 4,4'-DDE
- ☐ 4,4'-DDT; p,p'-DDT
- ☐ 4,4-DDD; p,p'-DDD; p,p'-TDE
- ☐ Endrin
- ☐ Endrin aldehyde
- ☐ Heptachlor
- ☐ Heptachlor epoxide
- ☐ Chlordane
- ☐ Toxaphene

K. Toxic Organics: Oxygenated Compounds

- ☐ Acrolein

L. Toxic Organics: Miscellaneous

- ☐ Isophorone
- ☐ 2,3,7,8-tetrachlorodibenzo-p-dioxin; TCDD; dioxin

Section 2 Conventional Pollutants

- ☐ Carbonaceous Biochemical Oxygen ($cBOD_5$) > 250 mg/L
- ☐ 10 units < pH < 5 units
- ☐ Total Suspended Solids (TSS) > 250 mg/L
- ☒ Oil and Grease (O & G)

Section 3 Nonconventional Pollutants

- ☐ Ammonia (NH_3-N)
- ☒ Surfactants
- ☒ Phosphorus, Total

1. Provide a DETAILED written description of the manufacturing process or service activity provided on the premises.

Riverside Tool Corp. manufactures and services cutting tools for the woodworking and plastics industries. The cutting tools are machined and ground within the facility and many times are put through a black oxide process or electroplating process before shipment.

Two flow diagrams illustrating these processes, referenced as 'New Tooling Flow Diagram' and 'Tool Servicing Flow Diagram', are attached as separate documents to this application.

For cutting tool service and manufacturing (SIC 3545), coolants, lubricants, and cleaning solutions are utilized during machining, grinding, and cleaning of metal. These chemicals are as follows (See MSDS Book for details):

- Clearedge 6519
- IonoPlus 3000 ET
- GrindKlean
- Transogrind 250
- De-ionized water
- X10

All liquids are re-circulated within the machine. When machines require cleaning or maintenance, if necessary, the lubricant/coolant/cleaning solution is transferred out of the machine into the designated container (Disposal Tote 2) which is periodically pumped out by Safety Kleen Systems, Inc and hauled away for proper disposal.

For Electroplating and Black Oxide conditioning of tools (SIC 3471), tools are dipped in various liquids. Below is a sequential listing of the chemicals that tools are moved through for each process (See MSDS Book for details):

Black Oxide Process

- Safe Scrub ST Biodegradable Cleaner
- De-Ionized Water
- Birchwood Casey Oxyprime Surface Conditioner
- De-Ionized Water
- Tru Temp XL Blackener
- De-Ionized Water
- Dri-Touch Plus IPR3 Rust Preventative

Electroplating Process

- Electroscrub
- De-Ionized Water
- De-Ionized Water
- Metal Activator Solution
- De-Ionized Water
- De-Ionized Water
- Bright Nickel Solution
- De-Ionized Water
- De-Ionized Water
- Bright Copper Catalyst & Bright Copper MakeUp (Combined)
- De-Ionized Water
- De-Ionized Water
- Bright Nickel Solution
- De-Ionized Water

Stripping of ElectroPlating

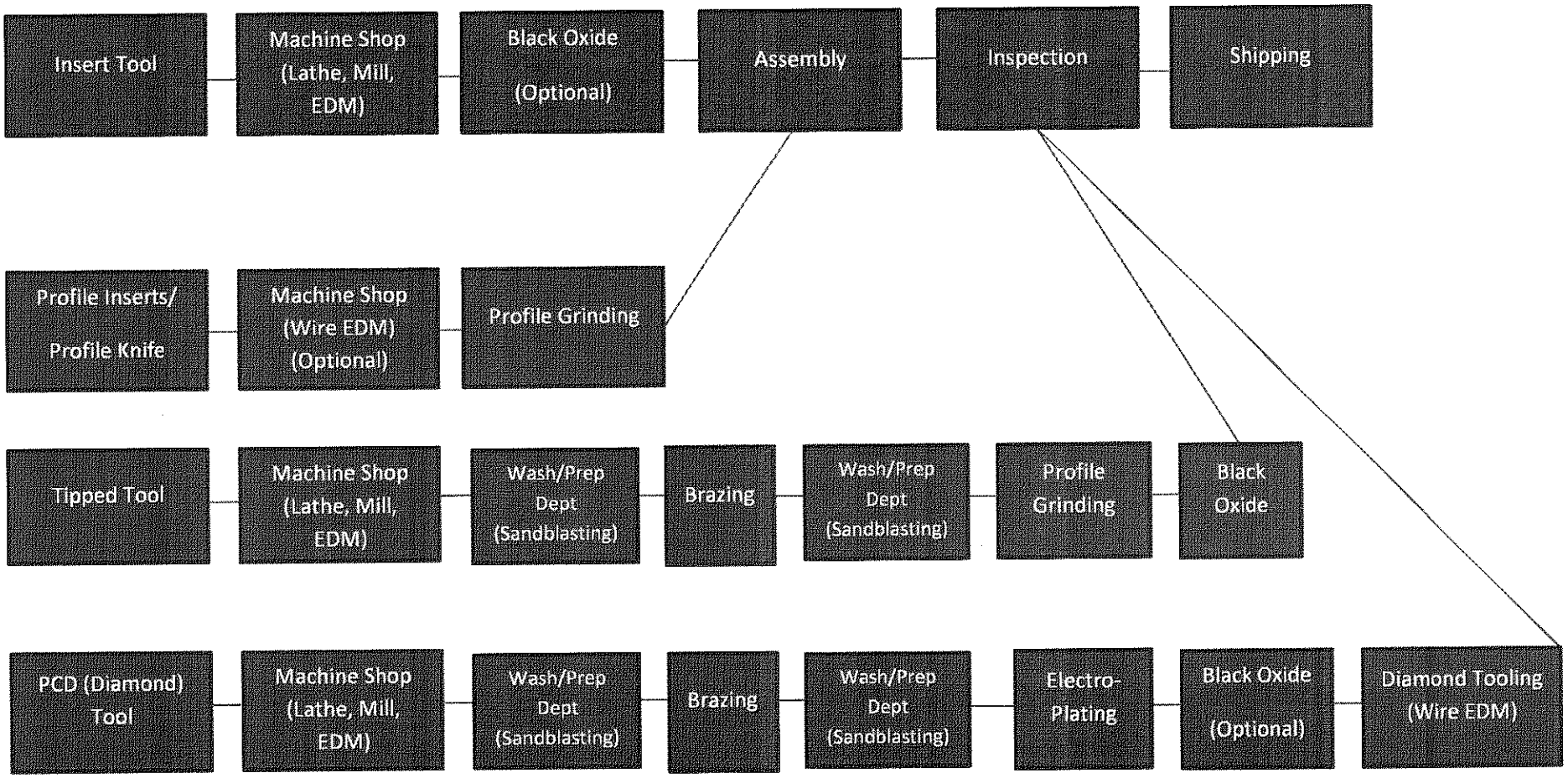
- Electro-Strip
- De-Ionized Water & Baking Soda (Combined)
- De-Ionized Water

The De-Ionized Water listed above is transferred to the designated container (Disposal Tote 1) periodically as needed (for proper disposal with Safety Kleen Systems, Inc.) and refilled with De-Ionized Water. Any disposal of the other chemicals listed is rare and they are transferred to the designated container (Disposal Tote 1) for later disposal using Safety Kleen Systems, Inc..

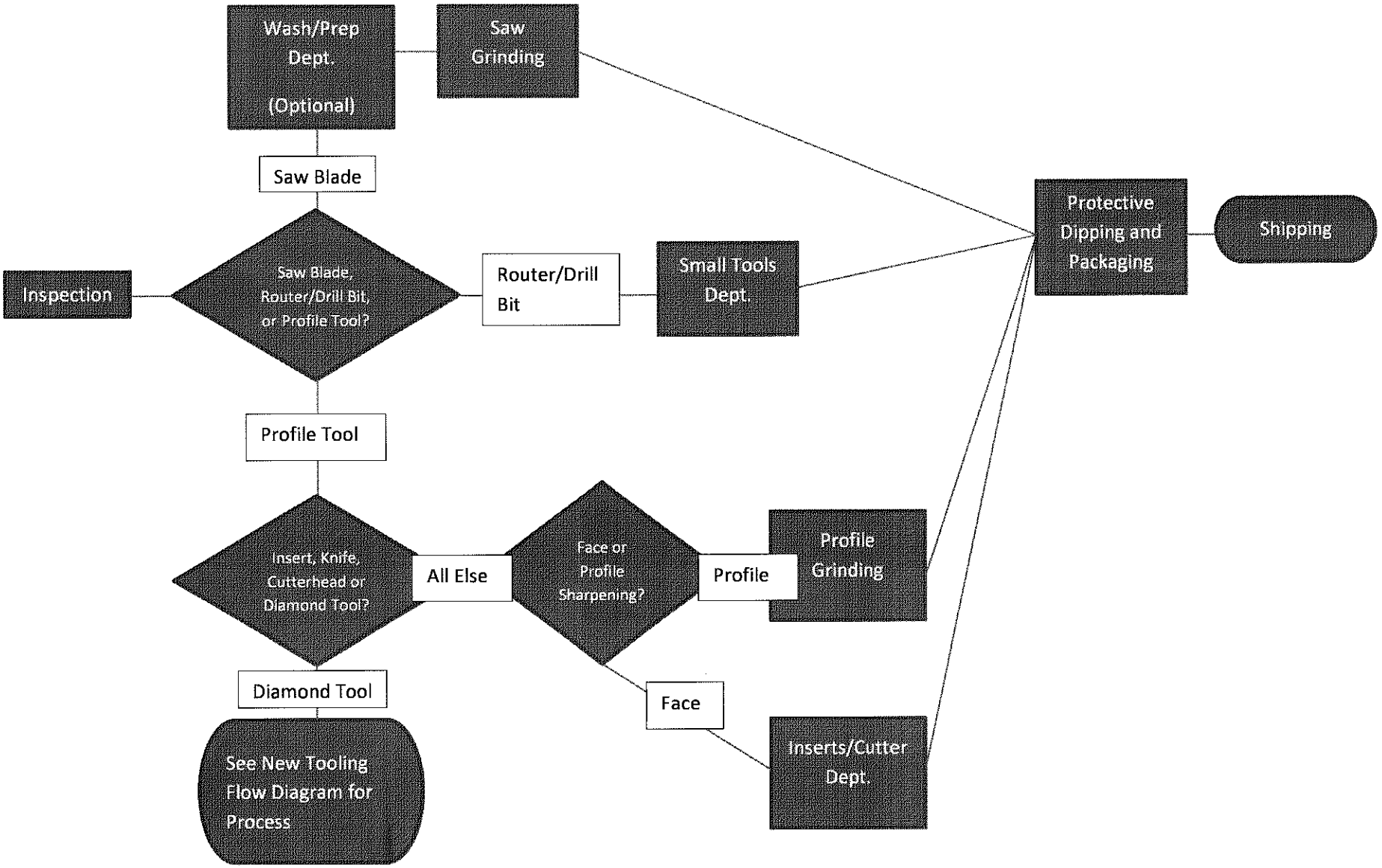
2. Principle raw materials used:
    - Tungsten Carbide (C3, C4)
    - Steel (4140, C1018, 301/304 Stainless, M2, M3)
    - Aluminum (6061)
    - M42 Alloy
    - Polycrystalline Diamond
    - Copper
    - Brass
    - Nickel
3. Chemicals and compounds used (include MSDS for each)
   See previously submitted binder of MSDS sheets.

4. Hours of process discharge into the sewer system per day:
   There are zero hours of process discharge into the municipal sewer system. No manufacturing process discharges any liquid into the municipal sewer system. All oils, coolant, grease, and liquids from the manufacturing, grinding, electroplating and black oxide processes are collected in designated containers and transferred to Safety-Kleen Systems, Inc. for proper disposal.

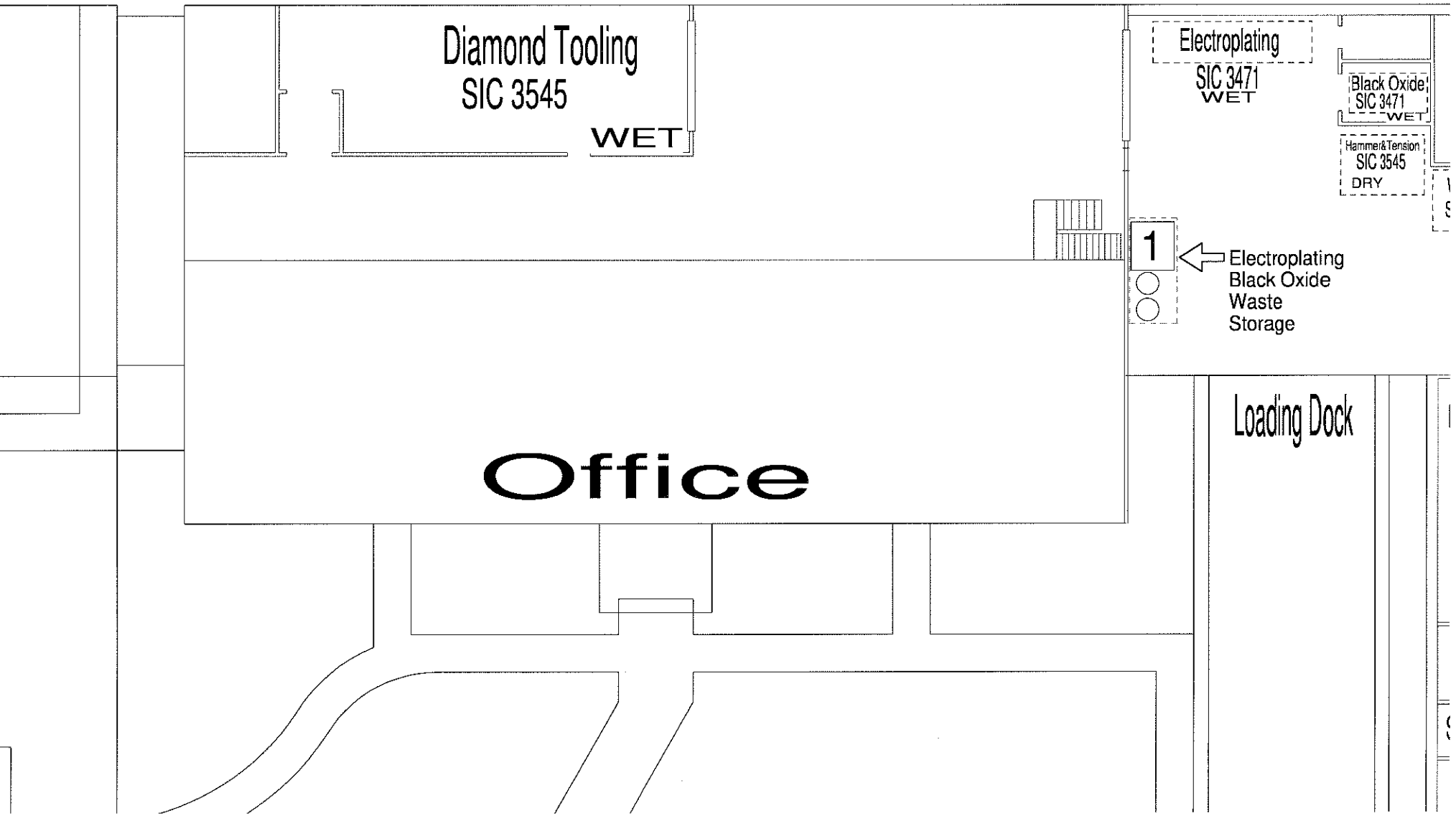
New Tooling Flow Diagram



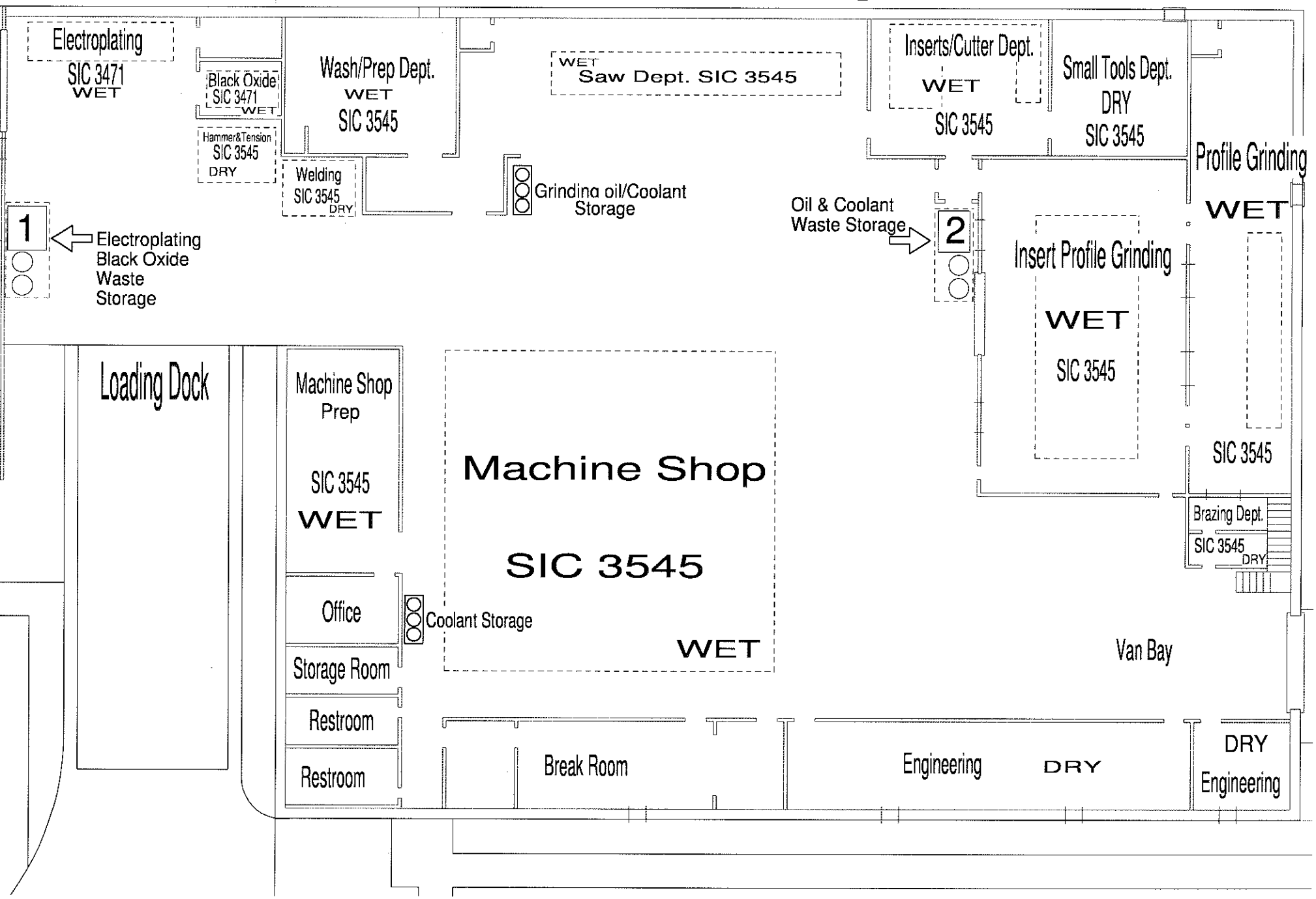
Tool Servicing Flow Diagram

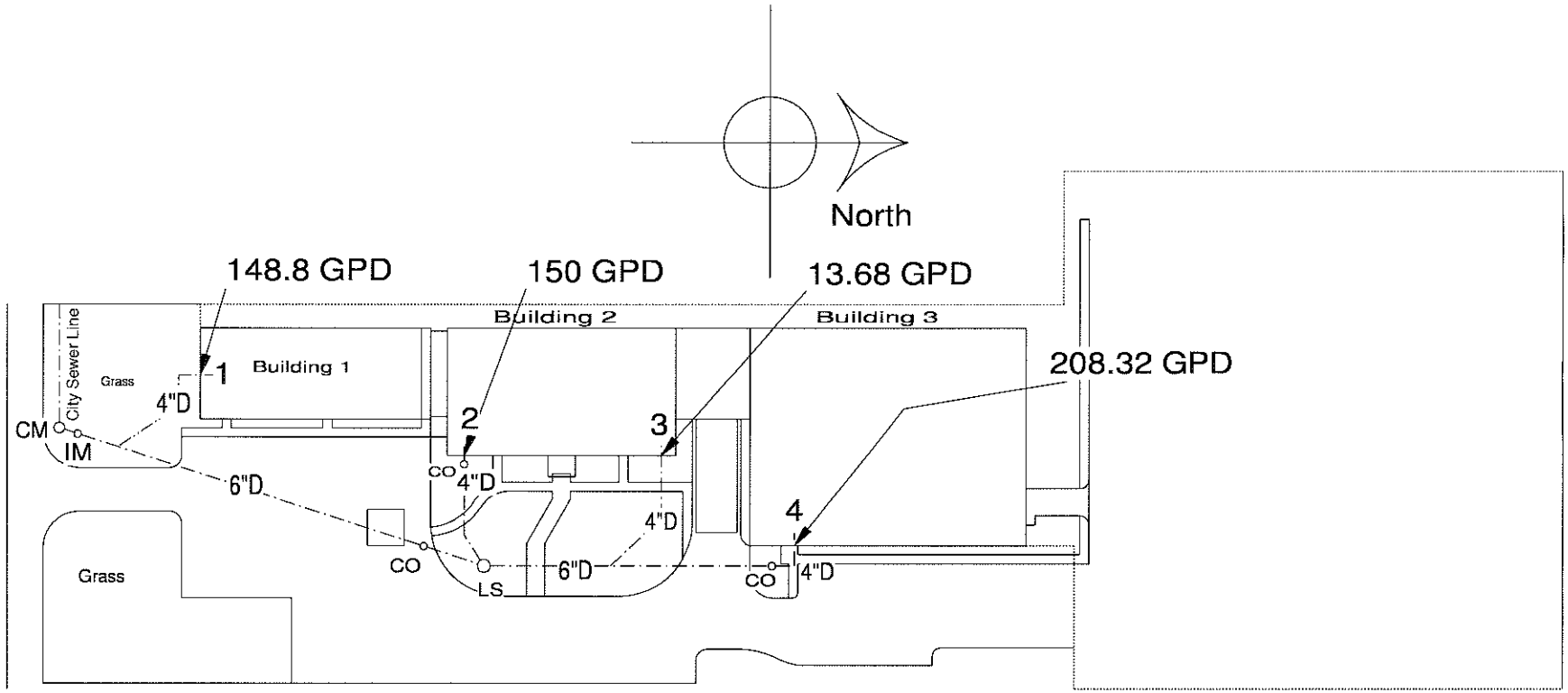


Building 2


Diamond Tooling
SIC 3545
WET
Electroplating
SIC 3471
WET
Black Oxide
SIC 3471
WET
Hammer&Tension
SIC 3545
DRY
1
Electroplating
Black Oxide
Waste
Storage
Loading Dock
Office

Building 3


Electroplating
SIC 3471
WET
Black Oxide
SIC 3471
WET
Hammer&Tension
SIC 3545
DRY
Wash/Prep Dept.
WET
SIC 3545
Welding
SIC 3545
DRY
WET
Saw Dept. SIC 3545
Grinding oil/Coolant
Storage
Inserts/Cutter Dept.
WET
SIC 3545
Small Tools Dept.
DRY
SIC 3545
Profile Grinding
WET
1
Electroplating
Black Oxide
Waste
Storage
Oil & Coolant
Waste Storage
2
Insert Profile Grinding
WET
SIC 3545
SIC 3545
Brazing Dept.
SIC 3545
DRY
Loading Dock
Machine Shop
Prep
SIC 3545
WET
Machine Shop
SIC 3545
WET
Office
Coolant Storage
Storage Room
Restroom
Restroom
Break Room
Van Bay
Engineering
DRY
DRY
Engineering



Symbols

-LS Lift Station

-CM Man Hole

-IM Inspection Man Hole

-CO Clean Out

Riverside Tool Corp. Response
Attachment 7

Hazardous Substances Table

Product	Chemical	CAS	Manufacturer	Product Container Size	Percent of Chemical in Product	Average Yearly Consumption	Use
METAL ACTIVATOR	AMMONIUM BIFLUORIDE	1341497	P & A SALES	15 gallons	<1%	1 purchased total to date	Used in electroplating process
GASOLINE ALL GRADES	BENZENE	71432	HESS	2 Gallon	1-4.9%	4 gallons	Used for landscaping and snow removal maintenance on facility
Aluminum alloys with low Beryllium	Beryllium	7440417	Alcoa	Varies	0.002	Varies Depending On Production	Present in 6061 Aluminum that is machined from round and square solid pieces
Black Blasting Abrasive	Beryllium	7440417	TCC Materials	50lb	0.00036	30 bags	Present in small amounts in sand-blasting media
NICKEL CADMIUM BATTERY	CADMIUM	7440439	SANYO BATTERIES	Varies	11-26%	Varies - 5 or less batteries per yea	Batteries are present in power tools, lights, etc. Used for maintenance.
Aluminum alloys containing lead	CHROMIUM	7440473	Kaiser Aluminum	Varies	0.1-1	Varies Depending On Production	Present in 6061 Aluminum that is machined from round and square solid pieces
Aluminum alloys with low Beryllium	CHROMIUM	7440473	Alcoa	Varies	0.36	Varies Depending On Production	Present in 6061 Aluminum that is machined from round and square solid pieces
Crobalt Alloy	CHROMIUM	7440473	Crobalt	Varies	25-30	Varies Depending On Production	Present in alloy material ground for wood-working tool inserts (cutting tools)
Nicrobraz LM	CHROMIUM	7440473	Wall Colmonoy Corporation	1 gallon	5-10%	1 per year	Used in grit form to prepare diamond tools before brazing
Widell Taps & Dies	CHROMIUM	7440473	Widell Industries	Varies	1	Varies based on Production	Used to machine steel and aluminum
Bright Copper Catalyst	COPPER SULFATE, LIQUID	7758987	P&A Sales	5-15 gallon	3	No Longer in Use (1 every 3 years	Used in electroplating process
ELECTROSTRIP	COPPER SULFATE, LIQUID	7758987	P & A SALES	15 gallons	1%	1 purchased total to date	Used in electroplating process
Brake Parts Cleaner	Dichloromethane	75092	Berryman Products, Inc.	20oz	60-70	82 cans per year	Used for machine maintenance and occasional tool cleaning
Brake Cleaner	Dichloromethane	75092	Radiator Specialty Company	19oz	30-60	82 cans per year	Used for machine maintenance and occasional tool cleaning
INSTAPAK QUICK RT COMPONENT "A"	DIPHENLMETHAN DIISOCYANAT	101688	SEALED AIR	<1lb	<1%	Less than 5 per year	Ocassionally used in Shipping department for packaging (contained in sealed bag)
GASOLINE ALL GRADES	ETHYLBENZENE	100414	HESS	2 Gallon	<3%	4 gallons	Used for landscaping and snow removal maintenance on facility
GASOLINE ALL GRADES	HEXANE	110543	HESS	2 Gallon	.5-4%	4 gallons	Used for landscaping and snow removal maintenance on facility
The Works Disinfectant Toilet Bowl Cleaner	hydrogen chloride	7647010	HomeCare Labs, Inc.		20%	1-2 Bottles per year	Used for bathroom cleaning, misc. cleaning
Aluminum alloys containing lead	Lead	7439921	Kaiser Aluminum	Varies	0.1-1, 1-2	Varies Depending On Production	Present in 6061 Aluminum that is machined from round and square solid pieces
Widell Taps & Dies	Lead	7439921	Widell Industries	Varies	.05	Varies based on Production	Used to machine steel and aluminum
S396 Lead Foil Tape	Lead	7439921	Specialty Tapes	1" or 2" Wide Rolls	80-90%	Varies based on Production	used to mask parts for electroplating
Aluminum alloys with low Beryllium	Nickel	7440020	Alcoa	Varies	1.5	Varies Depending On Production	Present in 6061 Aluminum that is machined from round and square solid pieces
Crobalt Alloy	Nickel	7440020	Crobalt	Varies	1-5	Varies Depending On Production	Present in alloy material ground for wood-working tool inserts (cutting tools)
Diamond or Cubic Boron Nitride Grinding Wheel	Nickel	7440020	EAGLE INTERNATIONAL, IN	Varies	82	Varies Depending on Production	Used in wet grinding process for grinding carbide and steel alloys
NICKEL CADMIUM BATTERY	Nickel	7440020	SANYO BATTERIES	Varies	8-17%	Varies - 5 or less batteries per yea	Batteries are present in power tools, lights, etc. Used for maintenance.
Nicrobraz LM	Nickel	7440020	Wall Colmonoy Corporation	1 gallon	60-100%	1 per year	Used in grit form to prepare diamond tools before brazing
SilverCopperManganeseNickelZinc Alloys	Nickel	7440020	Lucas Milhaupt, Inc.	Varies	0.1-4.5	Varies based on Production	Used in brazing process
SilverCopperNickelZinc Alloys	Nickel	7440020	Lucas Milhaupt, Inc.	Varies	0.1-24	Varies based on Production	Used in brazing process
Tool Steel; Grades A2, D2, O1, S7, W1	Nickel	7440020	Precision Kidd Steel Company	Varies	.01-4.0	Varies based on Production	Present in Tool Steel that is machined from round and square solid pieces
Widell Taps & Dies	Nickel	7440020	Widell Industries	Varies	1	Varies based on Production	Used to machine steel and aluminum
Silver Brazing Alloys	Nickel	7440-02-0	The Prince/Izant Company	Varies	N/A	Varies based on Production	Used in Brazing Process
Bright Nickel Solution	Nickel (II) Chloride (1:2)	7718549	P&A Sales	5-15 gallon	15	less than 1 per year	Used in electroplating process
NICKEL CADMIUM BATTERY	NICKEL HYDROXIDE	12054487	SANYO BATTERIES	Varies	5-12%	Varies - 5 or less batteries per yea	Batteries are present in power tools, lights, etc. Used for maintenance.
LPS ZERO TRI	PENTYL ACETATE	628637	LPS LABORATORIES	15oz.	1-5%	312 aerosol cans per year	Used for cleaning parts during brazing process - Aerosol Only
AC 500, Acid Rust, Scale & Oil Remover	Phosphoric Acid	7664382	Rochester Midland Corporatio	1 gallon	45-55	Less than 1 bottle every 3 years	Occasional deep cleaning of EDM water tanks with hard water deposits
Rust Free	Phosphoric Acid	7664382	PMS Products, Inc.	8 oz bottle	<30%	12 bottles	Used to clean woodworking tools and for resale to customers
Crobalt Alloy	Phosphorous	7723140	Crobalt	Varies	0.001 - 0.02	Varies Depending On Production	Present in alloy material ground for wood-working tool inserts (cutting tools)
Diamond or Cubic Boron Nitride Grinding Wheel	Phosphorous	7723140	EAGLE INTERNATIONAL, IN	Varies	1	Varies Depending on Production	Used in wet grinding process for grinding carbide and steel alloys
Widell Taps & Dies	Phosphorous	7723140	Widell Industries	Varies	0.1	Varies based on Production	Used to machine steel and aluminum
Birchwood Casey Safe Scrub ST	Potassium Hydroxide	1310583	Birchwood Casey	5 gallons	20	15 gallons	Component of Safe Scrub ST used in Black Oxide Process
Blade & Bit	Potassium Hydroxide	1310583	PMS Products, Inc.	1 Gallon and 8 oz	<5	33.5 gallons	Used to clean woodworking tools and for resale to customers
Daraclean 282 GF	Potassium Hydroxide	1310583	Magnaflux	Unknown	1-5	No longer in Use	No longer in Use - would have been used in brazing process.
NICKEL CADMIUM BATTERY	Potassium Hydroxide	1310583	SANYO BATTERIES	Varies	<3%	Varies - 5 or less batteries per yea	Batteries are present in power tools, lights, etc. Used for maintenance.
Diamond or Cubic Boron Nitride Grinding Wheel	Silver	7440224	EAGLE INTERNATIONAL, IN	Varies	85	Varies Depending on Production	Used in wet grinding process for grinding carbide and steel alloys
SilverCopperManganeseNickelZinc Alloys	Silver	7440224	Lucas Milhaupt, Inc.	Varies	24-49	Varies based on Production	Used in brazing process
SilverCopperNickelZinc Alloys	Silver	7440224	Lucas Milhaupt, Inc.	Varies	1.5-55	Varies based on Production	Used in brazing process
Silver Brazing Alloys	Silver (Metal)	7440-22-4	The Prince/Izant Company	Varies	N/A	Varies based on Production	Used in Brazing Process
Silver Brazing Alloys	Silver (soluble)	7440-22-4	The Prince/Izant Company	Varies	N/A	Varies based on Production	Used in Brazing Process
METAL ACTIVATOR	SODIUM BISULFITE	7631905	P & A SALES	15 gallons	7%	1 purchased total to date	Used in electroplating process
Electroscrub	Sodium Hydroxide	1310732	P&A Sales	15 gallons	17	1 purchased total to date	Used in electroplating process
Saw Cleaner Pitch and Gum Remover	Sodium Hydroxide	1310732	Sprayway	18 oz.	5-8	12 aerosol cans	Resale to customers - rare use at the Site
Tru Temp XL Blackener	Sodium Hydroxide	1310732	Birchwood Casey	5 gallons	30	27.5 gallons	Used in black oxide process
X10	Sodium Hydroxide	1310732	Owen Edwards Company, LLC	5 gallon pail	N/A	Less than 1 per year	Used in closed machine to clean saw blades
Clorox Bleach Wipes	Sodium Hypochlorite	7681529	The Clorox Company	1lb 4.5oz	0.1-1	60 containers	Miscellanous cleaning (bathrooms, offices)
PROFORCE BATHROOM & TILE CLEANER	Sodium Hypochlorite	7681529	ECOLAB INC.	1 gallon	2%	Varies - very low	Used for occasional cleaning of bathrooms
S722	Sodium phosphate, tribasic (TSP) (	7601549	Beaver Research Company	30 gallons	N/A	No Longer In Use	Was used for Machine cleaning - no longer in use
S722	Sodium Tripolyphosphate	7758294	Beaver Research Company	30 gallons	N/A	No Longer In Use	Was used for Machine cleaning - no longer in use
X10	Sodium Tripolyphosphate	7758294	Owen Edwards Company, LLC	5 gallon pail	N/A	Less than 1 per year	Used in closed machine to clean saw blades
Bright Copper Make Up	Sulfuric Acid	7664939	P&A Sales	5-15 gallon	<1	1 purchased - No Longer in use	Used in electroplating process
ELECTROSTRIP	Sulfuric Acid	7664939	P & A SALES	15 gallons	95%	1 purchased total to date	Used in electroplating process
Brake Parts Cleaner	Tetrachloroethylene	127184	Berryman Products, Inc.	20oz	5-15	82 cans per year	Used for machine maintenance and occasional tool cleaning

Brake Cleaner	Tetrachloroethylene	127184	Radiator Specialty Company	19oz.	30-60	82 cans per year	Used for machine maintenance and occasional tool cleaning
Brake Parts Cleaner	TOLUENE	108883	Berryman Products, Inc.	20oz	20-30	82 cans per year	Used for machine maintenance and occasional tool cleaning
GASOLINE ALL GRADES	TOLUENE	108883	HESS	2 Gallon	1-25%	4 gallons	Used for landscaping and snow removal maintenance on facility
GASOLINE ALL GRADES	XYLENES	1330207	HESS	2 Gallon	1-15%	4 gallons	Used for landscaping and snow removal maintenance on facility

Riverside Tool Corp. Response
Attachment 8

Fire Safety Inspection Records

ELKHART FIRE DEPARTMENT - INSPECTION BUREAU

500 EAST STREET • ELKHART, INDIANA 46516
(574) 293-8931 FAX (574) 522-1023

FIRE CODE INSPECTION FORM

BUSINESS NAME RIVERSIDE TOOL PHONE 522-6798

ADDRESS 3504 HENKE DR SUITE # P.O. BOX # ZIP # 46514

EMERGENCY CONTACT SHOFF - 293-6157 PHONE

OCCUPANCY USED FOR + RON MILLER - C 536-9696 (MANUFACTOR)

#	FIRE CODE	COMPLIANCE ✓	VIOLATION ✓	COMMENTS
01	PROVIDE EXIT ACCESS MINIMUM 44" WIDTH			
02	EXIT DOORS SWING IN TRAVEL DIRECTION, GOOD REPAIR			
03	PROPER NUMBER OF EXIT SIGNS SHALL BE PROVIDED			
04	EXIT DOORS SHALL NOT BE OBSTRUCTED, GOOD REPAIR			
05	EXIT SIGNS SHALL BE ILLUMINATED WHILE OCCUPIED			
06	EXIT DOORS SECURED BY PANIC HARDWARE, OTHER SINGLE MOTION SIMPLE LOCKING DEVICE, NO SPECIAL TOOLS			
07	SELF CLOSURE INSTALLED ON ALL FIRE DOORS			
08	EMERGENCY LIGHTING SHALL BE PROVIDED IN BUILDING			
09	NO EXIT SHALL BE PERMITTED THROUGH KITCHENS, STORE-ROOMS, RESTROOMS, CLOSETS, OR HAZARDOUS AREAS			
10	ALL MEANS OF EGRESS SHALL BE ILLUMINATED WHILE OCCUPIED			
11	TOTAL LENGTH OF TRAVEL FROM ANY POINT TO AN EXIT SHALL NOT EXCEED 150'-200' IN SPRINKLED BUILDINGS			
12	EXIT CORRIDORS SHALL HAVE (1) HOUR WALL AND CEILING PROTECTION IN UNSPRINKLED BLDGS			
13	EVERY LIVING UNIT SHALL HAVE ACCESS TO AT LEAST TWO EXITS			
14	EXIT SIGNS SHALL BE VISIBLE FROM ANY DIRECTION OF EXIT			
15	FIRE ALARM SYSTEM SHALL BE OPERABLE & TESTED			
16	EVERY CLASS "A" OR "B" ASSEMBLY SHALL BE PROVIDED WITH A WORKING MANUAL FIRE ALARM SYSTEM			
17	SMOKE DETECTORS SHALL BE INSTALLED AND IN OPERATING CONDITION EXCEPT IN SPRINKLED BUILDINGS			
18	OWNER / OCCUPANT SHALL REPORT ALL FIRES IMMEDIATELY			
19	ALL DWELLINGS SHALL HAVE WORKING SMOKE DETECTORS			
20	FIRE EXTINGUISHER SHALL BE SERVICED ONCE A YEAR AND/OR MAINTAINED IN GOOD OPERATING CONDITION			
21	FIRE EXTINGUISHER SHALL BE MOUNTED ON WALL-TOP NO MORE THAN 3½" FROM FLOOR-BOTTOM NO LESS THAN 4" FROM FLOOR			
22	NO SMOKING SIGNS TO BE POSTED — SMOKING IN DESIGNATED AREAS ONLY			
23	SPRINKLER SYSTEM OPERABLE, GAUGE INDICATES PRESSURE ON SYSTEM MAIN WATER VALVE OPEN			
24	STANDPIPE SHALL BE UNOBSTRUCTED, GOOD REPAIR			
25	PRIVATE FIRE HYDRANTS SHALL BE FLOW TESTED ANNUALLY			
26	BUILDING SPRINKLER SYSTEMS SHALL BE TESTED ANNUALLY IN ACCORDANCE WITH THE FIRE CODE BY A QUALIFIED PERSON			
27	SPRINKLER HEADS SHALL HAVE 18" MINIMUM CLEARANCE			
28	SPRINKLED BLDGS, SPRINKLED IN ALL UNSPRINKLED COMBUSTIBLE SPACES			
29	SPRINKLER FUSIBLE LINKS OVER 50 YRS. OLD SHALL BE TESTED			
30	SUSPENDED CEILINGS TO BE W/APPROV. DROP OUT PANELS OR SPRINKLER HEADS EXTENDED BELOW CEILING			
31	HOOD AND VENT SYSTEM SHALL BE MAINTAINED			
32	HOOD AND VENT SYSTEM SHALL BE SERVICED / 6 MONTHS			
33	ELECTRICAL BOXES, EQUIPMENT SHALL HAVE 3' MIN. CLEARANCE			
34	EXTENSION CORDS SHALL NOT BE USED FOR PERMANENT WIRING			
35	ELECTRICAL BOXES SHALL NOT HAVE UNUSED OPENINGS			
36	UNPROTECTED ELECTRICAL WIRING IN COMMERCIAL USAGE SHALL BE INSTALLED IN EMT CONDUIT			
37	ELECTRIC MOTORS SHALL BE MAINTAINED FREE FROM ACCUMU-LATIONS OF OIL, DIRT, WASTE AND OTHER DEBRIS WHICH WILL INTERFERE WITH PROPER PERFORMANCE			
38	ABANDONED ELECT. WIRING SHALL BE REMOVED-(N.E.C.)			
39	ELECT. SWITCHES, OUTLETS, JUNCTION COVERS SHALL BE PROVIDED AND INSTALLED			
40	ELECT. SYSTEMS SHALL BE MAINTAINED PROPERLY. MISUSE OF ELECTRICITY IS PROHIBITED			
41	MULTIPLE ELECT. CORDS NOT PLUGGED INTO RECEPTS			
42	FLAMMABLE LIQUIDS SHALL BE STORED IN A NON-SPILLABLE APPROVED CONTAINER			
43	FLAMMABLE OR HAZARDOUS MATERIALS SHALL NOT BE EXCESSIVE QUANTITIES IN WORK PLACE (1) DAY SUPPLY			
44	LP FILLING FACILITIES SHALL HAVE FIRE EXTINGUISHER & BE BARRICADED			
45	ALL CLASS I AND II LIQUID CONTAINERS (OVER 5 GAL) SHALL BE DISPENSED DRAWING FROM THE TOPS OF THE CONTAINER OR BY GRAVITY WITH A SELF-CLOSING FAUCET			
46	FLAMMABLE LIQUID CONTAINERS TO BE PROPERLY GROUNDED DURING ALL DISPENSING OPERATIONS			
47	STORAGE OR REPAIR OF GAS OR GAS FUELED EQUIPMENT IN ANY DWELLING, OFFICE, EXITWAY, ETC. IS PROHIBITED			
48	ALL FLAMMABLE POWDER COATING, AND DIP TANK OPERATIONS SHALL BE CONDUCTED IN AN APPROVED MANNER AND CONDITION			

#	FIRE CODE	COMPLIANCE ✓	VIOLATION ✓	COMMENTS
51	ANY UNDERGROUND STORAGE TANK OUT OF SERVICE FOR (1) YEAR OR LONGER SHALL BE REMOVED OR ABANDONED PER CODE			
52	ANY UNDERGROUND STORAGE TANK NOT USED FOR A PERIOD OF (90) DAYS SHALL BE PROPERLY SAFEGUARDED OR REMOVED			
53	STORAGE TANK VENTILATION OF CLASS I LIQUID TO TERMINATE OUTSIDE WITH VAPORS NOT TO ENTER THE BUILDING, AND 12 FT ABOVE GRADE LEVEL			
54	LEAKING UNDERGROUND STORAGE TANKS SHALL BE PROMPTLY EMPTIED AND REMOVED FROM THE GROUND OR REPAIRED			
55	COMPRESSED GAS CYLINDERS SHALL BE SECURED			
56	GENERAL HOUSEKEEPING SHALL BE CLEAN AND NEAT			
57	RUBBISH — DEBRIS — COMBUSTIBLES TO BE REMOVED			
58	AISLEWAYS OR STAIRWELLS SHALL NOT BE OBSTRUCTED BY DEBRIS, STORAGE, ETC. & BE VACATABLE			
59	DUMPSTER LOCATION SHALL NOT BE PLACED WITHIN 5' FEET OF COMBUSTIBLE WALLS — OR UNDER ROOFS			
60	STORAGE UNDER EXIT STAIRWAYS WITHOUT (1) HOUR FIRE-SEPARATION UNDER STAIRS IS PROHIBITED			
61	ANY EXTERIOR DOOR THAT IS BLOCKED BY STORAGE ON THE INTERIOR SIDE SHALL BE POSTED AS SUCH WITH SIGN ON THE EXTERIOR OF THE DOOR (THIS DOOR BLOCKED)			
62	VACANT BUILDINGS SHALL REMOVE ALL ACCUMULATIONS OF FLAM-MABLE OR COMBUSTIBLE WASTE AND SHALL BE SECURED			
63	HEATING APPLIANCES SHALL HAVE 18" MINIMUM CLEARANCE			
64	ALL PROTECTIVE COVERS SHALL BE INSTALLED ON HEATING PRODUCING APPLIANCES & OTHER HAZARDS			
65	GAS FLUES SHALL BE IN GOOD REPAIR			
66	FIRE DOORS AND SMOKE VENTS SHALL NOT BE OBSTRUCTED AND SHALL BE OPERABLE W/SELF CLOSURES			
67	FLOORS, CEILINGS, WALLS, DOORS, WINDOWS, SHALL BE IN GOOD REPAIR, FIRE DOOR W/SELF CLOSURES			
68	BOILER-LARGE ELECT. EQUIP.-MACH. RMS.-REFRIGERATION SHALL HAVE A (1) HR FIRE SEPARATION			
69	ALL DECORATIONS SHALL BE NONFLAMMABLE OR TREATED WITH A FLAME RETARDANT MATERIAL			
70	SITE FLOOR PLAN WITH LOCATIONS OF SPRINKLER MAIN, ELECTRICAL MAIN, GAS MAIN, FLAMMABLE LIQUID STORAGE			
71	APPROVED FIRE RATED CARPET, DRAPES, CURTAINS, ETC. SHALL BE INSTALLED			
72	OFFICE AREAS AND WAREHOUSING OR MANUFACTURING SHALL BE SEPARATED WITH AN APPROVED FIRE SEPARATION WALL			
73	FIRE SEPARATION WALL SHALL NOT BE BREACHED WITH UNPROTECTED OPENINGS THRU WALLS			
74	ATTIC ACCESS HOLES SHALL BE COVERED AND/OR CLOSED			
75	ONE (1) HOUR FIRE SEPARATION WALL BETWEEN TENANTS OF OVER 1000 SQ. FEET SHALL BE INSTALLED			
76	DUST COLLECTION SYSTEM ON ALL MACHINES THAT PRODUCE AIRBORNE PARTICLES			
77	SHAFT ENCLOSURE OPENINGS EXTENDING VERTICALLY THROUGH FLOORS SHALL BE ENCLOSED IN A SHAFT OF FIRE RESISTIVE CONSTRUCTION			
78	MALL BUILDING OWNERS SHALL PROVIDE A LEASE PLAN SHOWING LOCATION OF EACH OCCUPANT AND ITS EXITS. SUCH PLANS SHALL BE KEPT CURRENT. NO CHANGES WITHOUT APPROVAL			
79	SPRAY FINISHING OPERATIONS PERFORMED INSIDE A BUILDING SHALL BE CONDUCTED IN AN APPROVED SPRAY BOOTH			
80	SPRAY BOOTHS OR SPRAY ROOMS SHALL BE PROTECTED BY AN APPROVED FIRE EXTINGUISHING SYSTEM			
81	ALL SPRAY BOOTH OPERATIONS SHALL BE CLEAN AND ORDERLY			
82	FLAMMABLE OPERATIONS SHALL BE POSTED W/ "NO SMOKING" — "NO WELDING" SIGNS			
83	SPRAY BOOTHS & ROOMS TO BE W/O COMBUSTIBLE OR SPARK PRODUCING MATERIALS			
84	NON-EXPLOSION PROOF ELECT. IS PROHIBITED WITHIN SPRAY BOOTH, ROOM OR 20' RADIUS OUTSIDE OF OPENING			
85	FIRE APPARATUS ACCESS ROADS SHALL BE PROVIDED AND MAIN-TAINED IN ACCORDANCE WITH THE PROVISIONS OF THE FIRE CODE			
86	CORRECT ADDRESS SHALL BE POSTED AND VISIBLE			
87	APARTMENT NUMBERS SHALL BE POSTED AND VISIBLE			
88	A KEY BOX SHALL BE INSTALLED WHEN ACCESS TO OR WITHIN A STRUCTURE OR AN AREA IS UNDULY DIFFICULT FOR LIFE SAVING OR FIRE FIGHTING PURPOSES			
89	OCCUPANCY SIGN SHALL BE POSTED, VISIBLE, IF 50 OR MORE			
90	STATE ELEVATOR CERTIFICATE SHALL BE POSTED, VISIBLE AND CURRENT AT ELEVATOR LOCATION			
91	PRESSURE BOILER OR PRESSURE VESSEL STATE INSPECTION CERTIFICATE SHALL BE POSTED AND CURRENT			
92	STATE FIRE MARSHALL AND CITY ENTERTAINMENT PERMIT SHALL BE OBTAINED AND CURRENT			
93	CITY PERMITS SHALL BE OBTAINED FOR CONSTRUCTION			

27	SPRINKLER HEADS SHALL HAVE 18" MINIMUM CLEARANCE				
28	SPRINKLED BLDGS. SPRINKLED IN ALL UNSPRINKLED COMBUSTIBLE SPACES				
29	SPRINKLER FUSIBLE LINKS OVER 50 YRS. OLD SHALL BE TESTED				
30	SUSPENDED CEILINGS TO BE W/APPROV. DROP OUT PANELS OR SPRINKLER HEADS EXTENDED BELOW CEILING				
31	HOOD AND VENT SYSTEM SHALL BE MAINTAINED				
32	HOOD AND VENT SYSTEM SHALL BE SERVICED / 6 MONTHS				
33	ELECTRICAL BOXES, EQUIPMENT SHALL HAVE 3' MIN. CLEARANCE				
34	EXTENSION CORDS SHALL NOT BE USED FOR PERMANENT WIRING				
35	ELECTRICAL BOXES SHALL NOT HAVE UNUSED OPENINGS				
36	UNPROTECTED ELECTRICAL WIRING IN COMMERCIAL USAGE SHALL BE INSTALLED IN EMT CONDUIT				
37	ELECTRIC MOTORS SHALL BE MAINTAINED FREE FROM ACCUMULATIONS OF OIL, DIRT, WASTE AND OTHER DEBRIS WHICH WILL INTERFERE WITH PROPER PERFORMANCE				
38	ABANDONED ELECT. WIRING SHALL BE REMOVED (N.E.C.)				
39	ELECT. SWITCHES, OUTLETS, JUNCTION COVERS SHALL BE PROVIDED AND INSTALLED				
40	ELECT. SYSTEMS SHALL BE MAINTAINED PROPERLY. MISUSE OF ELECTRICITY IS PROHIBITED				
41	MULTIPLE ELECT. CORDS NOT PLUGGED INTO RECEPTS				
42	FLAMMABLE LIQUIDS SHALL BE STORED IN A NON-SPILLABLE APPROVED CONTAINER				
43	FLAMMABLE OR HAZARDOUS MATERIALS SHALL NOT BE EXCESSIVE QUANTITIES IN WORK PLACE (1) DAY SUPPLY				
44	LP FILLING FACILITIES SHALL HAVE FIRE EXTINGUISHER & BE BARRICADED				
45	ALL CLASS I AND II LIQUID CONTAINERS (OVER 5 GAL) SHALL BE DISPENSED DRAWING FROM THE TOPS OF THE CONTAINER OR BY GRAVITY WITH A SELF-CLOSING FAUCET				
46	FLAMMABLE LIQUID CONTAINERS TO BE PROPERLY GROUNDED DURING ALL DISPENSING OPERATIONS				
47	STORAGE OR REPAIR OF GAS OR GAS FUELED EQUIPMENT IN ANY DWELLING, OFFICE, EXITWAY, ETC. IS PROHIBITED				
48	ALL FLAMMABLE POWDER COATING, AND DIP TANK OPERATIONS SHALL BE CONDUCTED IN AN APPROVED MANNER AND CONDITION				
49	OXYGEN SYSTEMS SHALL BE INSTALLED PROPERLY				
50	STORAGE OF EXPLOSIVE MATERIAL SHALL BE IN MAGAZINES				

	UNPROTECTED OPENINGS THRU WALLS				
74	ATTIC ACCESS HOLES SHALL BE COVERED AND/OR CLOSED				
75	ONE (1) HOUR FIRE SEPARATION WALL BETWEEN TENANTS OF OVER 1000 SQ. FEET SHALL BE INSTALLED				
76	DUST COLLECTION SYSTEM ON ALL MACHINES THAT PRODUCE AIRBORNE PARTICLES				
77	SHAFT ENCLOSURE OPENINGS EXTENDING VERTICALLY THROUGH FLOORS SHALL BE ENCLOSED IN A SHAFT OF FIRE RESISTIVE CONSTRUCTION				
78	MALL BUILDING OWNERS SHALL PROVIDE A LEASE PLAN SHOWING LOCATION OF EACH OCCUPANT AND ITS EXITS. SUCH PLANS SHALL BE KEPT CURRENT. NO CHANGES WITHOUT APPROVAL				
79	SPRAY FINISHING OPERATIONS PERFORMED INSIDE A BUILDING SHALL BE CONDUCTED IN AN APPROVED SPRAY BOOTH				
80	SPRAY BOOTHS OR SPRAY ROOMS SHALL BE PROTECTED BY AN APPROVED FIRE EXTINGUISHING SYSTEM				
81	ALL SPRAY BOOTH OPERATIONS SHALL BE CLEAN AND ORDERLY				
82	FLAMMABLE OPERATIONS SHALL BE POSTED W/ "NO SMOKING" — "NO WELDING" SIGNS				
83	SPRAY BOOTHS & ROOMS TO BE W/O COMBUSTIBLE OR SPARK PRODUCING MATERIALS				
84	NON-EXPLOSION PROOF ELECT. IS PROHIBITED WITHIN SPRAY BOOTH, ROOM OR 20' RADIUS OUTSIDE OF OPENING				
85	FIRE APPARATUS ACCESS ROADS SHALL BE PROVIDED AND MAINTAINED IN ACCORDANCE WITH THE PROVISIONS OF THE FIRE CODE				
86	CORRECT ADDRESS SHALL BE POSTED AND VISIBLE				
87	APARTMENT NUMBERS SHALL BE POSTED AND VISIBLE				
88	A KEY BOX SHALL BE INSTALLED WHEN ACCESS TO OR WITHIN A STRUCTURE OR AN AREA IS UNDULY DIFFICULT FOR LIFE SAVING OR FIRE FIGHTING PURPOSES				
89	OCCUPANCY SIGN SHALL BE POSTED, VISIBLE, IF 50 OR MORE				
90	STATE ELEVATOR CERTIFICATE SHALL BE POSTED, VISIBLE AND CURRENT AT ELEVATOR LOCATION				
91	PRESSURE BOILER OR PRESSURE VESSEL STATE INSPECTION CERTIFICATE SHALL BE POSTED AND CURRENT				
92	STATE FIRE MARSHALL AND CITY ENTERTAINMENT PERMIT SHALL BE OBTAINED AND CURRENT				
93	CITY PERMITS SHALL BE OBTAINED FOR CONSTRUCTION				
94	A PERSON SHALL NOT BURN ANY MATERIAL AS TO ENDANGER THE LIFE OR PROPERTY OF ANY PERSON THEREBY				

COMMENTS: _____

Fire Officer _____ A follow-up survey will be conducted approximately 30 days from the date of this report. I acknowledge receiving this report and understand that the noted violations are required to be corrected in accordance with applicable laws, codes and standards of the State of Indiana & City of Elkhart.

Signature _____ Date 4/25, 20 14

Your prompt attention to the correction of the aforementioned items will be greatly appreciated. The policy of the Elkhart Fire Department is based on a cooperative and participatory approach with the business community and citizenry to realize the goal of a fire safe business community within the city of Elkhart.

WHITE: Bureau Copy YELLOW: Occupant

DPI 10000

ELKHART FIRE DEPARTMENT - INSPECTION BUREAU
500 EAST STREET • ELKHART, INDIANA 46516
(574) 293-8931 FAX (574) 522-1023

FIRE CODE INSPECTION FORM

BUSINESS NAME HACH PHONE 262-2060

ADDRESS 3504 HENKE SUITE # P.O. BOX # ZIP # 46514

EMERGENCY CONTACT RON MIDGET - 936-9696 PHONE

OCCUPANCY USED FOR LAB (POOL TEST STRIPS) STAFF - 293-6517

#	FIRE CODE	COMPLIANCE ✓	VIOLATION ✓	COMMENTS
01	PROVIDE EXIT ACCESS MINIMUM 44" WIDTH			
02	EXIT DOORS SWING IN TRAVEL DIRECTION, GOOD REPAIR			
03	PROPER NUMBER OF EXIT SIGNS SHALL BE PROVIDED			
04	EXIT DOORS SHALL NOT BE OBSTRUCTED, GOOD REPAIR			
05	EXIT SIGNS SHALL BE ILLUMINATED WHILE OCCUPIED			
06	EXIT DOORS SECURED BY PANIC HARDWARE, OTHER SINGLE MOTION SIMPLE LOCKING DEVICE, NO SPECIAL TOOLS			
07	SELF CLOSURE INSTALLED ON ALL FIRE DOORS			
08	EMERGENCY LIGHTING SHALL BE PROVIDED IN BUILDING			
09	NO EXIT SHALL BE PERMITTED THROUGH KITCHENS, STOREROOMS, RESTROOMS, CLOSETS, OR HAZARDOUS AREAS			
10	ALL MEANS OF EGRESS SHALL BE ILLUMINATED WHILE OCCUPIED			
11	TOTAL LENGTH OF TRAVEL FROM ANY POINT TO AN EXIT SHALL NOT EXCEED 150'-200' IN SPRINKLED BUILDINGS			
12	EXIT CORRIDORS SHALL HAVE (1) HOUR WALL AND CEILING PROTECTION IN UNSPRINKLED BLDGS			
13	EVERY LIVING UNIT SHALL HAVE ACCESS TO AT LEAST TWO EXITS			
14	EXIT SIGNS SHALL BE VISIBLE FROM ANY DIRECTION OF EXIT			
15	FIRE ALARM SYSTEM SHALL BE OPERABLE & TESTED			
16	EVERY CLASS "A" OR "B" ASSEMBLY SHALL BE PROVIDED WITH A WORKING MANUAL FIRE ALARM SYSTEM			
17	SMOKE DETECTORS SHALL BE INSTALLED AND IN OPERATING CONDITION EXCEPT IN SPRINKLED BUILDINGS			
18	OWNER / OCCUPANT SHALL REPORT ALL FIRES IMMEDIATELY			
19	ALL DWELLINGS SHALL HAVE WORKING SMOKE DETECTORS			
20	FIRE EXTINGUISHER SHALL BE SERVICED ONCE A YEAR AND/OR MAINTAINED IN GOOD OPERATING CONDITION			
21	FIRE EXTINGUISHER SHALL BE MOUNTED ON WALL-TOP NO MORE THAN 3½' FROM FLOOR-BOTTOM NO LESS THAN 4" FROM FLOOR			
22	NO SMOKING SIGNS TO BE POSTED — SMOKING IN DESIGNATED AREAS ONLY			
23	SPRINKLER SYSTEM OPERABLE, GAUGE INDICATES PRESSURE ON SYSTEM MAIN WATER VALVE OPEN			
24	STANDPIPE SHALL BE UNOBSTRUCTED, GOOD REPAIR			
25	PRIVATE FIRE HYDRANTS SHALL BE FLOW TESTED ANNUALLY			
26	BUILDING SPRINKLER SYSTEMS SHALL BE TESTED ANNUALLY IN ACCORDANCE WITH THE FIRE CODE BY A QUALIFIED PERSON			
27	SPRINKLER HEADS SHALL HAVE 18" MINIMUM CLEARANCE			
28	SPRINKLED BLDGS, SPRINKLED IN ALL UNSPRINKLED COMBUSTIBLE SPACES			
29	SPRINKLER FUSIBLE LINKS OVER 50 YRS. OLD SHALL BE TESTED			
30	SUSPENDED CEILINGS TO BE W/APPROV. DROP OUT PANELS OR SPRINKLER HEADS EXTENDED BELOW CEILING			
31	HOOD AND VENT SYSTEM SHALL BE MAINTAINED			
32	HOOD AND VENT SYSTEM SHALL BE SERVICED / 6 MONTHS			
33	ELECTRICAL BOXES, EQUIPMENT SHALL HAVE 3' MIN. CLEARANCE			
34	EXTENSION CORDS SHALL NOT BE USED FOR PERMANENT WIRING			
35	ELECTRICAL BOXES SHALL NOT HAVE UNUSED OPENINGS			
36	UNPROTECTED ELECTRICAL WIRING IN COMMERCIAL USAGE SHALL BE INSTALLED IN EMT CONDUIT			
37	ELECTRIC MOTORS SHALL BE MAINTAINED FREE FROM ACCUMULATIONS OF OIL, DIRT, WASTE AND OTHER DEBRIS WHICH WILL INTERFERE WITH PROPER PERFORMANCE			
38	ABANDONED ELECT. WIRING SHALL BE REMOVED (N.E.C.)			
39	ELECT. SWITCHES, OUTLETS, JUNCTION COVERS SHALL BE PROVIDED AND INSTALLED			
40	ELECT. SYSTEMS SHALL BE MAINTAINED PROPERLY. MISUSE OF ELECTRICITY IS PROHIBITED			
41	MULTIPLE ELECT. CORDS NOT PLUGGED INTO RECEPTS			
42	FLAMMABLE LIQUIDS SHALL BE STORED IN A NON-SPILLABLE APPROVED CONTAINER			
43	FLAMMABLE OR HAZARDOUS MATERIALS SHALL NOT BE EXCESSIVE QUANTITIES IN WORK PLACE (1) DAY SUPPLY			
44	LP FILLING FACILITIES SHALL HAVE FIRE EXTINGUISHER & BE BARRICADED			
45	ALL CLASS I AND II LIQUID CONTAINERS (OVER 5 GAL) SHALL BE DISPENSED DRAWING FROM THE TOPS OF THE CONTAINER OR BY GRAVITY WITH A SELF-CLOSING FAUCET			
46	FLAMMABLE LIQUID CONTAINERS TO BE PROPERLY GROUNDED DURING ALL DISPENSING OPERATIONS			
47	STORAGE OR REPAIR OF GAS OR GAS FUELED EQUIPMENT IN ANY DWELLING, OFFICE, EXITWAY, ETC. IS PROHIBITED			
48	ALL FLAMMABLE POWDER COATING, AND DIP TANK OPERATIONS SHALL BE CONDUCTED IN AN APPROVED MANNER AND CONDITION			

#	FIRE CODE	COMPLIANCE ✓	VIOLATION ✓	COMMENTS
51	ANY UNDERGROUND STORAGE TANK OUT OF SERVICE FOR (1) YEAR OR LONGER SHALL BE REMOVED OR ABANDONED PER CODE			
52	ANY UNDERGROUND STORAGE TANK NOT USED FOR A PERIOD OF (90) DAYS SHALL BE PROPERLY SAFEGUARDED OR REMOVED			
53	STORAGE TANK VENTILATION OF CLASS I LIQUID TO TERMINATE OUTSIDE WITH VAPORS NOT TO ENTER THE BUILDING, AND 12 FT ABOVE GRADE LEVEL			
54	LEAKING UNDERGROUND STORAGE TANKS SHALL BE PROMPTLY EMPTIED AND REMOVED FROM THE GROUND OR REPAIRED			
55	COMPRESSED GAS CYLINDERS SHALL BE SECURED			
56	GENERAL HOUSEKEEPING SHALL BE CLEAN AND NEAT			
57	RUBBISH — DEBRIS — COMBUSTIBLES TO BE REMOVED			
58	AISLEWAYS OR STAIRWELLS SHALL NOT BE OBSTRUCTED BY DEBRIS, STORAGE, ETC. & BE VACATABLE			
59	DUMPSTER LOCATION SHALL NOT BE PLACED WITHIN 5 FEET OF COMBUSTIBLE WALLS — OR UNDER ROOFS			
60	STORAGE UNDER EXIT STAIRWAYS WITHOUT (1) HOUR FIRE SEPARATION UNDER STAIRS IS PROHIBITED			
61	ANY EXTERIOR DOOR THAT IS BLOCKED BY STORAGE ON THE INTERIOR SIDE SHALL BE POSTED AS SUCH WITH SIGN ON THE EXTERIOR OF THE DOOR (THIS DOOR BLOCKED)			
62	VACANT BUILDINGS SHALL REMOVE ALL ACCUMULATIONS OF FLAMMABLE OR COMBUSTIBLE WASTE AND SHALL BE SECURED			
63	HEATING APPLIANCES SHALL HAVE 18" MINIMUM CLEARANCE			
64	ALL PROTECTIVE COVERS SHALL BE INSTALLED ON HEATING PRODUCING APPLIANCES & OTHER HAZARDS			
65	GAS FLUES SHALL BE IN GOOD REPAIR			
66	FIRE DOORS AND SMOKE VENTS SHALL NOT BE OBSTRUCTED AND SHALL BE OPERABLE W/SELF CLOSURES			
67	FLOORS, CEILINGS, WALLS, DOORS, WINDOWS, SHALL BE IN GOOD REPAIR, FIRE DOOR W/SELF CLOSURES			
68	BOILER-LARGE ELECT. EQUIP.-MACH. RMS.-REFRIGERATION SHALL HAVE A (1) HR FIRE SEPARATION			
69	ALL DECORATIONS SHALL BE NONFLAMMABLE OR TREATED WITH A FLAME RETARDANT MATERIAL			
70	SITE FLOOR PLAN WITH LOCATIONS OF SPRINKLER MAIN, ELECTRICAL MAIN, GAS MAIN, FLAMMABLE LIQUID STORAGE			
71	APPROVED FIRE RATED CARPET, DRAPES, CURTAINS, ETC. SHALL BE INSTALLED			
72	OFFICE AREAS AND WAREHOUSING OR MANUFACTURING SHALL BE SEPARATED WITH AN APPROVED FIRE SEPARATION WALL			
73	FIRE SEPARATION WALL SHALL NOT BE BREACHED WITH UNPROTECTED OPENINGS THRU WALLS			
74	ATTIC ACCESS HOLES SHALL BE COVERED AND/OR CLOSED			
75	ONE (1) HOUR FIRE SEPARATION WALL BETWEEN TENANTS OF OVER 1000 SQ. FEET SHALL BE INSTALLED			
76	DUST COLLECTION SYSTEM ON ALL MACHINES THAT PRODUCE AIRBORNE PARTICLES			
77	SHAFT ENCLOSURE OPENINGS EXTENDING VERTICALLY THROUGH FLOORS SHALL BE ENCLOSED IN A SHAFT OF FIRE RESISTIVE CONSTRUCTION			
78	MALL BUILDING OWNERS SHALL PROVIDE A LEASE PLAN SHOWING LOCATION OF EACH OCCUPANT AND ITS EXITS. SUCH PLANS SHALL BE KEPT CURRENT. NO CHANGES WITHOUT APPROVAL			
79	SPRAY FINISHING OPERATIONS PERFORMED INSIDE A BUILDING SHALL BE CONDUCTED IN AN APPROVED SPRAY BOOTH			
80	SPRAY BOOTHS OR SPRAY ROOMS SHALL BE PROTECTED BY AN APPROVED FIRE EXTINGUISHING SYSTEM			
81	ALL SPRAY BOOTH OPERATIONS SHALL BE CLEAN AND ORDERLY			
82	FLAMMABLE OPERATIONS SHALL BE POSTED W/ "NO SMOKING" — "NO WELDING" SIGNS			
83	SPRAY BOOTHS & ROOMS TO BE W/O COMBUSTIBLE OR SPARK PRODUCING MATERIALS			
84	NON-EXPLOSION PROOF ELECT. IS PROHIBITED WITHIN SPRAY BOOTH, ROOM OR 20' RADIUS OUTSIDE OF OPENING			
85	FIRE APPARATUS ACCESS ROADS SHALL BE PROVIDED AND MAINTAINED IN ACCORDANCE WITH THE PROVISIONS OF THE FIRE CODE			
86	CORRECT ADDRESS SHALL BE POSTED AND VISIBLE			
87	APARTMENT NUMBERS SHALL BE POSTED AND VISIBLE			
88	A KEY BOX SHALL BE INSTALLED WHEN ACCESS TO OR WITHIN A STRUCTURE OR AN AREA IS UNDULY DIFFICULT FOR LIFE SAVING OR FIRE FIGHTING PURPOSES			
89	OCCUPANCY SIGN SHALL BE POSTED, VISIBLE, IF 50 OR MORE			
90	STATE ELEVATOR CERTIFICATE SHALL BE POSTED, VISIBLE AND CURRENT AT ELEVATOR LOCATION			
91	PRESSURE BOILER OR PRESSURE VESSEL STATE INSPECTION CERTIFICATE SHALL BE POSTED AND CURRENT			
92	STATE FIRE MARSHALL AND CITY ENTERTAINMENT PERMIT SHALL BE OBTAINED AND CURRENT			
93	CITY PERMITS SHALL BE OBTAINED FOR CONSTRUCTION			

29	SPRINKLER FUSIBLE LINKS OVER 50 YRS. OLD SHALL BE TESTED			
30	SUSPENDED CEILINGS TO BE W/APPROV. DROP OUT PANELS OR SPRINKLER HEADS EXTENDED BELOW CEILING			
31	HOOD AND VENT SYSTEM SHALL BE MAINTAINED			
32	HOOD AND VENT SYSTEM SHALL BE SERVICED / 6 MONTHS			
33	ELECTRICAL BOXES, EQUIPMENT SHALL HAVE 3' MIN. CLEARANCE			
34	EXTENSION CORDS SHALL NOT BE USED FOR PERMANENT WIRING			
35	ELECTRICAL BOXES SHALL NOT HAVE UNUSED OPENINGS			
36	UNPROTECTED ELECTRICAL WIRING IN COMMERCIAL USAGE SHALL BE INSTALLED IN EMT CONDUIT			
37	ELECTRIC MOTORS SHALL BE MAINTAINED FREE FROM ACCUMULATIONS OF OIL, DIRT, WASTE AND OTHER DEBRIS WHICH WILL INTERFERE WITH PROPER PERFORMANCE			
38	ABANDONED ELECT. WIRING SHALL BE REMOVED (N.E.C.)			
39	ELECT. SWITCHES, OUTLETS, JUNCTION COVERS SHALL BE PROVIDED AND INSTALLED			
40	ELECT. SYSTEMS SHALL BE MAINTAINED PROPERLY. MISUSE OF ELECTRICITY IS PROHIBITED			
41	MULTIPLE ELECT. CORDS NOT PLUGGED INTO RECEPTS			
42	FLAMMABLE LIQUIDS SHALL BE STORED IN A NON-SPILLABLE APPROVED CONTAINER			
43	FLAMMABLE OR HAZARDOUS MATERIALS SHALL NOT BE EXCESSIVE QUANTITIES IN WORK PLACE (1) DAY SUPPLY			
44	LP FILLING FACILITIES SHALL HAVE FIRE EXTINGUISHER & BE BARRICADED			
45	ALL CLASS I AND II LIQUID CONTAINERS (OVER 5 GAL) SHALL BE DISPENSED DRAWING FROM THE TOPS OF THE CONTAINER OR BY GRAVITY WITH A SELF-CLOSING FAUCET			
46	FLAMMABLE LIQUID CONTAINERS TO BE PROPERLY GROUNDED DURING ALL DISPENSING OPERATIONS			
47	STORAGE OR REPAIR OF GAS OR GAS FUELED EQUIPMENT IN ANY DWELLING, OFFICE, EXITWAY, ETC. IS PROHIBITED			
48	ALL FLAMMABLE POWDER COATING, AND DIP TANK OPERATIONS SHALL BE CONDUCTED IN AN APPROVED MANNER AND CONDITION			
49	OXYGEN SYSTEMS SHALL BE INSTALLED PROPERLY			
50	STORAGE OF EXPLOSIVE MATERIAL SHALL BE IN MAGAZINES			
76	DUST COLLECTION SYSTEM ON ALL MACHINES THAT PRODUCE AIRBORNE PARTICLES			
77	SHAFT ENCLOSURE OPENINGS EXTENDING VERTICALLY THROUGH FLOORS SHALL BE ENCLOSED IN A SHAFT OF FIRE RESISTIVE CONSTRUCTION			
78	MALL BUILDING OWNERS SHALL PROVIDE A LEASE PLAN SHOWING LOCATION OF EACH OCCUPANT AND ITS EXITS. SUCH PLANS SHALL BE KEPT CURRENT. NO CHANGES WITHOUT APPROVAL			
79	SPRAY FINISHING OPERATIONS PERFORMED INSIDE A BUILDING SHALL BE CONDUCTED IN AN APPROVED SPRAY BOOTH			
80	SPRAY BOOTHS OR SPRAY ROOMS SHALL BE PROTECTED BY AN APPROVED FIRE EXTINGUISHING SYSTEM			
81	ALL SPRAY BOOTH OPERATIONS SHALL BE CLEAN AND ORDERLY			
82	FLAMMABLE OPERATIONS SHALL BE POSTED W/ "NO SMOKING" — "NO WELDING" SIGNS			
83	SPRAY BOOTHS & ROOMS TO BE W/O COMBUSTIBLE OR SPARK PRODUCING MATERIALS			
84	NON-EXPLOSION PROOF ELECT. IS PROHIBITED WITHIN SPRAY BOOTH, ROOM OR 20' RADIUS OUTSIDE OF OPENING			
85	FIRE APPARATUS ACCESS ROADS SHALL BE PROVIDED AND MAINTAINED IN ACCORDANCE WITH THE PROVISIONS OF THE FIRE CODE			
86	CORRECT ADDRESS SHALL BE POSTED AND VISIBLE			
87	APARTMENT NUMBERS SHALL BE POSTED AND VISIBLE			
88	A KEY BOX SHALL BE INSTALLED WHEN ACCESS TO OR WITHIN A STRUCTURE OR AN AREA IS UNDULY DIFFICULT FOR LIFE SAVING OR FIRE FIGHTING PURPOSES			
89	OCCUPANCY SIGN SHALL BE POSTED, VISIBLE, IF 50 OR MORE			
90	STATE ELEVATOR CERTIFICATE SHALL BE POSTED, VISIBLE AND CURRENT AT ELEVATOR LOCATION			
91	PRESSURE BOILER OR PRESSURE VESSEL STATE INSPECTION CERTIFICATE SHALL BE POSTED AND CURRENT			
92	STATE FIRE MARSHALL AND CITY ENTERTAINMENT PERMIT SHALL BE OBTAINED AND CURRENT			
93	CITY PERMITS SHALL BE OBTAINED FOR CONSTRUCTION			
94	A PERSON SHALL NOT BURN ANY MATERIAL AS TO ENDANGER THE LIFE OR PROPERTY OF ANY PERSON THEREBY			

COMMENTS: _____

Fire Officer _____ A follow-up survey will be conducted approximately 30 days from the date of this report. I acknowledge receiving this report and understand that the noted violations are required to be corrected in accordance with applicable laws, codes and standards of the State of Indiana & City of Elkhart.

Signature _____ Date 6/25, 20 14

Your prompt attention to the correction of the aforementioned items will be greatly appreciated. The policy of the Elkhart Fire Department is based on a cooperative and participatory approach with the business community and citizenry to realize the goal of a fire safe business community within the city of Elkhart.

WHITE: Bureau Copy YELLOW: Occupant

DPI 10000

ELKHART FIRE DEPARTMENT - INSPECTION BUREAU

500 EAST STREET • ELKHART, INDIANA 46516

(574) 293-8931 FAX (574) 522-1023

FIRE CODE INSPECTION FORM

BUSINESS NAME RIVERSIDE TOOL PHONE 522-6798

ADDRESS 3504 HOWE ST SUITE # P.O. BOX # ZIP # 46514

EMERGENCY CONTACT RON MIGEOT CELL # 536-9696 PHONE

OCCUPANCY USED FOR TOOL PRODUCTION / S/OFF # 293-6517

#	FIRE CODE	COMPLIANCE ✓	VIOLATION ✓	COMMENTS
01	PROVIDE EXIT ACCESS MINIMUM 44" WIDTH			
02	EXIT DOORS SWING IN TRAVEL DIRECTION, GOOD REPAIR			
03	PROPER NUMBER OF EXIT SIGNS SHALL BE PROVIDED			
04	EXIT DOORS SHALL NOT BE OBSTRUCTED, GOOD REPAIR			
05	EXIT SIGNS SHALL BE ILLUMINATED WHILE OCCUPIED		✓	NEW BULB
06	EXIT DOORS SECURED BY PANIC HARDWARE, OTHER SINGLE MOTION SIMPLE LOCKING DEVICE, NO SPECIAL TOOLS			
07	SELF CLOSURE INSTALLED ON ALL FIRE DOORS			
08	EMERGENCY LIGHTING SHALL BE PROVIDED IN BUILDING		✓	NOT WORKING
09	NO EXIT SHALL BE PERMITTED THROUGH KITCHENS, STOREROOMS, RESTROOMS, CLOSETS, OR HAZARDOUS AREAS			
10	ALL MEANS OF EGRESS SHALL BE ILLUMINATED WHILE OCCUPIED		✓	NEW BULB
11	TOTAL LENGTH OF TRAVEL FROM ANY POINT TO AN EXIT SHALL NOT EXCEED 150'-200' IN SPRINKLED BUILDINGS			
12	EXIT CORRIDORS SHALL HAVE (1) HOUR WALL AND CEILING PROTECTION IN UNSPRINKLED BLDGS			
13	EVERY LIVING UNIT SHALL HAVE ACCESS TO AT LEAST TWO EXITS			
14	EXIT SIGNS SHALL BE VISIBLE FROM ANY DIRECTION OF EXIT			
15	FIRE ALARM SYSTEM SHALL BE OPERABLE & TESTED			
16	EVERY CLASS "A" OR "B" ASSEMBLY SHALL BE PROVIDED WITH A WORKING MANUAL FIRE ALARM SYSTEM			
17	SMOKE DETECTORS SHALL BE INSTALLED AND IN OPERATING CONDITION EXCEPT IN SPRINKLED BUILDINGS			
18	OWNER / OCCUPANT SHALL REPORT ALL FIRES IMMEDIATELY			
19	ALL DWELLINGS SHALL HAVE WORKING SMOKE DETECTORS			
20	FIRE EXTINGUISHER SHALL BE SERVICED ONCE A YEAR AND/OR MAINTAINED IN GOOD OPERATING CONDITION			
21	FIRE EXTINGUISHER SHALL BE MOUNTED ON WALL-TOP NO MORE THAN 3½' FROM FLOOR-BOTTOM NO LESS THAN 4" FROM FLOOR			
22	NO SMOKING SIGNS TO BE POSTED — SMOKING IN DESIGNATED AREAS ONLY			
23	SPRINKLER SYSTEM OPERABLE, GAUGE INDICATES PRESSURE ON SYSTEM MAIN WATER VALVE OPEN			
24	STANDPIPE SHALL BE UNOBSTRUCTED, GOOD REPAIR			
25	PRIVATE FIRE HYDRANTS SHALL BE FLOW TESTED ANNUALLY			
26	BUILDING SPRINKLER SYSTEMS SHALL BE TESTED ANNUALLY IN ACCORDANCE WITH THE FIRE CODE BY A QUALIFIED PERSON			
27	SPRINKLER HEADS SHALL HAVE 18" MINIMUM CLEARANCE			
28	SPRINKLED BLDGS, SPRINKLED IN ALL UNSPRINKLED COMBUSTIBLE SPACES			
29	SPRINKLER FUSIBLE LINKS OVER 50 YRS. OLD SHALL BE TESTED			
30	SUSPENDED CEILINGS TO BE W/APPROV. DROP OUT PANELS OR SPRINKLER HEADS EXTENDED BELOW CEILING			
31	HOOD AND VENT SYSTEM SHALL BE MAINTAINED			
32	HOOD AND VENT SYSTEM SHALL BE SERVICED / 6 MONTHS			
33	ELECTRICAL BOXES, EQUIPMENT SHALL HAVE 3' MIN. CLEARANCE			
34	EXTENSION CORDS SHALL NOT BE USED FOR PERMANENT WIRING			
35	ELECTRICAL BOXES SHALL NOT HAVE UNUSED OPENINGS			
36	UNPROTECTED ELECTRICAL WIRING IN COMMERCIAL USAGE SHALL BE INSTALLED IN EMT CONDUIT			
37	ELECTRIC MOTORS SHALL BE MAINTAINED FREE FROM ACCUMULATIONS OF OIL, DIRT, WASTE AND OTHER DEBRIS WHICH WILL INTERFERE WITH PROPER PERFORMANCE			
38	ABANDONED ELECT. WIRING SHALL BE REMOVED (N.E.C.)			
39	ELECT. SWITCHES, OUTLETS, JUNCTION COVERS SHALL BE PROVIDED AND INSTALLED			
40	ELECT. SYSTEMS SHALL BE MAINTAINED PROPERLY. MISUSE OF ELECTRICITY IS PROHIBITED			
41	MULTIPLE ELECT. CORDS NOT PLUGGED INTO RECEPTS			
42	FLAMMABLE LIQUIDS SHALL BE STORED IN A NON-SPILLABLE APPROVED CONTAINER			
43	FLAMMABLE OR HAZARDOUS MATERIALS SHALL NOT BE EXCESSIVE QUANTITIES IN WORK PLACE (1) DAY SUPPLY			
44	LP FILLING FACILITIES SHALL HAVE FIRE EXTINGUISHER & BE BARRICADED			
45	ALL CLASS I AND II LIQUID CONTAINERS (OVER 5 GAL) SHALL BE DISPENSED DRAWING FROM THE TOPS OF THE CONTAINER OR BY GRAVITY WITH A SELF-CLOSING FAUCET			
46	FLAMMABLE LIQUID CONTAINERS TO BE PROPERLY GROUNDED DURING ALL DISPENSING OPERATIONS			
47	STORAGE OR REPAIR OF GAS OR GAS FUELED EQUIPMENT IN ANY DWELLING, OFFICE, EXITWAY, ETC. IS PROHIBITED			
48	ALL FLAMMABLE POWDER COATING, AND DIP TANK OPERATIONS SHALL BE CONDUCTED IN AN APPROVED MANNER AND CONDITION			
49	OXYGEN SYSTEMS SHALL BE INSTALLED PROPERLY			

#	FIRE CODE	COMPLIANCE ✓	VIOLATION ✓	COMMENTS
51	ANY UNDERGROUND STORAGE TANK OUT OF SERVICE FOR (1) YEAR OR LONGER SHALL BE REMOVED OR ABANDONED PER CODE			
52	ANY UNDERGROUND STORAGE TANK NOT USED FOR A PERIOD OF (90) DAYS SHALL BE PROPERLY SAFEGUARDED OR REMOVED			
53	STORAGE TANK VENTILATION OF CLASS I LIQUID TO TERMINATE OUTSIDE WITH VAPORS NOT TO ENTER THE BUILDING, AND 12 FT ABOVE GRADE LEVEL			
54	LEAKING UNDERGROUND STORAGE TANKS SHALL BE PROMPTLY EMPTIED AND REMOVED FROM THE GROUND OR REPAIRED			
55	COMPRESSED GAS CYLINDERS SHALL BE SECURED			
56	GENERAL HOUSEKEEPING SHALL BE CLEAN AND NEAT			
57	RUBBISH — DEBRIS — COMBUSTIBLES TO BE REMOVED			
58	AISLEWAYS OR STAIRWELLS SHALL NOT BE OBSTRUCTED BY DEBRIS, STORAGE, ETC. & BE VACATABLE			
59	DUMPSTER LOCATION SHALL NOT BE PLACED WITHIN 5 FEET OF COMBUSTIBLE WALLS — OR UNDER ROOFS			
60	STORAGE UNDER EXIT STAIRWAYS WITHOUT (1) HOUR FIRE SEPARATION UNDER STAIRS IS PROHIBITED			
61	ANY EXTERIOR DOOR THAT IS BLOCKED BY STORAGE ON THE INTERIOR SIDE SHALL BE POSTED AS SUCH WITH SIGN ON THE EXTERIOR OF THE DOOR (THIS DOOR BLOCKED)			
62	VACANT BUILDINGS SHALL REMOVE ALL ACCUMULATIONS OF FLAMMABLE OR COMBUSTIBLE WASTE AND SHALL BE SECURED			
63	HEATING APPLIANCES SHALL HAVE 18" MINIMUM CLEARANCE		✓	MOVE AWAY
64	ALL PROTECTIVE COVERS SHALL BE INSTALLED ON HEATING PRODUCING APPLIANCES & OTHER HAZARDS			
65	GAS FLUES SHALL BE IN GOOD REPAIR			
66	FIRE DOORS AND SMOKE VENTS SHALL NOT BE OBSTRUCTED AND SHALL BE OPERABLE W/SELF CLOSURES			
67	FLOORS, CEILINGS, WALLS, DOORS, WINDOWS, SHALL BE IN GOOD REPAIR, FIRE DOOR W/SELF CLOSURES			
68	BOILER-LARGE ELECT. EQUIP.-MACH. RMS.-REFRIGERATION SHALL HAVE A (1) HR FIRE SEPARATION			
69	ALL DECORATIONS SHALL BE NONFLAMMABLE OR TREATED WITH A FLAME RETARDANT MATERIAL			
70	SITE FLOOR PLAN WITH LOCATIONS OF SPRINKLER MAIN, ELECTRICAL MAIN, GAS MAIN, FLAMMABLE LIQUID STORAGE			
71	APPROVED FIRE RATED CARPET, DRAPES, CURTAINS, ETC. SHALL BE INSTALLED			
72	OFFICE AREAS AND WAREHOUSING OR MANUFACTURING SHALL BE SEPARATED WITH AN APPROVED FIRE SEPARATION WALL			
73	FIRE SEPARATION WALL SHALL NOT BE BREACHED WITH UNPROTECTED OPENINGS THRU WALLS			
74	ATTIC ACCESS HOLES SHALL BE COVERED AND/OR CLOSED			
75	ONE (1) HOUR FIRE SEPARATION WALL BETWEEN TENANTS OF OVER 1000 SQ. FEET SHALL BE INSTALLED			
76	DUST COLLECTION SYSTEM ON ALL MACHINES THAT PRODUCE AIRBORNE PARTICLES			
77	SHAFT ENCLOSURE OPENINGS EXTENDING VERTICALLY THROUGH FLOORS SHALL BE ENCLOSED IN A SHAFT OF FIRE RESISTIVE CONSTRUCTION			
78	MALL BUILDING OWNERS SHALL PROVIDE A LEASE PLAN SHOWING LOCATION OF EACH OCCUPANT AND ITS EXITS. SUCH PLANS SHALL BE KEPT CURRENT. NO CHANGES WITHOUT APPROVAL			
79	SPRAY FINISHING OPERATIONS PERFORMED INSIDE A BUILDING SHALL BE CONDUCTED IN AN APPROVED SPRAY BOOTH			
80	SPRAY BOOTHS OR SPRAY ROOMS SHALL BE PROTECTED BY AN APPROVED FIRE EXTINGUISHING SYSTEM			
81	ALL SPRAY BOOTH OPERATIONS SHALL BE CLEAN AND ORDERLY			
82	FLAMMABLE OPERATIONS SHALL BE POSTED W/ "NO SMOKING" — "NO WELDING" SIGNS			
83	SPRAY BOOTHS & ROOMS TO BE W/O COMBUSTIBLE OR SPARK PRODUCING MATERIALS			
84	NON-EXPLOSION PROOF ELECT. IS PROHIBITED WITHIN SPRAY BOOTH, ROOM OR 20' RADIUS OUTSIDE OF OPENING			
85	FIRE APPARATUS ACCESS ROADS SHALL BE PROVIDED AND MAINTAINED IN ACCORDANCE WITH THE PROVISIONS OF THE FIRE CODE			
86	CORRECT ADDRESS SHALL BE POSTED AND VISIBLE			
87	APARTMENT NUMBERS SHALL BE POSTED AND VISIBLE			
88	A KEY BOX SHALL BE INSTALLED WHEN ACCESS TO OR WITHIN A STRUCTURE OR AN AREA IS UNDULY DIFFICULT FOR LIFE SAVING OR FIRE FIGHTING PURPOSES			
89	OCCUPANCY SIGN SHALL BE POSTED, VISIBLE, IF 50 OR MORE			
90	STATE ELEVATOR CERTIFICATE SHALL BE POSTED, VISIBLE AND CURRENT AT ELEVATOR LOCATION			
91	PRESSURE BOILER OR PRESSURE VESSEL STATE INSPECTION CERTIFICATE SHALL BE POSTED AND CURRENT		✓	NO CERT.
92	STATE FIRE MARSHALL AND CITY ENTERTAINMENT PERMIT SHALL BE OBTAINED AND CURRENT			
93	CITY PERMITS SHALL BE OBTAINED FOR CONSTRUCTION			

41	MULTIPLE ELECT. CORDS NOT PLUGGED INTO RECEPTS				85	TAINED IN ACCORDANCE WITH THE PROVISIONS OF THE FIRE CODE			
42	FLAMMABLE LIQUIDS SHALL BE STORED IN A NON-SPILLABLE APPROVED CONTAINER				86	CORRECT ADDRESS SHALL BE POSTED AND VISIBLE			
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46	FLAMMABLE LIQUID CONTAINERS TO BE PROPERLY GROUNDED DURING ALL DISPENSING OPERATIONS				90	STATE ELEVATOR CERTIFICATE SHALL BE POSTED, VISIBLE AND CURRENT AT ELEVATOR LOCATION			
47	STORAGE OR REPAIR OF GAS OR GAS FUELED EQUIPMENT IN ANY DWELLING, OFFICE, EXITWAY, ETC. IS PROHIBITED				91	PRESSURE BOILER OR PRESSURE VESSEL STATE INSPECTION CERTIFICATE SHALL BE POSTED AND CURRENT		✓	NO CERT.
48	ALL FLAMMABLE POWDER COATING, AND DIP TANK OPERATIONS SHALL BE CONDUCTED IN AN APPROVED MANNER AND CONDITION				92	STATE FIRE MARSHALL AND CITY ENTERTAINMENT PERMIT SHALL BE OBTAINED AND CURRENT			
49	OXYGEN SYSTEMS SHALL BE INSTALLED PROPERLY				93	CITY PERMITS SHALL BE OBTAINED FOR CONSTRUCTION			
50	STORAGE OF EXPLOSIVE MATERIAL SHALL BE IN MAGAZINES				94	A PERSON SHALL NOT BURN ANY MATERIAL AS TO ENDANGER THE LIFE OR PROPERTY OF ANY PERSON THEREBY			

COMMENTS: STATE CERT. FOR AIR COMPRESSOR.
CHECK ALL EXTINGUISHERS & HALON SYSTEM
KNOX BOX SIDE A (EMPLOYEE ENTRANCE)

Fire Officer _____ A follow-up survey will be conducted approximately 30 days from the date of this report. I acknowledge receiving this report and understand that the noted violations are required to be corrected in accordance with applicable laws, codes and standards of the State of Indiana & City of Elkhart.

Signature _____ Date 6/28 , 20 11

Your prompt attention to the correction of the aforementioned items will be greatly appreciated. The policy of the Elkhart Fire Department is based on a cooperative and participatory approach with the business community and citizenry to realize the goal of a fire safe business community within the city of Elkhart.

WHITE: Bureau Copy YELLOW: Occupant

DPi 10000

ELKHART FIRE DEPARTMENT - INSPECTION BUREAU

500 EAST STREET • ELKHART, INDIANA 46516

(574) 293-8931 FAX (574) 522-1023

FIRE CODE INSPECTION FORM

BUSINESS NAME HACH PHONE 262-2060

ADDRESS 3504 HENCE SUITE # P.O. BOX # ZIP # 46514

EMERGENCY CONTACT RON MIBEDT-536-9696 DAN MORRIS 220-5883 PHONE

OCCUPANCY USED FOR OFFICE / LAB (POOL TEST STRIPS) SHOP -

#	FIRE CODE	COMPLIANCE ✓	VIOLATION ✓	COMMENTS
01	PROVIDE EXIT ACCESS MINIMUM 44" WIDTH			
02	EXIT DOORS SWING IN TRAVEL DIRECTION, GOOD REPAIR			
03	PROPER NUMBER OF EXIT SIGNS SHALL BE PROVIDED			
04	EXIT DOORS SHALL NOT BE OBSTRUCTED, GOOD REPAIR			
05	EXIT SIGNS SHALL BE ILLUMINATED WHILE OCCUPIED		✓	NEW BULB
06	EXIT DOORS SECURED BY PANIC HARDWARE, OTHER SINGLE MOTION SIMPLE LOCKING DEVICE, NO SPECIAL TOOLS			
07	SELF CLOSURE INSTALLED ON ALL FIRE DOORS			
08	EMERGENCY LIGHTING SHALL BE PROVIDED IN BUILDING		✓	CHECK ALL
09	NO EXIT SHALL BE PERMITTED THROUGH KITCHENS, STORE-ROOMS, RESTROOMS, CLOSETS, OR HAZARDOUS AREAS			
10	ALL MEANS OF EGRESS SHALL BE ILLUMINATED WHILE OCCUPIED			
11	TOTAL LENGTH OF TRAVEL FROM ANY POINT TO AN EXIT SHALL NOT EXCEED 150'-200' IN SPRINKLED BUILDINGS			
12	EXIT CORRIDORS SHALL HAVE (1) HOUR WALL AND CEILING PROTECTION IN UNSPRINKLED BLDGS			
13	EVERY LIVING UNIT SHALL HAVE ACCESS TO AT LEAST TWO EXITS			
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15	FIRE ALARM SYSTEM SHALL BE OPERABLE & TESTED			
16	EVERY CLASS "A" OR "B" ASSEMBLY SHALL BE PROVIDED WITH A WORKING MANUAL FIRE ALARM SYSTEM			
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18	OWNER / OCCUPANT SHALL REPORT ALL FIRES IMMEDIATELY			
19	ALL DWELLINGS SHALL HAVE WORKING SMOKE DETECTORS			
20	FIRE EXTINGUISHER SHALL BE SERVICED ONCE A YEAR AND/OR MAINTAINED IN GOOD OPERATING CONDITION		✓	CHECK ALL
21	FIRE EXTINGUISHER SHALL BE MOUNTED ON WALL-TOP NO MORE THAN 3½' FROM FLOOR-BOTTOM NO LESS THAN 4" FROM FLOOR		✓	MOUNT
22	NO SMOKING SIGNS TO BE POSTED — SMOKING IN DESIGNATED AREAS ONLY			
23	SPRINKLER SYSTEM OPERABLE, GAUGE INDICATES PRESSURE ON SYSTEM MAIN WATER VALVE OPEN			
24	STANDPIPE SHALL BE UNOBSTRUCTED, GOOD REPAIR			
25	PRIVATE FIRE HYDRANTS SHALL BE FLOW TESTED ANNUALLY			
26	BUILDING SPRINKLER SYSTEMS SHALL BE TESTED ANNUALLY IN ACCORDANCE WITH THE FIRE CODE BY A QUALIFIED PERSON			
27	SPRINKLER HEADS SHALL HAVE 18" MINIMUM CLEARANCE			
28	SPRINKLED BLDGS, SPRINKLED IN ALL UNSPRINKLED COMBUSTIBLE SPACES			
29	SPRINKLER FUSIBLE LINKS OVER 50 YRS. OLD SHALL BE TESTED			
30	SUSPENDED CEILINGS TO BE W/APPROV. DROP OUT PANELS OR SPRINKLER HEADS EXTENDED BELOW CEILING			
31	HOOD AND VENT SYSTEM SHALL BE MAINTAINED			
32	HOOD AND VENT SYSTEM SHALL BE SERVICED / 6 MONTHS			
33	ELECTRICAL BOXES, EQUIPMENT SHALL HAVE 3' MIN. CLEARANCE		✓	CLEAR AREA
34	EXTENSION CORDS SHALL NOT BE USED FOR PERMANENT WIRING			
35	ELECTRICAL BOXES SHALL NOT HAVE UNUSED OPENINGS			
36	UNPROTECTED ELECTRICAL WIRING IN COMMERCIAL USAGE SHALL BE INSTALLED IN EMT CONDUIT			
37	ELECTRIC MOTORS SHALL BE MAINTAINED FREE FROM ACCUMU-LATIONS OF OIL, DIRT, WASTE AND OTHER DEBRIS WHICH WILL INTERFERE WITH PROPER PERFORMANCE			
38	ABANDONED ELECT. WIRING SHALL BE REMOVED (N.E.C.)			
39	ELECT. SWITCHES, OUTLETS, JUNCTION COVERS SHALL BE PROVIDED AND INSTALLED			
40	ELECT. SYSTEMS SHALL BE MAINTAINED PROPERLY. MISUSE OF ELECTRICITY IS PROHIBITED			
41	MULTIPLE ELECT. CORDS NOT PLUGGED INTO RECEPTS			
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43	FLAMMABLE OR HAZARDOUS MATERIALS SHALL NOT BE EXCESSIVE QUANTITIES IN WORK PLACE (1) DAY SUPPLY			
44	LP FILLING FACILITIES SHALL HAVE FIRE EXTINGUISHER & BE BARRICADED			
45	ALL CLASS I AND II LIQUID CONTAINERS (OVER 5 GAL) SHALL BE DISPENSED DRAWING FROM THE TOPS OF THE CONTAINER OR BY GRAVITY WITH A SELF-CLOSING FAUCET			
46	FLAMMABLE LIQUID CONTAINERS TO BE PROPERLY GROUNDED DURING ALL DISPENSING OPERATIONS			
47	STORAGE OR REPAIR OF GAS OR GAS FUELED EQUIPMENT IN ANY DWELLING, OFFICE, EXITWAY, ETC. IS PROHIBITED			
48	ALL FLAMMABLE POWDER COATING, AND DIP TANK OPERATIONS SHALL BE CONDUCTED IN AN APPROVED MANNER AND CONDITION			

#	FIRE CODE	COMPLIANCE ✓	VIOLATION ✓	COMMENTS
51	ANY UNDERGROUND STORAGE TANK OUT OF SERVICE FOR (1) YEAR OR LONGER SHALL BE REMOVED OR ABANDONED PER CODE			
52	ANY UNDERGROUND STORAGE TANK NOT USED FOR A PERIOD OF (90) DAYS SHALL BE PROPERLY SAFEGUARDED OR REMOVED			
53	STORAGE TANK VENTILATION OF CLASS I LIQUID TO TERMINATE OUTSIDE WITH VAPORS NOT TO ENTER THE BUILDING, AND 12 FT ABOVE GRADE LEVEL			
54	LEAKING UNDERGROUND STORAGE TANKS SHALL BE PROMPTLY EMPTIED AND REMOVED FROM THE GROUND OR REPAIRED			
55	COMPRESSED GAS CYLINDERS SHALL BE SECURED			
56	GENERAL HOUSEKEEPING SHALL BE CLEAN AND NEAT		✓	
57	RUBBISH — DEBRIS — COMBUSTIBLES TO BE REMOVED		✓	LORD UNDER
58	AISLEWAYS OR STAIRWELLS SHALL NOT BE OBSTRUCTED BY DEBRIS, STORAGE, ETC. & BE VACATABLE			
59	DUMPSTER LOCATION SHALL NOT BE PLACED WITHIN 5 FEET OF COMBUSTIBLE WALLS — OR UNDER ROOFS			
60	STORAGE UNDER EXIT STAIRWAYS WITHOUT (1) HOUR FIRE SEPARA-TION UNDER STAIRS IS PROHIBITED			
61	ANY EXTERIOR DOOR THAT IS BLOCKED BY STORAGE ON THE INTERIOR SIDE SHALL BE POSTED AS SUCH WITH SIGN ON THE EXTERIOR OF THE DOOR (THIS DOOR BLOCKED)			
62	VACANT BUILDINGS SHALL REMOVE ALL ACCUMULATIONS OF FLAM-MABLE OR COMBUSTIBLE WASTE AND SHALL BE SECURED			
63	HEATING APPLIANCES SHALL HAVE 18" MINIMUM CLEARANCE		✓	CLEAR AREA
64	ALL PROTECTIVE COVERS SHALL BE INSTALLED ON HEATING PRODUCING APPLIANCES & OTHER HAZARDS			
65	GAS FLUES SHALL BE IN GOOD REPAIR			
66	FIRE DOORS AND SMOKE VENTS SHALL NOT BE OBSTRUCTED AND SHALL BE OPERABLE W/SELF CLOSURES			
67	FLOORS, CEILINGS, WALLS, DOORS, WINDOWS, SHALL BE IN GOOD REPAIR, FIRE DOOR W/SELF CLOSURES			
68	BOILER-LARGE ELECT. EQUIP.-MACH. RMS.-REFRIGERATION SHALL HAVE A (1) HR FIRE SEPARATION			
69	ALL DECORATIONS SHALL BE NONFLAMMABLE OR TREATED WITH A FLAME RETARDANT MATERIAL			
70	SITE FLOOR PLAN WITH LOCATIONS OF SPRINKLER MAIN, ELECTRICAL MAIN, GAS MAIN, FLAMMABLE LIQUID STORAGE			
71	APPROVED FIRE RATED CARPET, DRAPES, CURTAINS, ETC. SHALL BE INSTALLED			
72	OFFICE AREAS AND WAREHOUSING OR MANUFACTURING SHALL BE SEPARATED WITH AN APPROVED FIRE SEPARATION WALL			
73	FIRE SEPARATION WALL SHALL NOT BE BREACHED WITH UNPROTECTED OPENINGS THRU WALLS			
74	ATTIC ACCESS HOLES SHALL BE COVERED AND/OR CLOSED			
75	ONE (1) HOUR FIRE SEPARATION WALL BETWEEN TENANTS OF OVER 1000 SQ. FEET SHALL BE INSTALLED			
76	DUST COLLECTION SYSTEM ON ALL MACHINES THAT PRODUCE AIRBORNE PARTICLES			
77	SHAFT ENCLOSURE OPENINGS EXTENDING VERTICALLY THROUGH FLOORS SHALL BE ENCLOSED IN A SHAFT OF FIRE RESISTIVE CONSTRUCTION			
78	MALL BUILDING OWNERS SHALL PROVIDE A LEASE PLAN SHOWING LOCATION OF EACH OCCUPANT AND ITS EXITS. SUCH PLANS SHALL BE KEPT CURRENT. NO CHANGES WITHOUT APPROVAL			
79	SPRAY FINISHING OPERATIONS PERFORMED INSIDE A BUILDING SHALL BE CONDUCTED IN AN APPROVED SPRAY BOOTH			
80	SPRAY BOOTHS OR SPRAY ROOMS SHALL BE PROTECTED BY AN APPROVED FIRE EXTINGUISHING SYSTEM			
81	ALL SPRAY BOOTH OPERATIONS SHALL BE CLEAN AND ORDERLY			
82	FLAMMABLE OPERATIONS SHALL BE POSTED W/ "NO SMOKING" — "NO WELDING" SIGNS			
83	SPRAY BOOTHS & ROOMS TO BE W/O COMBUSTIBLE OR SPARK PRODUCING MATERIALS			
84	NON-EXPLOSION PROOF ELECT. IS PROHIBITED WITHIN SPRAY BOOTH, ROOM OR 20' RADIUS OUTSIDE OF OPENING			
85	FIRE APPARATUS ACCESS ROADS SHALL BE PROVIDED AND MAIN-TAINED IN ACCORDANCE WITH THE PROVISIONS OF THE FIRE CODE			
86	CORRECT ADDRESS SHALL BE POSTED AND VISIBLE			
87	APARTMENT NUMBERS SHALL BE POSTED AND VISIBLE			
88	A KEY BOX SHALL BE INSTALLED WHEN ACCESS TO OR WITHIN A STRUCTURE OR AN AREA IS UNDULY DIFFICULT FOR LIFE SAVING OR FIRE FIGHTING PURPOSES		✓	KNOX BOX
89	OCCUPANCY SIGN SHALL BE POSTED, VISIBLE, IF 50 OR MORE			
90	STATE ELEVATOR CERTIFICATE SHALL BE POSTED, VISIBLE AND CURRENT AT ELEVATOR LOCATION			
91	PRESSURE BOILER OR PRESSURE VESSEL STATE INSPECTION CERTIFICATE SHALL BE POSTED AND CURRENT		✓	NEED COPY
92	STATE FIRE MARSHALL AND CITY ENTERTAINMENT PERMIT SHALL BE OBTAINED AND CURRENT			
93	CITY PERMITS SHALL BE OBTAINED FOR CONSTRUCTION			

	TAINED IN ACCORDANCE WITH THE PROVISIONS OF THE FIRE CODE							
42	FLAMMABLE LIQUIDS SHALL BE STORED IN A NON-SPILLABLE APPROVED CONTAINER				86	CORRECT ADDRESS SHALL BE POSTED AND VISIBLE			
43	FLAMMABLE OR HAZARDOUS MATERIALS SHALL NOT BE EXCESSIVE QUANTITIES IN WORK PLACE (1) DAY SUPPLY				87	APARTMENT NUMBERS SHALL BE POSTED AND VISIBLE			
44	LP FILLING FACILITIES SHALL HAVE FIRE EXTINGUISHER & BE BARRICADED				88	A KEY BOX SHALL BE INSTALLED WHEN ACCESS TO OR WITHIN A STRUCTURE OR AN AREA IS UNDULY DIFFICULT FOR LIFE SAVING OR FIRE FIGHTING PURPOSES		✓	KNOX BOX
45	ALL CLASS I AND II LIQUID CONTAINERS (OVER 5 GAL) SHALL BE DISPENSED DRAWING FROM THE TOPS OF THE CONTAINER OR BY GRAVITY WITH A SELF-CLOSING FAUCET				89	OCCUPANCY SIGN SHALL BE POSTED, VISIBLE, IF 50 OR MORE			
46	FLAMMABLE LIQUID CONTAINERS TO BE PROPERLY GROUNDED DURING ALL DISPENSING OPERATIONS				90	STATE ELEVATOR CERTIFICATE SHALL BE POSTED, VISIBLE AND CURRENT AT ELEVATOR LOCATION			
47	STORAGE OR REPAIR OF GAS OR GAS FUELED EQUIPMENT IN ANY DWELLING, OFFICE, EXITWAY, ETC. IS PROHIBITED				91	PRESSURE BOILER OR PRESSURE VESSEL STATE INSPECTION CERTIFICATE SHALL BE POSTED AND CURRENT		✓	NEED COPY
48	ALL FLAMMABLE POWDER COATING, AND DIP TANK OPERATIONS SHALL BE CONDUCTED IN AN APPROVED MANNER AND CONDITION				92	STATE FIRE MARSHALL AND CITY ENTERTAINMENT PERMIT SHALL BE OBTAINED AND CURRENT			
49	OXYGEN SYSTEMS SHALL BE INSTALLED PROPERLY				93	CITY PERMITS SHALL BE OBTAINED FOR CONSTRUCTION			
50	STORAGE OF EXPLOSIVE MATERIAL SHALL BE IN MAGAZINES				94	A PERSON SHALL NOT BURN ANY MATERIAL AS TO ENDANGER THE LIFE OR PROPERTY OF ANY PERSON THEREBY			

COMMENTS: ACID STORED IN LAB AREA, SEVERAL SMALL CONTAINERS

Fire Officer _____

30 days from the date of this report. I acknowledge receiving this report and understand that the noted violations are required to be corrected in accordance with applicable laws, codes and standards of the State of Indiana & City of Elkhart. A follow-up survey will be conducted approximately

Signature _____ Date 6/28 , 20 11

Your prompt attention to the correction of the aforementioned items will be greatly appreciated. The policy of the Elkhart Fire Department is based on a cooperative and participatory approach with the business community and citizenry to realize the goal of a fire safe business community within the city of Elkhart.

WHITE: Bureau Copy YELLOW: Occupant

DPI 10000

Elkhart Fire Dept
500 EAST ST
Elkhart, IN 46516

EFD Violation Notice

Tuesday June 28, 2011

HACH

P.O. BOX 1425
ELKHART. IN. 46515

CITY ORD. 95.04 Weeds to be removed

It is unlawful for the owner of real estate in the city to maintain and permit to grow weeds, sumac, black locust, and rank vegetation. Dead and dry growth shall constitute a fire hazard as well.

NFPA 10-1-6.2 Portable Fire Extinguishers

Portable fire extinguishers shall be maintained in operable condition.

680 IAC 1-2-15 Pressure boiler or pressure vessel

Pressure boiler and pressure vessel state inspection shall be posted and current.

IFC 1011.5.3 Exit signs shall be illuminated while

Exit Illumination; Exit signs shall be illuminated at all times. To ensure continued illumination for a duration of not less than 90 minutes in case of primary power loss, the sign illumination means shall be connected to an emergency power system provided from storage batteries, unit equipment or an on-site generator. The installation of the emergency power system shall be in accordance with Section 2702 of the International Building Code.

IFC 506.1 Knox Box

Key Box; Where access to or within a structure or an area is restricted because of secured openings or where immediate access is necessary for life-saving or firefighting purposes, the code official is authorized to require a key box to be installed in an approved location.

IFC 605.3 Clearance from Electrical

Electrical Equipment, Wiring and Hazards; Working space and clearance. A working space of not less than 30 inches in width, 36 inches in depth and 78 inches in height shall be provided in front of the electrical service equipment.

BALZANO, ANTONIO
Inspector

Elkhart Fire Dept
500 EAST ST
Elkhart, IN 46516

EFD Violation Notice

Tuesday June 28, 2011

HACH

3504 HENKE DR
Elkhart, IN 46516

An inspection of your facility on Tuesday June 28, 2011 revealed the violations listed below.

ORDER TO COMPLY: Since these conditions are contrary to law, you must correct them upon receipt of this notice. An inspection to determine compliance with this notice will be conducted on at / / :

If you fail to comply with this notice before the reinspection date listed, you may be liable for the penalties provided for by law for such violations.Correction of these items within (30) thirty days is necessary to attain compliance.Relavent sections of Indiana Fire Code are annotated. Notification on company letterhead upon completion is mandatory. Your date of re-inspection is annotated above.

You have the right to file a petition for review within (18) eighteen working days of the above date to: Office of the State Fire Marshal, 401 W. Washington St., Indianapolis, IN. 46204. You also have the right to request informal discussions concerning violations prior to the filing of a petition.

Failure to comply will result in the institution of suit for mandatory and injunctive relief in the enforcement of I.C. Chapter 22-14 and the revocation or denial of a permit to operate your business.

If there are any questions, please contact the Elkhart Fire Deaprtment Inspection Bureau at 574-293-8931. Office hours are Monday thru Friday 8am to 5pm.

Violation Code	Article	Division	Page	Count
1006.1 Means of egress illumination Means of Egress Illumination; The means of egress, including the exit discharge, shall be illuminated at all times the building space served by the means of egress is occupied.			0	0
63 Heating Appliances Heating appliances shall have an 18 inch minimum clearance.			0	0

Elkhart Fire Dept
500 EAST ST
Elkhart, IN 46516

EFD Violation Notice

Tuesday June 28, 2011

RIVERSIDE TOOL
P.O. BOX 1425
ELKHART, IN, 46515

An inspection of your facility on Tuesday June 28, 2011 revealed the violations listed below.

ORDER TO COMPLY: Since these conditions are contrary to law, you must correct them upon receipt of this notice. An inspection to determine compliance with this notice will be conducted on at / / :

If you fail to comply with this notice before the reinspection date listed, you may be liable for the penalties provided for by law for such violations.Correction of these items within (30) thirty days is necessary to attain compliance.Relavent sections of Indiana Fire Code are annotated. Notification on company letterhead upon completion is mandatory. Your date of re-inspection is annotated above.

You have the right to file a petition for review within (18) eighteen working days of the above date to: Office of the State Fire Marshal, 401 W. Washington St., Indianapolis, IN. 46204. You also have the right to request informal discussions concerning violations prior to the filing of a petition.

Failure to comply will result in the institution of suit for mandatory and injunctive relief in the enforcement of I.C. Chapter 22-14 and the revocation or denial of a permit to operate your business.

If there are any questions, please contact the Elkhart Fire Deaprtment Inspection Bureau at 574-293-8931. Office hours are Monday thru Friday 8am to 5pm.

6/25/14

Violation Code	Article	Division	Page	Count
63 Heating Appliances Heating appliances shall have an 18 inch minimum clearance.				
680 IAC 1-2-15 Pressure boiler or pressure vessel Pressure boiler and pressure vessel state inspection shall be posted and current.			0	0

6/25/14

Elkhart Fire Dept
500 EAST ST
Elkhart, IN 46516

EFD Violation Notice

Tuesday June 28, 2011

RIVERSIDE TOOL

3504 HENKE ST
Elkhart, IN 46516

1006.1 Means of egress illumination — 0 — 0

Means of Egress Illumination; The means of egress, including the exit discharge, shall be illuminated at all times the building space served by the means of egress is occupied.

6/25/14

IFC 1027.5 Emergency lighting shall be provided. — 0 — 0

Illumination Emergency Power; The power supply for means of egress illumination shall normally be provided by the premise's electrical supply. In the event of power supply failure, illumination shall be automatically provided from an emergency system for the following occupancies where such occupancies require two or more means of egress.

6/25/14

NFPA 10-1-6.2 Portable Fire Extinguishers — 0 — 0

Portable fire extinguishers shall be maintained in operable condition.

IFC 1011.5.3 Exit signs shall be illuminated while — 0 — 0

Exit Illumination; Exit signs shall be illuminated at all times. To ensure continued illumination for a duration of not less than 90 minutes in case of primary power loss, the sign illumination means shall be connected to an emergency power system provided from storage batteries, unit equipment or an on-site generator. The installation of the emergency power system shall be in accordance with Section 2702 of the International Building Code.

6/25/14

BALZANO, ANTONIO
Inspector

CERTIFICATE OF INSPECTION

Boiler & Pressure Vessel Section
Division of Fire & Building Safety
Indiana Department of Homeland Security
302 W Washington St Room 246
Indianapolis IN 46204
Phone: (317)232-1921 Fax: (317)232-0146

Fee paid	Date check received (mo.,	Check number	Certificate expiration date (mo
$ 40.00	08/12/2011	51290	07/13/2014

Date inspected (mo.,	Indiana registration #	Owner #	National Board or serial number
07/13/2011	314799		78305

Name of owner	Nature of business	Kind of inspection
RIVERSIDE TOOL CORP	MFG	External

Mailing address of owner	City	State	ZIP code
PO BOX 1425	ELKHART	IN	46515

Contact Name	Specific location	County
	MEZZ	20

User & address RIVERSIDE TOOL CORP	City	State	ZIP code
3504 HENKE ST	ELKHART	IN	46515

Type of object	Name of manufacturer	Year built	Size
AIR TANK	STEEL FAB	1994	+15 CF

Use
Storage

Pressure allowed this	Previous inspection	Safety relief valves set at:	Inspection certificate frequency	Hydrostatic test this certificate?
200		200	3	[ ] Yes [X] No

OWNER/USER NOTICE

1. This Certificate of Inspection must be posted under glass in the room the vessel is located. If the vessel is outside, the Certificate of Inspection may be in a file indoors or in a metal container attached to the vessel.
2. You must arrange for inspections by either your vessel insurance carrier inspector, if insured, or by a State inspector and you must pay the fees required by the statute.
3. You may not operate any vessel without a current, valid inspection certificate.
4. When making repairs, you or your contractor must involve an inspector concerning those repairs prior to starting repairs. The completed repair is subject to the inspector's approval.
5. If there is an accident to the vessel, you must contact the division immediately. You may not remove or disturb any parts except to save human life.

Authorized Inspector	Identification Number	Name of Company
DAVID SCHERER	1761	STATE OF INDIANA

State Form 364 (R3 / 12-91)
Approved by the State Board of Accounts 1991

Riverside Tool Corp. Response
Attachment 9

Elkhart County Health Department
Inspection Records

ELKHART COUNTY GROUND WATER PROTECTION PROGRAM
REGISTRATION AND INSPECTION FORM

Facility Name River Tool Corp	Facility I.D. No. 5459	Date 1/3/13	
Address 3504 Henke	Contact Name Jim Beard		
City Elkhart	Zip 46516	Township 02	Phone No. 522-6798 NAICS 332710

Purpose: (check all that apply)
Routine ☒ Registration ☐
Reinspection ☐ Spill ☐
Complaint ☐ Other ☐

Additional Information: (check all that apply)
Hazardous Waste Inspected: SQG ☐ LQG ☐ TSD ☐ Unknown ☐
SARA Title III: Emergency Planning (EHS) ☐
Toxic Chemical Release Reporting ☐
Community Right-To-Know Requirements ☐
Unknown ☐

Registration Exemption: (check all that apply)
No on-site wastewater disposal system ☒ Resale of unopened products ☐
Store < 100 kg/mo. of hazardous/toxic substances ☐ Laboratory ☐

The items marked below identify violations of the Elkhart County Ground Water Protection Ordinance 09-172. All violations should be corrected as soon as possible, but no later than the compliance time indicated under each violation. Failure to comply may result in the assessment of fines. **Prior to the indicated compliance time written requests for the extension of compliance times or appeals regarding this inspection may be directed to the Elkhart County Health Department, 4230 Elkhart Road, Goshen, IN, 46526, Phone (574) 875-3391, Fax (574) 875-3376.**

Registration
11 Registered on-site wastewater disposal systems (5.A.) **(Immediate compliance)**

System 1: Type City Employees _____
Location _____
System 2: Type _____ Employees _____
Location _____
System 3: Type _____ Employees _____
Location _____

Notes: _____

12 Registered hazardous/toxic materials storage area (5.B.) **(Immediate compliance)**
13 Notified ECHD of changes to on-site wastewater disposal system or hazardous/toxic substances storage area (RR 2.C., RR 2.D.) **(Immediate compliance)**

On-site Wastewater Disposal System
14 Furnished a wastewater characterization for each on-site wastewater disposal system (6.) **(30 days to comply)**

Inspections
15 Upon notice of a violation, correct the violation as requested (12.B.) **(Immediate compliance)**
16 Provided requested information to determine compliance with ordinance (13.C.) **(Immediate compliance)**

Indoor Storage of Hazardous/Toxic Substances
17 Toxic/hazardous substances located in a manner to prevent a spill onto the ground (RR 4.B.) **(7 days to comply)**
18 Toxic/hazardous substances located in a manner to prevent a spill into a drain that is connected to an on-site wastewater disposal system (RR 4.B.) **(7 days to comply)**

Outside Storage of Hazardous/Toxic Substances
19 Storage on an impervious underlying base (RR 4.A.) **(7 days to comply)**
20 Storage in a containment system with adequate capacity (RR 4.A.) **(14 days to comply)**
21 Proper maintenance of containment system to protect integrity and capacity (RR 4.A.) **(14 days to comply)**
22 Proper removal or disposal of spilled material and accumulated precipitation (RR 4.A.) **(7 days to comply)**
23 Storage in product-tight containers (RR 4.C.) **(7 days to comply)**
24 Controlled drainage of precipitation in the containment system (RR 4.D.) **(7 days to comply)**
25 Storage in secondary containment (RR 4.A.) **(14 days to comply)**

Temporary Storage Areas
26 Storage on an impervious underlying base (RR 4.F.) **(7 days to comply)**
27 Storage does not exceed two (2) business days (RR 4.F.) **(2 days to comply)**
28 Spill response plan (RR 4.F.) **(7 days to comply)**

Spills
29 Spill of a toxic or hazardous substance (4.) **(Immediate compliance)**
30 Discharge of process wastewater into or above an aquifer (4.) **(Immediate compliance)**
31 Reportable spill due to quantity requirements (10.A. and 10.C.) **(Immediate compliance)**
32 Reportable spill damaging waters of the state (10.A. and 10.C.) **(Immediate compliance)**
33 Reportable spill due to no spill response (10.A.) **(Immediate compliance)**
34 Undertake spill response activities (10.C.)**(7 days to comp**

No Violations Thank You

Follow-up Action: Reinspection on or about _____
Routine (Priority Category) 1 (2) 3

Received by: _____
Inspected by: _____

Page 1 of 1

*Compliance with the Elkhart County Ground Water Protection Ordinance does not exempt this facility from any other federal, state or local laws, codes or regulations.

White – ECHD 1 Yellow – Facility Pink – ECHD 2

10/09

ELKHART COUNTY GROUND WATER PROTECTION PROGRAM
TOXIC OR HAZARDOUS SUBSTANCE STORAGE AREAS
REGISTRATION INFORMATION

FACILITY NAME Riverside Tool Corp FACILITY ID NUMBER 5459

Hazardous Substance	Type of Container							Maximum Amount Stored In Any Month			Storage Location		Date	
	D	B	C	A	T	U	O				Inside	Outside	Added	Deleted
Dielectric Fluid		5						25	gals	lbs	X		1/3/13	
Engine Prime		1						5	gals	lbs				
Soft Scrub		1						5	gals	lbs				
Black Oxide		1						5	gals	lbs				
Tri-Butyl Amine		1						5	gals	lbs				
Copper Plating Chem		15						50	gals	lbs				
Plating Drift					1			275	gals	lbs				
Coolant		6						30	gals	lbs				
Grinding Oil	2	1						60	gals	lbs				
Rinse Coat		2						10	gals	lbs				
Waste Oil						1		275	gals	lbs				
									gals	lbs				
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Container type: D – drum, B – bucket, C – can, A – above ground storage tank, T – tote, U – underground storage tank, O – other

White – ECHD Yellow - Facility

ELKHART COUNTY GROUND WATER PROTECTION PROGRAM
REGISTRATION AND INSPECTION FORM

Facility Name Riverside Tool Corp		Facility I.D. No. 5459	Date 12-27-11
Address 3504 Hanks		Contact Name Jim Baad	
City Elkhart	Zip 46515	Township 02	Phone No. 522-6798 NAICS 332710

Purpose: (check all that apply)
Routine ☑
Reinspection ☐
Complaint ☐
Registration ☐
Spill ☐
Other ☐

Additional Information: (check all that apply)
Hazardous Waste Inspected: SQG ☐ LQG ☐ TSD ☐ Unknown ☐
SARA Title III: Emergency Planning (EHS) ☐
Toxic Chemical Release Reporting ☐
Community Right-To-Know Requirements ☐
Unknown ☐

Registration Exemption: (check all that apply)
No on-site wastewater disposal system ☑
Store < 100 kg/mo. of hazardous/toxic substances ☐
Resale of unopened products ☐
Laboratory ☐

The items marked below identify violations of the Elkhart County Ground Water Protection Ordinance 09-172. All violations should be corrected as soon as possible, but no later than the compliance time indicated under each violation. Failure to comply may result in the assessment of fines. **Prior to the indicated compliance time written requests for the extension of compliance times or appeals regarding this inspection may be directed to the Elkhart County Health Department, 4230 Elkhart Road, Goshen, IN, 46526, Phone (574) 875-3391, Fax (574) 875-3376.**

Registration

11 Registered on-site wastewater disposal systems (5.A.) **(Immediate compliance)**

System 1: Type City Sewer Employees _____
Location _____
System 2: Type _____ Employees _____
Location _____
System 3: Type _____ Employees _____
Location _____

Notes: _____

12 Registered hazardous/toxic materials storage area (5.B.) **(Immediate compliance)**
13 Notified ECHD of changes to on-site wastewater disposal system or hazardous/toxic substances storage area (RR 2.C., RR 2.D.) **(Immediate compliance)**

On-site Wastewater Disposal System

14 Furnished a wastewater characterization for each on-site wastewater disposal system (6.) **(30 days to comply)**

Inspections

15 Upon notice of a violation, correct the violation as requested (12.B.) **(Immediate compliance)**
16 Provided requested information to determine compliance with ordinance (13.C.) **(Immediate compliance)**

Indoor Storage of Hazardous/Toxic Substances

17 Toxic/hazardous substances located in a manner to prevent a spill onto the ground (RR 4.B.) **(7 days to comply)**
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19 Storage on an impervious underlying base (RR 4.A.) **(7 days to comply)**
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Spills

29 Spill of a toxic or hazardous substance (4.) **(Immediate compliance)**
30 Discharge of process wastewater into or above an aquifer (4.) **(Immediate compliance)**
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32 Reportable spill damaging waters of the state (10.A. and 10.C.) **(Immediate compliance)**
33 Reportable spill due to no spill response (10.A.) **(Immediate compliance)**
34 Undertake spill response activities (10.C.)**(7 days to compl**

No violations noted
Thank You

Follow-up Action: Reinspection on or about ___/___/___
Routine (Priority Category) (1) 2 3

Received by: [signature]
Inspected by: [signature]

Page 1 of 2

*Compliance with the Elkhart County Ground Water Protection Ordinance does not exempt this facility from any other federal, state or local laws, codes or regulations.

White – ECHD 1 Yellow – Facility Pink – ECHD 2

10/09

ELKHART COUNTY GROUND WATER PROTECTION PROGRAM
TOXIC OR HAZARDOUS SUBSTANCE STORAGE AREAS
REGISTRATION INFORMATION

FACILITY NAME Riverside Tool Corp FACILITY ID NUMBER 5459

Hazardous Substance	Type of Container							Maximum Amount Stored In Any Month			Storage Location		Date	
	D	B	C	A	T	U	O				Inside	Outside	Added	Deleted
Dielectric Fluid (coolant)	1							55	gals	lbs	X		12-27-4	
Electroplating & Black Oxide Chem					1			275	gals	lbs				
Dri-Touch Amber		1					1	18	gals	lbs				
Way Oil		1						5	gals	lbs				
Oxy Prime		1					1	18	gals	lbs				
Saf-Escrub		1					1	18	gals	lbs				
Black Oxide		1					1	18	gals	lbs				
Bright Copper mix							1	13	gals	lbs				
Bright Nickel Mix							1	13	gals	lbs				
Electroscrub							1	13	gals	lbs				
Electrostrip							1	13	gals	lbs				
Metal Activator							1	13	gals	lbs				
Grinder Oil	2							110	gals	lbs				
Grinding Coolant	1							55	gals	lbs				
Used Oil	1							55	gals	lbs				
Machine Oil		1						5	gals	lbs				
Way Oil		2						10	gals	lbs				
Used Oil						1		275	gals	lbs				
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Page 2 of 2

Container type: D – drum, B – bucket, C – can, A – above ground storage tank, T – tote, U – underground storage tank, O – other

White – ECHD Yellow - Facility

7/05

2012 Industrial Survey

Elkhart, Indiana

City of Elkhart
Public Works and Utilities

Name of Industry: RIVERSIDE TOOL CORP. Phone Number: 574-522-6798
Site Address: 3504 HENKE ST. City: ELKHART Zip Code: 46514
Mailing Address: P.O. BOX 1425 City: ELKHART Zip Code: 46515
Name & title of person filling out form: RONALD MIGEDT, PRESIDENT
Standard Industrial Classification Number (SIC): 3545, 3471
What year was this industry established on this site? 2004

Who should the Elkhart Public Works and Utilities Department contact if we have questions regarding the information submitted in this questionnaire?

Name: RONALD MIGEDT Title: PRESIDENT
E-mail: RON@RIVERSIDETOOL.COM Phone Number: 574-522-6798
Name: Title:
E-mail: Phone Number:

Number of Employees: 30 How many shifts? 1

Please provide a description of the production process or service activity (be specific):

SEE ATTACHED DOCUMENT, SECTION 2, THAT WAS SUBMITTED TO YOU PREVIOUSLY

What are the products produced from the process or activity above?

SEE ATTACHED DOCUMENT, SECTION 2

List all of the industry's water source(s)?
☑ City ☐ Well ☐ Other _____

Is water contained in any of the products you produce? ○ Yes ● No

Do you have a Rule 6 permit? ○ Yes, permit number: _____ ● No

Do you have stormwater runoff that leaves your site? ○ Yes* ● No
If yes, where does it go? ☐ Stream ☐ Ditch ☐ Storm sewer ☐ Other

Please check the following list to indicate the principle raw products (Box "A") used at this site as well as the potential products that could be discharged (Box "B"), this could be by normal production, maintenance, clean up, or accidental spills.

- [A] [B] Acids
- [A] [B] Alkalis
- [A] [B] Blood
- [A] [B] Chemicals
- [A] [B] Detergents (surfactants)
- [A] [B] Inert Materials
- [A] [B] Lubricants
- [A] [B] Metals
- [A] [B] Mineral Oils
- [A] [B] Motor Oil
- [A] [B] Phenols
- [A] [B] Radioactive Wastes
- [A] [B] Solvents
- [A] [B] Temperatures >104 °F
- [A] [B] Vegetable Oils
- [A] [B] Viscous Materials
- [A] [B] Other _____
- [A] [B] Other _____

2012 Industrial Survey

Elkhart, Indiana

City of Elkhart
Public Works and Utilities

Name of Industry: RIVERSIDE TOOL CORP. Phone Number: 574-522-6798
Site Address: 3504 HENKE ST. City: ELKHART Zip Code: 46514
Mailing Address: P.O. BOX 1425 City: ELKHART Zip Code: 46515
Name & title of person filling out form: RONALD MILGEDT, PRESIDENT
Standard Industrial Classification Number (SIC): 3545, 3471
What year was this industry established on this site? 2004

Who should the Elkhart Public Works and Utilities Department contact if we have questions regarding the information submitted in this questionnaire?

Name: RONALD MILGEDT Title: PRESIDENT
E-mail: RON@RIVERSIDETOOL.COM Phone Number: 574-522-6798
Name: Title:
E-mail: Phone Number:

Number of Employees: 30 How many shifts? 1

Please provide a description of the production process or service activity (be specific):

SEE ATTACHED DOCUMENT, SECTION 2, THAT WAS SUBMITTED TO YOU PREVIOUSLY

What are the products produced from the process or activity above?

SEE ATTACHED DOCUMENT, SECTION 2

List all of the industry's water source(s)?
☑ City ☐ Well ☐ Other _____

Is water contained in any of the products you produce? ○ Yes ◉ No

Do you have a Rule 6 permit? ○ Yes, permit number: _____ ◉ No

Do you have stormwater runoff that leaves your site? ○ Yes* ◉ No
If yes, where does it go? ☐ Stream ☐ Ditch ☐ Storm sewer ☐ Other

Please check the following list to indicate the principle raw products (Box "A") used at this site as well as the potential products that could be discharged (Box "B"), this could be by normal production, maintenance, clean up, or accidental spills.

- [A] [B] Acids
- [A] [B] Alkalis
- [A] [B] Blood
- [A] [B] Chemicals
- [A] [B] Detergents (surfactants)
- [A] [B] Inert Materials
- [A] [B] Lubricants
- [A] [B] Metals
- [A] [B] Mineral Oils
- [A] [B] Motor Oil
- [A] [B] Phenols
- [A] [B] Radioactive Wastes
- [A] [B] Solvents
- [A] [B] Temperatures >104 °F
- [A] [B] Vegetable Oils
- [A] [B] Viscous Materials
- [A] [B] Other _____
- [A] [B] Other _____

Are any chemicals stored in total quantities greater than 50 gallons? (●) Yes ( ) No
If yes please give details: MACHINE COOLANT

Do you employ a special waste hauler to dispose of any other items listed above? (●) Yes ( ) No
Do you employ a special waste hauler to dispose of any other items not listed above? (●) Yes ( ) No

Does your facility have any wastewater pre-treatment capabilities (such as a grease trap, lint trap, heat reclaimer, metals recovery system, oil and water separator, etc)? ( ) Yes* (●) No
*If yes, please describe briefly: _____

Please list any environmental control permits (air, RCRA, etc.) held by your industry, including the permit number and expiration date.
N/A

Do you have active floor drains? ( ) Yes*, we have: _____ drains (●) No
If yes, do you know where they go? ( ) Yes, where: _____ ( ) No

Are there any equipment wash downs that occur? ( ) Yes* (●) No
*If yes, how often? ☐ Daily ☐ Weekly ☐ Monthly ☐ Other: _____
*where? ☐ Inside ☐ Outside

Does your company have other sites/industries on the City of Elkhart's sewer network that should receive this form? ( ) Yes* (●) No

Certification Statement:
I certify that the information submitted in this form is complete and accurate to the best of my knowledge.

Signature of responsible company official

RONALD MCGODT
Printed Name

PRESIDENT
Printed official title

10/3/2012
Date Signed

Please return the completed questionnaire to:

Elkhart Public Works and Utilities, 1201 S. Nappanee St., Elkhart, IN 46516
or
faxing it to: 574-293-7658 or e-mail at: pretreatement@coei.org.

City of Elkhart
Public Works and Utilities

Please return no later than
Thursday, October 25, 2012
Thank you for your time.

Submit by E-mail
Print Form

1. Provide a DETAILED written description of the manufacturing process or service activity provided on the premises.

Riverside Tool Corp. manufactures and services cutting tools for the woodworking and plastics industries. The cutting tools are machined and ground within the facility and many times are put through a black oxide process or electroplating process before shipment.

Two flow diagrams illustrating these processes, referenced as 'New Tooling Flow Diagram' and 'Tool Servicing Flow Diagram', are attached as separate documents to this application.

For cutting tool service and manufacturing (SIC 3545), coolants, lubricants, and cleaning solutions are utilized during machining, grinding, and cleaning of metal. These chemicals are as follows (See MSDS Book for details):

- Clearedge 6519
- IonoPlus 3000 ET
- GrindKlean
- Transogrind 250
- De-ionized water
- X10

All liquids are re-circulated within the machine. When machines require cleaning or maintenance, if necessary, the lubricant/coolant/cleaning solution is transferred out of the machine into the designated container (Disposal Tote 2) which is periodically pumped out by Safety Kleen Systems, Inc and hauled away for proper disposal.

For Electroplating and Black Oxide conditioning of tools (SIC 3471), tools are dipped in various liquids. Below is a sequential listing of the chemicals that tools are moved through for each process (See MSDS Book for details):

Black Oxide Process

- Safe Scrub ST Biodegradable Cleaner
- De-Ionized Water
- Birchwood Casey Oxyprime Surface Conditioner
- De-Ionized Water
- Tru Temp XL Blackener
- De-Ionized Water
- Dri-Touch Plus IPR3 Rust Preventative

Electroplating Process

- Electroscrub
- De-Ionized Water
- De-Ionized Water
- Metal Activator Solution
- De-Ionized Water
- De-Ionized Water
- Bright Nickel Solution
- De-Ionized Water
- De-Ionized Water
- Bright Copper Catalyst & Bright Copper MakeUp (Combined)
- De-Ionized Water
- De-Ionized Water
- Bright Nickel Solution
- De-Ionized Water

Stripping of ElectroPlating

- Electro-Strip
- De-Ionized Water & Baking Soda (Combined)
- De-Ionized Water

The De-Ionized Water listed above is transferred to the designated container (Disposal Tote 1) periodically as needed (for proper disposal with Safety Kleen Systems, Inc.) and refilled with De-Ionized Water. Any disposal of the other chemicals listed is rare and they are transferred to the designated container (Disposal Tote 1) for later disposal using Safety Kleen Systems, Inc..

2. Principle raw materials used:
    - Tungsten Carbide (C3, C4)
    - Steel (4140, C1018, 301/304 Stainless, M2, M3)
    - Aluminum (6061)
    - M42 Alloy
    - Polycrystalline Diamond
    - Copper
    - Brass
    - Nickel
3. Chemicals and compounds used (include MSDS for each)
   See previously submitted binder of MSDS sheets.

4. Hours of process discharge into the sewer system per day:
   There are zero hours of process discharge into the municipal sewer system. No manufacturing process discharges any liquid into the municipal sewer system. All oils, coolant, grease, and liquids from the manufacturing, grinding, electroplating and black oxide processes are collected in designated containers and transferred to Safety-Kleen Systems, Inc. for proper disposal.

Exemption 4,
5 U.S.C. §552(b)(4)

Confidential Business Information

Riverside Tool Corp. Response
Attachment 10

Insurance Audit/Inspection Records