10 STABILITY AND REACTIVITY

Stability:	Stable under normal temperatures and pressures.
Conditions to avoid:	High temperatures, incompatible materials, ignition sources, and excessive heat.
Materials to avoid (incompatability):	Avoid contact with strong oxidizing agents, acids and halogenated organic compounds
Hazardous Decomposition products:	Nitrogen oxides, carbon monoxide, carbon dioxide, ammoinia and irritating alheydes and ketones.
Hazardous Polymerization:	Has not been reported.

11 TOXICOLOGICAL INFORMATION

N/A

12 ECOLOGICAL INFORMATION

N/A

13 DISPOSAL CONSIDERATIONS

Dispose in accordance with Federal, State, and Local regulations. This product mixture has components that would, in their pure form, be listed as D001 (ignitable) hazardous wastes. This product mixture, at the time of disposal, may not meet RCRA criteria for hazardous waste; it is the user's responsibility to determine whether products meets RCRA criteria for hazardous waste.

Do not allow to enter drains or sewers. Can cause explosion.

14 TRANSPORT INFORMATION

DOT Shipping Name: Corrosive Liquid, Flammable, n.o.s. (Cyclohexylamine / Methoxypropylamine)
Hazard Class: 8
UN2920
Packing Group: II
Emergency Guide Number: 154
RQ: Not a Reportable Quantity

15 REGULATORY INFORMATION

Components of this product are on, or have been, excluded from the TSCA list.

16 OTHER INFORMATION

Disclaimer:

The information contained herein is, to the best of our knowledge and belief, accurate. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof.

Vendor assumes no responsibility for injury, to vendee or third person 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 this use of the material.

END OF MSDS DOCUMENT

MSDS Material Safety Data Sheet
Chemtech Chemical Services, L.L.C.

CHEMTECH
CHEMICAL SERVICES, LLC

CW-1095

1 PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

Chemtech Chemical Services, L.L.C.
31073 Terminal Ct.

Geismar, LA 70734

Contact: Chemtech Chemical Services
Telephone Number: 225-673-2436
FAX Number: 225-677-8522
E-Mail: vhebert@chemtechllc.com
Web

Product Name:	CW-1095
Revision Date:	2/16/2010
MSDS Number:	CW-1095
CAS Number:	Not applicable, mixture
Product Use:	Corrosion and Scale Inhibitor

Emergency Telephone:	24 hours a day, 7 days a week	
	Health/Transport/Regulatory	(225) 673-2436
	CHEMTREC	(800) 424-9300

2 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Identity is a Trade Secret

The following chemical componet(s) of this mixture are hazardous under OSHA's Hazard Communication Standard (29 CFR 1910.1200).

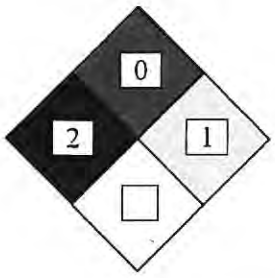
Cas #	Chemical Name
1310-58-3	Potassium Hydroxide
7664-38-2	Phosphoric acid

3 HAZARDS IDENTIFICATION

Route of Entry:	Eye, Skin, Ingestion, Ingestion
Target Organs:	N/A
Inhalation:	Corrosive mixture. Inhalation of mists or vapors may result in irritation of the respiratory system.
Skin Contact:	Corrosive mixture. May result in irritation or burns upon contact with skin.
Eye Contact:	Corrosive to eyes. May result in severe eye damage.
Ingestion:	Causes irritation or ulceration of the digestive tract.

Symptoms of Exposure: A review of available data does not identify any symptoms from exposure.

NFPA: Health = 2; Fire = 0; Reactivity = 1



4 FIRST AID MEASURES

Inhalation:	If overcome by vapors, remove to fresh air. If breathing has stopped or is impaired, give assisted respiration (e.g. mouth-to-mouth); supplemental oxygen should be given if available. Seek medical attention immediately.
Skin Contact:	Wash with soap and water. Launder contaminated clothing prior to reuse. For major exposure, rinse body thoroughly under shower. Seek medical attention immediately.
Eye Contact:	Flush eyes immediately and gently with large volumes of water for 15 minutes. Hold eyelids open to ensure proper flushing. Seek medical attention immediately.
Ingestion:	If conscious, give large quantities of water. Do not induce vomiting. Seek medical attention immediately.

5 FIRE FIGHTING MEASURES

Flash Point: N/A
Flammability Classification: 0

Extinguishing Media: This product is not expected to burn unless all water is boiled away. The remaining organic materials may ignite. Use water to cool containers exposed to fire. Use carbon dioxide, dry chemical, or water fog to extinguish fire.

USUAL FIRE AND EXPLOSION HAZARD: May evolve oxides of Nitrogen and toxic gases/fumes under fire conditions. If water is boiled off, remaining organics may ignite. Vapors can travel a long distance from source.

Firefighters should wear self-contained breathing apparatus and full protective clothing.

6 ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Cleanup personnel should wear proper protective equipment. See Section 8.

SMALL SPILLS: Cover with absorbent material such as sawdust, clay, soil, or commercial absorbent. Transfer into drums for disposal.

LARGE SPILLS: Dike to contain liquid and reclaim into salvage drums or tank truck for disposal.

Reportable Quantity: 1000lbs (103gal.)

7 HANDLING AND STORAGE

Handling Precautions:	Regard as corrosive to eyes and irritating to skin. For industrial use only. Do not take internally. Do not contact with food or feedstuffs.
Storage Requirements:	Empty containers may contain residual product. Do not reuse container unless properly reconditioned.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	VENTILATION: General ventilation should be sufficient.
Protective Equipment:	RESPIRATORY PROTECTION: Not normally required as volatility and toxicity are low. If significant vapors accumulate, wear NIOSH approved acid gas / organic vapor respirator or equivalent. For large spills, tank entry or inadequate ventilation, a pressure demand self contained breathing apparatus is recommended. PROTECTION EQUIPMENT: Use impermeable gloves, chemical splash goggles and apron when handling concentrated product. Access to safety shower and eye wash station is recommended.
Exposure Guidelines/Other:	Symptoms of Exposure: A review of available data does not identify any symptoms from exposure.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Light Yellow		
Physical State:	Liquid	Boiling Point:	210-220F
Odor:	None	Freezing/Melting Pt.:	20-30F
pH:	11.5-13.5	Solubility:	Complete
Vapor Pressure:	NA	Spec Grav./Density:	1.1-1.2
Vapor Density:	NA		

10 STABILITY AND REACTIVITY

Stability:	Stable.
Conditions to avoid:	N/A
Materials to avoid (incompatability):	Avoid contact with strong acids and strong oxidizing agents.
Hazardous Decomposition products:	In the event of combustion carbon monoxide, carbon dioxide, NOx, phosphoric, and sulfuric acid may be formed.
Hazardous Polymerization:	Will not occur.

11 TOXICOLOGICAL INFORMATION

Exposure level not extablished for product. See Section 2 for component information.

12 ECOLOGICAL INFORMATION

N/A

13 DISPOSAL CONSIDERATIONS

Dispose in accordance with federal, state, and local regulations.

14 TRANSPORT INFORMATION

DOT Shipping Name: Caustic Alkali Liquid, n.o.s., (Contains Potassium Hydroxide)
Hazard Class: 8
UN Number: UN1719
Packing Group:III
Placard Requirement: Corrosive
Emergency Guide Number: 154
RQ: 1000lbs (103gal.)

15 REGULATORY INFORMATION

All components of this product that are required to be on the TSCA Inventory, are on, or have been excluded from this list.

16 OTHER INFORMATION

Disclaimer:

The information contained herein is, to the best of our knowledge and belief, accurate. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof.

Vendor assumes no responsibility for injury, to vendee or third person 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 this use of the material.

END OF MSDS DOCUMENT

MSDS Material Safety Data Sheet
Chemtech Chemical Services, L.L.C.

CHEMTECH
CHEMICAL SERVICES, LLC

PL-520

MSDS Number: PL-520 | Revision Date: 6/19/09

1 PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

Chemtech Chemical Services, L.L.C.
31073 Terminal Ct.

Geismar, LA 70734

Contact: Chemtech Chemical Services
Telephone Number: 225-673-2436
FAX Number: 225-677-8522
E-Mail: vhebert@chemtechllc.com
Web

Product Name:	PL-520
Revision Date:	6/19/09
MSDS Number:	PL-520
CAS Number:	Not applicable, mixture
Product Use:	Polymer

Emergency Telephone: 24 hours a day, 7 days a week
Health/Transport/Regulatory (225) 673-2436
CHEMTREC (800) 424-9300

2 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

Cas #	Chemical Name	Perc.
64742-47-8	Petroleum Distillate Hydrotreated Light	20.5 - 22.5%
68002-97-1	Alcohols (C10-`16) ethoxylated	0 - 2.7%
68439-50-9	C-12-C14 Alcohol ethoxylated	0 - 2.7%
68551-12-2	Alcohols (C112-16), ethoxylated	0 - 2.7%

3 HAZARDS IDENTIFICATION

Route of Entry:	Skin, Eye, Inhalation, Ingestion
Target Organs:	N/A
Inhalation:	Inhalation of product mist or vapor may be irritating to respiratory tract.
Skin Contact:	May cause mild irritation.
Eye Contact:	May cause mild eye irritation.
Ingestion:	May cause sever irritation or burns to mucus membranes of the mouth, throat, esophagus, and stomach.

HMIS-ratings (scale 0-4): Health = 2, Fire = 1, Physical Hazard = 0
NFPA-ratings (scale 0-4): Health = 2, Fire = 1, Reactivity = 0

4 FIRST AID MEASURES

Inhalation: If overcome by vapors, remove to fresh air. If breathing is difficult, give oxygen. Obtain medical advice if there are persistent symptoms.

Skin Contact: Remove contaminated clothing and shoes without delay. Wash immediately with plenty of water. Do not reuse contaminated clothing without laundering. Get medical attention if pain or irritation persists after washing or if signs and symptoms of overexposure appear.

Eye Contact: Immediately flush with water for at least 15 minutes while holding eyelids open. Obtain medical advice if there are persistent symptoms.

Ingestion: If swallow, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

5 FIRE FIGHTING MEASURES

Flash Point: >200F (Closed Cup)
Flammability Classification: 0

EXTINGUISHING MEDIA: Use water spray, alcohol foam, carbon dioxide or dry chemical to extinguish fires. Water stream may be ineffective.

SPECIAL FIREFIGHTING PROTECTIVE EQUIPMENT: Firefighters, and other exposed, wear self-contained breathing apparatus. Wear full firefighting protective clothing. See MSDS Section 8 (Exposure Controls Personal Protection)

USUAL FIRE & EXPLOSION HAZARDS: Keep containers cool by spraying with water if exposed to fire.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions: Where exposure level is not known, wear approved, positive pressure, self-contained respirator. Where exposure level is known, wear approved respirator suitable for level of exposure. In addition to the protective clothing/equipment in Section 8 (Exposure Controls Personal Protection), wear impervious boots.

Methods for Cleaning Up: Product may cause a slip hazard. Spilled material should be absorbed onto an inert material and scooped up. Flush area with water. If slipperiness remains apply more dry-sweeping compound.

7 HANDLING AND STORAGE

Handling Precautions: Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

Storage Requirements: To avoid product degradation and equipment corrosion, do not use iron, copper, or aluminum containers or equipment. Flashpoint determinations on materials of this type are required by certain regulations and scientific standards to be performed by using a Pensky-Martens type closed cup test method. This method indicates it has a flashpoint greater than 200o F (93.3o C). Although there was not flashpoint detected below 93.3o C (200o F) by the Pensky-Martens Closed Tester method, some flammable vapors were evolved during the test as evidenced by the enlargement of the test flame; therefore, caution should be exercised in storage and handling.

Storage Temperature: Room Temperature

Reason: Integrity

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	Where this material is not used in a closed system, good enclosure and local exhaust ventilation should be provided to control exposure.
Protective Equipment:	EYE PROTECTION: Wear eye/face protection such as chemical splash proof goggles or face-shield. Eyewash equipment and safety shower should be provided in areas of potential exposure SKIN PROTECTION: Avoid skin contact. Wear impermeable gloves and suitable clothing. RESPIRATORY PROTECTION: Where exposures are below the established exposure limits, no respirator protection is required. Where exposures exceed the established exposure limit, use respirator protection recommended for the material and level of exposure.
Exposure Guidelines/Other:	ADDITIONAL ADVICE: Food, beverages, and tobacco products should not be carried, stored or consumed where this material is in use. Before eating, drinking or smoking, wash face and hands thoroughly with soap and water.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Grayish White Emulsion		
Physical State:	Liquid	Boiling Point:	177 - 260 F
Odor:	Ammonia	Freezing/Melting Pt.:	-0 F
pH:	6.0 - 8.0 in water	Solubility:	Limited by Viscosity
Vapor Pressure:	N/A	Spec Grav./Density:	~1.0
Vapor Density:	N/A		

VOC:	22% (g/g)
Percent Volatile:	64-65

10 STABILITY AND REACTIVITY

Stability:	Stable.
Conditions to avoid:	Avoid contact with strong oxidizing agents.
Materials to avoid (incompatability):	Strong oxidizing agents.
Hazardous Decomposition products:	Carbon monoxide, carbon dioxide, ammonia, oxides of nitrogen.
Hazardous Polymerization:	Will not occur.

11 TOXICOLOGICAL INFORMATION

Toxicological information for the product is found under Section 3. HAZARDS IDENTIFICATION. Toxicological information on the WHMIS regulated components of this product is as follows:

Petroleum distillates, hydrotreated light (CAS#64742-47-8) has acute oral (rat) and dermal (rabbit) LD_{50} values of >5 g/kg and >3.16 g/kg, respectively. Prolonged or repeated skin contact tends to remove skin oils, possible leading to irritation and dermatitis. Direct contact may cause eye irritation. Overexposure to high vapor concentrations, >~700 ppm, are irritating to the eyes and respiratory tract and may cause headaches, dizziness, drowsiness, and other central nervous system effects, including death. Aspiration of minute amounts during ingestion or vomiting may cause mild to severe pulmonary injury and possible death. In a 90-day oral gavage (rats) study at 100, 5000, or 1000 mg/kg, no treatment -related mortalities were observed. There were no significant changes in body weights or food consumption in any dose groups. Increased liver weights were observed in male and female rats at 500 and 1000 mg/kg. Increased kidney weights were observed only in male rat kidneys at all dose levels. Histological findings of hepatocellular hypertrophy were seen in the livers of male rats at 1000 mg/kg and in female rats at 500 and 1000 mg/kg. All treatment-related effects were reversible within the 4-week recovery period. Observed kidney effects (including light hydrocarbon nephropathy and increased kidney weight) are a unique response by male rats to chronic hydrocarbon exposure, which the U.S. EPA has declared "not relevant to humans". High dose liver effects (includinghepatocellular hypertrophy, or enlarged liver cells) are a direct consequence of the sustained high fat "hydrocarbon diet". The No Observed Adverse Effect Level (NOAEL) for this study was 1000 mg/kg.

Alcohols (C10-16), ethoxylated toxicological properties have not been fully investigated. Based on similar materials, the acute oral (rat) LD_{50} is estimated to range from 1600-2500 mg/kg and the acute dermal (rabbit) LD_{50} value is estimated to be >2000 mg/kg. Similar materials produced severe eye irritation and moderate skin irritation in studies with rabbits. C12-14 alcohol ethoxylated toxicological properties have not been fully investigated. The oral LD_{50} (rat) of this mixture is expected to be consistent with the chemical family of ethoxylated alcohol surfactants, and range from 1.6 to 2.5 g/kg. The acute dermal (rabbit) LD_{50} value is estimated to be > 2.0 g/kg. One expected component of this mixture was severely irritating to rabbit eyes (undiluted, Draize score = 60). This mixture is expected to be moderately irritating to skin, based on data reported for C9-C11 6EO: (primary irritation index) PII = 5.3/8.

Alcohols (C12-16), ethoxylated toxicological properties have not been fully investigated. Based on similar materials, the acute oral (rat) LD_{50} is estimated to range from 1600-2500 mg/kg and the acute dermal (rabbit) LD_{50} value is estimated to be >2000 mg/kg. Similar materials produced severe eye irritation and moderate skin irritation in studies with rabbits. California Proposition 65 Warning (applicable in California only) - This product contains (a) chemical(s) known to the State of California to cause cancer and birth defects or other reproductive harm.

12 ECOLOGICAL INFORMATION

Algae Test Results
Test: Acute Alga Toxicity, Seawater (ISO 10253)
Duration: 72 hr
Species: Marine Algae (Skeletonema costatum) ~27 mg/L IC50
Test: Growth Inhibition (OECD 201)
Duration: 72 hr
Species: Green Algae (Selenastrum capricornutum) >100 mg/L IC50 Information based on a structurally similar material.

Fish Test Results
Test: Acute Toxicity, Freshwater (OECD 203)
Duration: 96 hr
Species: Zebra Fish (Brachydanio rerio) > 100 mg/L LC50 Information based on a structurally similar material

Invertebrate Test Results
Test: Acute Invertebrate Toxicity, Seawater (PARCOM)
Duration: 10 day
Species: Marine Amphipod (Corophium volutator) 857 mg/L EC50
Test: Acute Invertebrate Toxicity, Seawater (PARCOM)
Duration: 48 hr
Species: Marine Copepod (Acartia tonsa) 7.4 mg/L EC50
Test: Acute Immobilization (OECD 202)
Duration: 48 hr
Species: Water Flea (Daphnia magna) >100 mg/L EC50 Information basedon a structurally similar material

Degradation:
Test: CO_2 Evolution: Modified Sturm (OECD 301B)
The polymeric ingredient is not readily biodegradable. The large polymer size is incompatible with transport across biological membranes and diffusion; the bioconcentration factor is therefore considered to be zero.
Test: Seawater Shake Flask Method (OECD 306)
Duration: 28 dya
Procedure: Biodegradability in seawater 13%

13 DISPOSAL CONSIDERATIONS

The information on RCRA waste classification and disposal methodology provided below applies only to the product, as supplied. If the material has been altered or contaminated, or it has exceeded its recommended shelf life, the guidance may be inapplicable. Hazardous waste classification under federal regulations (40 CFR Part 261 et seq) is dependent upon whether a material is a RCRA 'listed hazardous waste' or has any of the four RCRA 'hazardous waste characteristic. Refer to 40 CFR Part 261.33 to determine if a given material to be disposed of is a RCRA 'listed hazardous waste'; information contained in Section 15 of this MSDS is not intended to indicate if the product is a 'listed hazardous waste. 'RCRA Hazardous Waste Characteristics: There are four characteristics defined in 40 CFR Section 261.21-61.24: Ignitability, Corrosivity, Reactivity, and Toxicity. To determine Ignitability, see Section 9 of this MSDS (flash point). For Corrosivity, see Section 9 and 14 (ph and DOT corrosivity). For Reactivity, see Section 10 (incompatible materials). For Toxicity, see Section 2 (composition). Federal regulations are subject to change. State and local requirements, which may differ from or be more stringent than the federal regulations, may also, apply to the classification of the material if it is to be disposed. Distributor encourages the recycle, recovery and reuse of materials, where permitted, as an alternative to disposal as a waste. Distributor recommends that organic materials classified as RCRA hazardous waste to be disposed of by thermal treatment or incineration at EPA approved facilities. The distributor has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

14 TRANSPORT INFORMATION

DOT Shipping Name: Not Regulated

15 REGULATORY INFORMATION

United States (USA): All components of this product are included on the TSCA Chemical Inventory or are not required to be listed on the TSCA Chemical Inventory.
Other Environmental Information: The following components of this product may be subject to reporting requirements pursuant to Section 313 of CERCLA (40 CFR 372), Section 12(b) of TSCA, or may be subject to release reporting requirements (40 CFR 307, 40 CFR 311, etc.) See Section 13 for information on waste classification and waste disposal of this product.

This product does not contain any components regulated under these sections of the EPA.

PRODUCT HAZARD CLASSIFICATION UNDER SECTION 311 OF SARA Acute.

16 OTHER INFORMATION

Disclaimer:

The information contained herein is, to the best of our knowledge and belief, accurate. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof.

Vendor assumes no responsibility for injury, to vendee or third person 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 this use of the material.

END OF MSDS DOCUMENT

THE CLOROX COMPANY

SAFETY DATA SHEET

Issuing Date January 5, 2015 **Revision Date** New **Revision Number** 0

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name **Clorox Commercial Solutions® Clorox® Germicidal Bleach$_1$**

Other means of identification

EPA Registration Number 5813-100-67619

Recommended use of the chemical and restrictions on use

Recommended use Institutional hard surface disinfecting and sanitizing bleach

Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier Address
Clorox Professional Products Company
1221 Broadway
Oakland, CA 94612

Phone: 1-510-271-7000

Emergency telephone number

Emergency Phone Numbers For Medical Emergencies, call: 1-800-446-1014
For Transportation Emergencies, call Chemtrec: 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Skin corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1

GHS Label elements, including precautionary statements

Emergency Overview

Signal word **Danger**

Hazard Statements
Causes severe skin burns and eye damage
Causes serious eye damage

Appearance Clear, pale yellow **Physical State** Thin liquid **Odor** Bleach

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling.
Wear protective gloves, protective clothing, face protection, and eye protection such as safety glasses.

Precautionary Statements - Response
Immediately call a poison center or doctor.
If swallowed: Rinse mouth. Do NOT induce vomiting.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
Wash contaminated clothing before reuse.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
Specific treatment (see supplemental first aid instructions on this label).
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Precautionary Statements - Storage
Store locked up.

Precautionary Statements - Disposal
Dispose of contents in accordance with all applicable federal, state, and local regulations.

Hazards not otherwise classified (HNOC)
Although not expected, heart conditions or chronic respiratory problems such as asthma, chronic bronchitis, or obstructive lung disease may be aggravated by exposure to high concentrations of vapor or mist.

Product contains a strong oxidizer. Always flush drains before and after use.

Unknown Toxicity
Not applicable.

Other information
Very toxic to aquatic life with long lasting effects.

Interactions with Other Chemicals
Reacts with other household chemicals such as toilet bowl cleaners, rust removers, acids, or products containing ammonia to produce hazardous irritating gases, such as chlorine and other chlorinated compounds.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	Weight %	Trade Secret
Sodium hypochlorite	7681-52-9	5 - 10	*

* The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

First aid measures

General Advice Call a poison control center or doctor immediately for treatment advice. Show this safety data sheet to the doctor in attendance.

Eye Contact 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 Contact Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Inhalation Move to fresh air. If breathing is affected, call a doctor.

Ingestion 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. Call a poison control center or doctor immediately for treatment advice.

Protection of First-aiders Avoid contact with skin, eyes, and clothing. Use personal protective equipment as required. Wear personal protective clothing (see section 8).

Most important symptoms and effects, both acute and delayed

Most Important Symptoms and Effects Burning of eyes and skin.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically. Probable mucosal damage may contraindicate the use of gastric lavage.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media
CAUTION: Use of water spray when fighting fire may be inefficient.

Specific Hazards Arising from the Chemical
This product causes burns to eyes, skin, and mucous membranes. Thermal decomposition can release sodium chlorate and irritating gases and vapors.

Explosion Data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

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 Avoid contact with eyes, skin, and clothing. Ensure adequate ventilation. Use personal protective equipment as required. For spills of multiple products, responders should evaluate the MSDSs of the products for incompatibility with sodium hypochlorite. Breathing protection should be worn in enclosed and/or poorly-ventilated areas until hazard assessment is complete.

Other Information Refer to protective measures listed in Sections 7 and 8.

Environmental precautions

Environmental Precautions This product is toxic to fish, aquatic invertebrates, oysters, and shrimp. Do not allow product to enter storm drains, lakes, or streams. See Section 12 for ecological Information.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Cleaning Up Absorb and containerize. Wash residual down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes, and clothing. Do not eat, drink, or smoke when using this product.

Conditions for safe storage, including any incompatibilities

Storage Store away from children. Reclose cap tightly after each use. Store this product upright in a cool, dry area, away from direct sunlight and heat to avoid deterioration. Do not contaminate food or feed by storage of this product.

Incompatible Products Toilet bowl cleaners, rust removers, acids, and products containing ammonia.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Sodium hypochlorite 7681-52-9	None	None	None

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value. OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits. NIOSH IDLH: Immediately Dangerous to Life or Health.

Appropriate engineering controls

Engineering Measures
Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment

Eye/Face Protection If splashes are likely to occur: Wear safety glasses with side shields (or goggles) or face shield.

Skin and Body Protection Wear rubber or neoprene gloves and protective clothing such as long-sleeved shirt.

Respiratory Protection If irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice. Wash hands after direct contact. Do not wear product-contaminated clothing for prolonged periods. Remove and wash contaminated clothing before re-use. Do not eat, drink, or smoke when using this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Physical State	Thin liquid		
Appearance	Clear	**Odor**	Bleach
Color	Pale yellow	**Odor Threshold**	No information available

Property	**Values**	**Remarks/ Method**
pH	~12	None known
Melting/freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash Point	Not flammable	None known
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limits in Air		
Upper flammability limit	No data available	None known
Lower flammability limit	No data available	None known
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Specific Gravity	~1.1	None known
Water Solubility	Soluble	None known
Solubility in other solvents	No data available	None known
Partition coefficient: n-octanol/water	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Explosive Properties	Not explosive	
Oxidizing Properties	No data available	

Other Information

Softening Point	No data available
VOC Content (%)	No data available
Particle Size	No data available
Particle Size Distribution	No data available

10. STABILITY AND REACTIVITY

Reactivity
Reacts with other household chemicals such as toilet bowl cleaners, rust removers, acids, or products containing ammonia to produce hazardous irritating gases, such as chlorine and other chlorinated compounds.

Chemical stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Conditions to avoid
None known based on information supplied.

Incompatible materials
Toilet bowl cleaners, rust removers, acids, and products containing ammonia.

Hazardous Decomposition Products
None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information .

Inhalation Exposure to vapor or mist may irritate respiratory tract and cause coughing. Inhalation of high concentrations may cause pulmonary edema.

Eye Contact Corrosive. May cause severe damage to eyes.

Skin Contact May cause severe irritation to skin. Prolonged contact may cause burns to skin.

Ingestion Ingestion may cause burns to gastrointestinal tract and respiratory tract, nausea, vomiting, and diarrhea.

Component Information

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium hypochlorite 7681-52-9	8200 mg/kg (Rat)	>10000 mg/kg (Rabbit)	-

Information on toxicological effects

Symptoms May cause redness and tearing of the eyes. May cause burns to eyes. May cause redness or burns to skin. Inhalation may cause coughing.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization No information available.

Mutagenic Effects No information available.

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Sodium hypochlorite 7681-52-9	-	Group 3	-	-

IARC (International Agency for Research on Cancer)
Group 3 - Not Classifiable as to Carcinogenicity in Humans

Reproductive Toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposure No information available.
Chronic Toxicity Carcinogenic potential is unknown.
Target Organ Effects Respiratory system, eyes, skin, gastrointestinal tract (GI).

Aspiration Hazard No information available.

Numerical measures of toxicity - Product Information

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)
54 g/kg
ATEmix (inhalation-dust/mist)
58 mg/L

12. ECOLOGICAL INFORMATION

Ecotoxicity
Very toxic to aquatic life with long lasting effects.

This product is toxic to fish, aquatic invertebrates, oysters, and shrimp. Do not allow product to enter storm drains, lakes, or streams.

Persistence and Degradability
No information available.

Bioaccumulation
No information available.

Other adverse effects
No information available.

13. DISPOSAL CONSIDERATIONS

Disposal methods
Dispose of in accordance with all applicable federal, state, and local regulations. Do not contaminate food or feed by disposal of this product.

Contaminated Packaging
Do not reuse empty containers. Dispose of in accordance with all applicable federal, state, and local regulations.

14. TRANSPORT INFORMATION

DOT NOT REGULATED.

TDG

UN-No	UN3082
Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Hazard Class	9
Packing Group	III
Description	UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (SODIUM HYPOCHLORITE), 9, III, MARINE POLLUTANT

ICAO

UN-No	UN3082
Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Hazard Class	9
Packing Group	III
Description	UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (SODIUM HYPOCHLORITE), 9, III

IATA

UN-No	UN3082
Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Hazard Class	9
Packing Group	III
Description	UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (SODIUM HYPOCHLORITE), 9, III

IMDG/IMO

UN-No	UN3082
Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Hazard Class	9
Packing Group	III
EmS No.	F-A, S-F
Marine Pollutant	Product is a marine pollutant according to the criteria set by IMDG/IMO
Description	UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (SODIUM HYPOCHLORITE), 9, III, MARINE POLLUTANT

15. REGULATORY INFORMATION

Chemical Inventories

TSCA	All components of this product are either on the TSCA 8(b) Inventory or otherwise exempt from listing.
DSL/NDSL	All components are on the DSL or NDSL.

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

U.S. Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act
This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Sodium hypochlorite 7681-52-9	100 lb			X

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
Sodium hypochlorite 7681-52-9	100 lb	-	RQ 100 lb final RQ RQ 45.4 kg final RQ

EPA Statement
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

> **DANGER: CORROSIVE.** Causes irreversible eye damage and skin burns. Harmful if swallowed. Do not get in eyes, on skin, or on clothing. Wear protective eyewear and rubber gloves when handling this product. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the restroom. Avoid breathing vapors and use only in a well-ventilated area.

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Rhode Island	Illinois
Sodium hypochlorite 7681-52-9	X	X	X	X	
Sodium chlorate 7775-09-9	X	X	X		

International Regulations

Canada
WHMIS Hazard Class
E - Corrosive material

16. OTHER INFORMATION

NFPA	**Health Hazard**	3	**Flammability**	0	**Instability**	0	**Physical and Chemical Hazards** -
HMIS	**Health Hazard**	3	**Flammability**	0	**Physical Hazard**	0	**Personal Protection** B

Prepared By Product Stewardship
23 British American Blvd.
Latham, NY 12110
1-800-572-6501

Revision Date New

Revision Note New

Reference 1081722/166081.094

General 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

DOW CORNING

DOW CORNING CORPORATION
Material Safety Data Sheet

DOW CORNING(R) FG-10 ANTIFOAM EMULSION

1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

Dow Corning Corporation
South Saginaw Road
Midland, Michigan 48686

24 Hour Emergency Telephone: (989) 496-5900
Customer Service: (989) 496-6000
Product Disposal Information: (989) 496-6315
CHEMTREC: (800) 424-9300

MSDS No.: 01012835 Revision Date: 2007/06/18

Generic Description: Silicone emulsion
Physical Form: Liquid
Color: White
Odor: Some odor

NFPA Profile: Health 0 Flammability 1 Instability/Reactivity 0

Note: NFPA = National Fire Protection Association

2. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

Acute Effects

Eye: Direct contact may cause temporary redness and discomfort.

Skin: No significant irritation expected from a single short-term exposure.

Inhalation: No significant effects expected from a single short-term exposure.

Oral: Low ingestion hazard in normal use.

Prolonged/Repeated Exposure Effects

Skin: No known applicable information.

Inhalation: No known applicable information.

Oral: No known applicable information.

Signs and Symptoms of Overexposure

No known applicable information.

Medical Conditions Aggravated by Exposure

No known applicable information.

The above listed potential effects of overexposure are based on actual data, results of studies performed upon similar compositions,

component data and/or expert review of the product. Please refer to Section 11 for the detailed toxicology information.

3. COMPOSITION/INFORMATION ON INGREDIENTS

None present. This is not a hazardous material as defined in the OSHA Hazard Communication Standard.

4. FIRST AID MEASURES

Eye:	Immediately flush with water.
Skin:	No first aid should be needed.
Inhalation:	No first aid should be needed.
Oral:	No first aid should be needed.
Notes to Physician:	Treat symptomatically.

5. FIRE FIGHTING MEASURES

Flash Point:	> 214 °F / > 101.1 °C (Closed Cup)
Autoignition Temperature:	Not determined.
Flammability Limits in Air:	Not determined.
Extinguishing Media:	On large fires use dry chemical, foam or water spray. On small fires use carbon dioxide (CO2), dry chemical or water spray. Water can be used to cool fire exposed containers.
Fire Fighting Measures:	Self-contained breathing apparatus and protective clothing should be worn in fighting large fires involving chemicals. Determine the need to evacuate or isolate the area according to your local emergency plan. Use water spray to keep fire exposed containers cool.
Unusual Fire Hazards:	None.

6. ACCIDENTAL RELEASE MEASURES

Containment/Clean up:	Determine whether to evacuate or isolate the area according to your local emergency plan. Observe all personal protection equipment recommendations described in Sections 5 and 8. For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container. Clean up remaining materials from spill with suitable absorbant. Clean area as appropriate since spilled materials, even in small quantities, may present a slip hazard. Final cleaning may require use of steam, solvents or detergents. Dispose of saturated absorbant or cleaning materials appropriately, since spontaneous heating may occur. Local, state and federal laws and regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which federal, state and local laws and regulations are applicable. Sections 13 and 15 of this MSDS provide information regarding certain federal and state requirements.

Note: See section 8 for Personal Protective Equipment for Spills. Call (989) 496-5900, if additional information is required.

7. HANDLING AND STORAGE

Use with adequate ventilation. Avoid eye contact.

Use reasonable care and store away from oxidizing materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

There are no components with workplace exposure limits.

Engineering Controls

Local Ventilation:	None should be needed.
General Ventilation:	Recommended.

Personal Protective Equipment for Routine Handling

Eyes:	Use proper protection - safety glasses as a minimum.
Skin:	Washing at mealtime and end of shift is adequate.
Suitable Gloves:	Handle in accordance with good industrial hygiene and safety practices.
Inhalation:	No respiratory protection should be needed.
Suitable Respirator:	None should be needed.

Personal Protective Equipment for Spills

Eyes:	Use proper protection - safety glasses as a minimum.
Skin:	Washing at mealtime and end of shift is adequate.
Inhalation/Suitable Respirator:	No respiratory protection should be needed.
Precautionary Measures:	Avoid eye contact. Use reasonable care.

Note: These precautions are for room temperature handling. Use at elevated temperature or aerosol/spray applications may require added precautions.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Form:	Liquid
Color:	White
Odor:	Some odor
Specific Gravity @ 25°C:	1.0
Viscosity:	800 cP
Freezing/Melting Point:	Not determined.
Boiling Point:	> 35 °C
Vapor Pressure @ 25°C:	Not determined.
Vapor Density:	Not determined.
Solubility in Water:	Not determined.
pH:	Not determined.
Volatile Content:	89 %
Flash Point:	> 214 °F / > 101.1 °C (Closed Cup)
Autoignition Temperature:	Not determined.
Flammability Limits in Air:	Not determined.

Note: The above information is not intended for use in preparing product specifications. Contact Dow Corning before writing specifications.

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable.
Hazardous Polymerization:	Hazardous polymerization will not occur.
Conditions to Avoid:	None.
Materials to Avoid:	Oxidizing material can cause a reaction.

Hazardous Decomposition Products

Thermal breakdown of this product during fire or very high heat conditions may evolve the following decomposition

products: Carbon oxides and traces of incompletely burned carbon compounds. Formaldehyde. Silicon dioxide.

11. TOXICOLOGICAL INFORMATION

Special Hazard Information on Components

No known applicable information.

12. ECOLOGICAL INFORMATION

Environmental Fate and Distribution

Complete information is not yet available.

Environmental Effects

Complete information is not yet available.

Fate and Effects in Waste Water Treatment Plants

Complete information is not yet available.

Ecotoxicity Classification Criteria

Hazard Parameters (LC50 or EC50)	High	Medium	Low
Acute Aquatic Toxicity (mg/L)	<=1	>1 and <=100	>100
Acute Terrestrial Toxicity	<=100	>100 and <= 2000	>2000

This table is adapted from "Environmental Toxicology and Risk Assessment", ASTM STP 1179, p.34, 1993.

This table can be used to classify the ecotoxicity of this product when ecotoxicity data is listed above. Please read the other information presented in the section concerning the overall ecological safety of this material.

13. DISPOSAL CONSIDERATIONS

RCRA Hazard Class (40 CFR 261)

When a decision is made to discard this material, as received, is it classified as a hazardous waste? No

State or local laws may impose additional regulatory requirements regarding disposal.Call (989) 496-6315, if additional information is required.

14. TRANSPORT INFORMATION

DOT Road Shipment Information (49 CFR 172.101)

Not subject to DOT.

Ocean Shipment (IMDG)

Not subject to IMDG code.

Air Shipment (IATA)

Not subject to IATA regulations.

Call Dow Corning Transportation, (989) 496-8577, if additional information is required.

15. REGULATORY INFORMATION

Contents of this MSDS comply with the OSHA Hazard Communication Standard 29 CFR 1910.1200.

TSCA Status: All chemical substances in this material are included on or exempted from listing on the TSCA Inventory of Chemical Substances.

EPA SARA Title III Chemical Listings

Section 302 Extremely Hazardous Substances (40 CFR 355):
None.

Section 304 CERCLA Hazardous Substances (40 CFR 302):
None.

Section 311/312 Hazard Class (40 CFR 370):

Acute: No
Chronic: No
Fire: No
Pressure: No
Reactive: No

Section 313 Toxic Chemicals (40 CFR 372):
None present or none present in regulated quantities.

Note: Chemicals are listed under the 313 Toxic Chemicals section only if they meet or exceed a reporting threshold.

Supplemental State Compliance Information

California

Warning: This product contains the following chemical(s) listed by the State of California under the Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) as being known to cause cancer, birth defects or other reproductive harm.

None known.

Massachusetts

CAS Number	Wt %	Component Name
7664-93-9	<0.1	Sulfuric acid

New Jersey

CAS Number	Wt %	Component Name
7732-18-5	> 60.0	Water
63148-62-9	7.0 - 13.0	Polydimethylsiloxane

Pennsylvania

CAS Number	Wt %	Component Name
7732-18-5	> 60.0	Water
63148-62-9	7.0 - 13.0	Polydimethylsiloxane

16. OTHER INFORMATION

Prepared by: Dow Corning Corporation

These data are offered in good faith as typical values and not as product specifications. No warranty, either expressed or implied, is hereby made. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate.

(R) indicates Registered Trademark

SAFETY DATA SHEET

THE DOW CHEMICAL COMPANY

Product name: Propylene Glycol Industrial Grade

Issue Date: 03/31/2015
Print Date: 04/15/2015

THE DOW CHEMICAL COMPANY encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: Propylene Glycol Industrial Grade

Recommended use of the chemical and restrictions on use
Identified uses: Manufacture of substance, industrial. Distribution of substance, industrial. Formulation & (re)packing of substances and mixtures, industrial. Uses in Coatings, industrial. Uses in Coatings, consumer. Use as binders and release agents: Industrial (SU3) Functional Fluids, industrial. Use in laboratories, industrial. Polymer production: Industrial (SU10) Rubber production and processing, industrial. Water treatment chemicals For industrial use. Mining Chemicals Use in laboratories, professional. Use as binders and release agents, professional. Professional use in cleaning agents. professional use Uses in Coatings, professional Functional Fluids, professional. De-icing and anti-icing applications, professional. Professional use in agrochemicals. Uses in Coatings, consumer Use in Cleaning Agents, consumer. Functional Fluids, consumer. Other Consumer Uses Consumer use in agrochemicals. De-icing and anti-icing applications, consumer.

COMPANY IDENTIFICATION
THE DOW CHEMICAL COMPANY
2030 WILLARD H DOW CENTER
MIDLAND MI 48674-0000
UNITED STATES

Customer Information Number: 800-258-2436
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-424-9300
Local Emergency Contact: 800-424-9300

2. HAZARDS IDENTIFICATION

Hazard classification
This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

Other hazards
no data available

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3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: Methyl Ethylene Glycol
This product is a substance.

Component	CASRN	Concentration
Propylene glycol	57-55-6	> 99.5 %

4. FIRST AID MEASURES

Description of first aid measures
General advice: If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air; if effects occur, consult a physician.

Skin contact: Wash off with plenty of water.

Eye contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

Ingestion: No emergency medical treatment necessary.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture
Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Keep personnel out of low areas. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Any absorbent material. Collect in suitable and properly labeled open containers. Wash the spill site with large quantities of water. Large spills: Dike area to contain spill. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store away from direct sunlight or ultraviolet light. Keep container tightly closed when not in use. Protect from atmospheric moisture. Store in the following material(s): Stainless steel. Aluminum. Container lined with phenolic or epoxy-phenolic FDA food contact approved coating. 316 stainless steel. Opaque HDPE plastic container.

Storage stability
Shelf life: Use within 12 Month

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Propylene glycol	US WEEL	TWA	10 mg/m3

Exposure controls

Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use safety glasses (with side shields). If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles.

Skin protection

Hand protection: Chemical protective gloves should not be needed when handling this material. Consistent with general hygienic practice for any material, skin contact should be minimized.

Other protection: No precautions other than clean body-covering clothing should be needed.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. In misty atmospheres, use an approved particulate respirator.
The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Colorless
Odor	Odorless
Odor Threshold	No test data available
pH	Not applicable
Melting point/range	< -20 °C (< -4 °F) *EU Method A.1 (Melting / Freezing Temperature)*
Freezing point	< -20 °C (< -4 °F) *EC Method A1*
Boiling point (760 mmHg)	184 °C (363 °F) at 752.46 mmHg *Literature*
Flash point	**closed cup** 104 °C (219 °F) at 1,000.1 hPa *EC Method A9* (PMCC)
Evaporation Rate (Butyl Acetate = 1)	0.01 *Estimated.*
Flammability (solid, gas)	Not applicable to liquids
Lower explosion limit	2.6 % vol *Estimated.*
Upper explosion limit	12.5 % vol *Estimated.*
Vapor Pressure	20 Pa at 25 °C (77 °F) *EC Method A4*
Relative Vapor Density (air = 1)	2.62 *Literature*
Relative Density (water = 1)	1.03 at 20 °C (68 °F) / 20 °C *EU Method A.3 (Relative Density)*

Water solubility	100 % at 20 °C (68 °F) *EU Method A.6 (Water Solubility)*
Partition coefficient: n-octanol/water	log Pow: -1.07 *Measured*
Auto-ignition temperature	> 400 °C (> 752 °F) at 100.01 kPa *EC Method A15*
Decomposition temperature	No test data available
Dynamic Viscosity	43.4 mPa.s at 25 °C (77 °F) *Literature*
Kinematic Viscosity	No test data available
Explosive properties	Not explosive
Oxidizing properties	No
Liquid Density	1.03 g/cm3 at 20 °C (68 °F) *Literature*
Molecular weight	no data available
pour point	< -57 °C (< -71 °F) *Literature*

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: no data available

Chemical stability: Stable under recommended storage conditions. See Storage, Section 7. Hygroscopic

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems. Avoid direct sunlight or ultraviolet sources.

Incompatible materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes. Alcohols. Ethers. Organic acids.

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Acute toxicity

Acute oral toxicity

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

LD50, Rat, > 20,000 mg/kg

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

LD50, Rabbit, > 2,000 mg/kg No deaths occurred at this concentration.

Acute inhalation toxicity
At room temperature, exposure to vapor is minimal due to low volatility. Mist may cause irritation of upper respiratory tract (nose and throat).

LC50, Rabbit, 2 Hour, Aerosol, 317.042 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation
Prolonged contact is essentially nonirritating to skin.
Repeated contact may cause flaking and softening of skin.

Serious eye damage/eye irritation
May cause slight temporary eye irritation.
Corneal injury is unlikely.
Mist may cause eye irritation.

Sensitization
Did not cause allergic skin reactions when tested in humans.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
In rare cases, repeated excessive exposure to propylene glycol may cause central nervous system effects.

Carcinogenicity
Did not cause cancer in laboratory animals.

Teratogenicity
Did not cause birth defects or any other fetal effects in laboratory animals.

Reproductive toxicity
In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

Mutagenicity
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicological information on this product or its components appear in this section when such data is available.

Toxicity

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, 40,613 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates
LC50, Ceriodaphnia dubia (water flea), static test, 48 Hour, 18,340 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, Growth rate inhibition, 19,000 mg/l, OECD Test Guideline 201

Toxicity to bacteria
NOEC, Pseudomonas putida, 18 Hour, > 20,000 mg/l, Method Not Specified.

Chronic aquatic toxicity
Chronic toxicity to aquatic invertebrates
NOEC, Ceriodaphnia dubia (water flea), semi-static test, 7 d, number of offspring, 13,020 mg/l

Persistence and degradability

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Biodegradation may occur under anaerobic conditions (in the absence of oxygen).
10-day Window: Pass
Biodegradation: 81 %
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent
10-day Window: Not applicable
Biodegradation: 96 %
Exposure time: 64 d
Method: OECD Test Guideline 306 or Equivalent

Theoretical Oxygen Demand: 1.68 mg/mg

Chemical Oxygen Demand: 1.53 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	69.000 %
10 d	70.000 %
20 d	86.000 %

Photodegradation
Atmospheric half-life: 10 Hour
Method: Estimated.

Bioaccumulative potential

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): -1.07 Measured
Bioconcentration factor (BCF): 0.09 Estimated.

Mobility in soil

Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient(Koc): < 1 Estimated.

13. DISPOSAL CONSIDERATIONS

Disposal methods: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. 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. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Recycler. Reclaimer. Incinerator or other thermal destruction device. As a service to its customers, Dow can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums. Telephone Dow's Customer Information Group at 1-800-258-2436 or 1-989-832-1556 (U.S.), or 1-800-331-6451 (Canada) for further details.

14. TRANSPORT INFORMATION

DOT

Not regulated for transport

Classification for SEA transport (IMO-IMDG):

Not regulated for transport

Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Not regulated for transport

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional

transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
This product is not a hazardous chemical under 29CFR 1910.1200, and therefore is not covered by Title III of SARA.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Pennsylvania Worker and Community Right-To-Know Act:
The following chemicals are listed because of the additional requirements of Pennsylvania law:

Components	CASRN
Propylene glycol	57-55-6

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances knownto the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

United States TSCA Inventory (TSCA)
All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

:

16. OTHER INFORMATION

Product Literature
Additional information on this and other products may be obtained by visiting our web page.

Hazard Rating System
NFPA

Health	Fire	Reactivity
1	1	0

Revision
Identification Number: 101201408 / A001 / Issue Date: 03/31/2015 / Version: 8.1
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

TWA	8-hr TWA
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

THE DOW CHEMICAL COMPANY urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

GE Power
Water & Process Technologies

SAFETY DATA SHEET

CORRSHIELD* MD4100

1. Identification

Product identifier	**CORRSHIELD MD4100**
Other means of identification	None.
Recommended use	Water-based corrosion inhibitor
Recommended restrictions	None known.

Company/undertaking identification

GE Betz, Inc.
4636 Somerton Road
Trevose, PA 19053
T 215 355 3300, F 215 953 5524

Emergency telephone

(800) 877 1940

2. Hazard(s) identification

Physical hazards	Corrosive to metals	Category 1
Health hazards	Acute toxicity, oral	Category 4
	Skin corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1
	Carcinogenicity	Category 2
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
OSHA defined hazards	Not classified.	

Label elements

Signal word	Danger
Hazard statement	May be corrosive to metals. Harmful if swallowed. Causes severe skin burns and eye damage. Causes serious eye damage. May cause respiratory irritation.
Precautionary statement	
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep only in original container. Do not breathe mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
Response	If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. 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. Wash contaminated clothing before reuse. Absorb spillage to prevent material damage.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Components	CAS #	Percent
Sodium nitrite	7632-00-0	10 - 20

Composition comments	Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this SDS for our assessment of the potential hazards of this formulation.

4. First-aid measures

Inhalation	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.
Skin contact	Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.
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. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.
Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk. Cool containers / tanks with water spray.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Prevent entry into waterways, sewer, basements or confined areas. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb spillage to prevent material damage. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions	Avoid discharge into drains, water courses or onto the ground. Water contaminated with this product may [illegible] ent to a sanitary sewer treatment facility, or a pu[illegible]ted waste treatment facility, in accordance with any local agreements.

7. Handling and storage

Precautions for safe handling	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. When using, do not eat, drink or smoke. Should be handled in closed systems, if possible. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in a cool, dry place out of direct sunlight. Store in corrosive resistant container with a resistant inner liner. Keep only in the original container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.
Individual protection measures, such as personal protective equipment	
Eye/face protection	Splash proof chemical goggles. Face shield.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Suitable gloves can be recommended by the glove supplier. Glove selection must take into account any solvents and other hazards present.
Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Observe any medical surveillance requirements. Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Color	Yellow
Physical state	Liquid
Odor	Mild
Odor threshold	Not available.
pH (concentrated product)	12.8
Melting point/freezing point	14 °F (-10 °C)
Initial boiling point and boiling range	220 °F (104 °C)
Flash point	> 200 °F (> 93 °C) SETA(CC)
Evaporation rate	< 1 (Ether = 1)
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.

Explosive limit - upper (%)	Not available.
Vapor pressure	18 mm Hg
Vapor pressure temp.	70 °F (21 °C)
Vapor density	< 1 (Air = 1)
Relative density	1.18
Relative density temperature	70 °F (21 °C)
Solubility(ies)	
Solubility (water)	100 %
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	4 cps
Viscosity temperature	70 °F (21 °C)
Other information	
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Percent volatile	0 (Estimated)
Specific gravity	1.18

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Protect from freezing. Do not allow to dry. Avoid contact with strong acids. This product may react with reducing agents. Avoid temperatures exceeding the flash point.
Incompatible materials	Strong oxidizing agents. Avoid all contact with reducing agents, oils, greases, organics and acids. Contact with strong acids may cause a violent reaction releasing heat. Contact with water reactive compounds may cause fire or explosion.
Hazardous decomposition products	Oxides of carbon, nitrogen, and sulphur evolved in fire.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause irritation to the respiratory system.
Skin contact	Causes severe skin burns.
Eye contact	Causes serious eye damage.
Ingestion	Causes digestive tract burns.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation.

Information on toxicological effects

Acute toxicity Harmful if swallowed. May cause respiratory irritation.

Product	Species	Test Results
CORRSHIELD MD4100 (CAS Mixture)		
Acute		
Dermal		
LD50	Rabbit	> 5000 mg/kg, (Calculated according to GHS additivity formula)
Inhalation		
LC50	Rat	> 5 mg/l, 4 Hours, (Calculated according to GHS additivity formula)

Product	Species	Test Results
Oral		
LD50	Rat	1717 mg/kg, (Calculated according to GHS additivity formula (Category 4))

Components	Species	Test Results
Sodium nitrite (CAS 7632-00-0)		
Acute		
Oral		
LD50	Rat	180 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Causes severe skin burns and eye damage.

Serious eye damage/eye irritation Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Suspected of causing cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not available.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

US. National Toxicology Program (NTP) Report on Carcinogens

Not available.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure May cause respiratory irritation.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not classified. Aspiration of this product may cause the same corrosiveness/irritation impacts as if it were ingested.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity

Product		Species	Test Results
CORRSHIELD MD4100 (CAS Mixture)			
	LC50	Bluegill Sunfish	3258 mg/L, Static Acute Bioassay, 96 hour
		Fathead Minnow	2730 mg/L, Acute Toxicity, 96 hour, (Estimated)
	NOEL	Bluegill Sunfish	1800 mg/L, Static Acute Bioassay, 96 hour
		Fathead Minnow	1850 mg/L, Acute Toxicity, 96 hour, (Estimated)
Aquatic			
Crustacea	LC50	Daphnia magna	5997 mg/L, Static Acute Bioassay, 48 hour
	NOEL	Daphnia magna	500 mg/L, Static Acute Bioassay, 48 hour
Fish	0% Mortality	Rainbow Trout	2000 mg/L, Static Screen, 48 hour

Components		Species	Test Results
Sodium nitrite (CAS 7632-00-0)			
Aquatic			
Fish	LC50	Fish	0.56 - 1.78 mg/l, 96 hour

* Estimates for product may be based on additional component data not shown.

Bioaccumulative potential	
Mobility in soil	No data available.
Other adverse effects	Not available.
Persistence and degradability	

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations. Incinerate the material under controlled conditions in an approved incinerator.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel] The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number	UN3266
UN proper shipping name	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (SODIUM NITRITE, SODIUM HYDROXIDE), (SODIUM NITRITE) RQ
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
ERG number	154

Some containers may be exempt from Dangerous Goods/Hazmat Transport Regulations, please check BOL for exact container classification.

IATA

UN number	UN3266
UN proper shipping name	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (SODIUM NITRITE, SODIUM HYDROXIDE)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Environmental hazards	No.
ERG Code	154
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN3266
UN proper shipping name	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (SODIUM NITRITE, SODIUM HYDROXIDE)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	No.
EmS	Not available.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

DOT

IATA; IMDG

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Sodium nitrite (CAS 7632-00-0) 1.0 % One-Time Export Notification only.

CERCLA Hazardous Substance List (40 CFR 302.4)

Sodium nitrite (CAS 7632-00-0) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Sodium nitrite	7632-00-0	10 - 20

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130) Hazardous substance

Safe Drinking Water Act (SDWA) Not regulated.

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Non-Domestic Substances List (NDSL)	No
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)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

Food and drug administration No FDA approval for paper or paperboard having food contact.

NSF Registered and/or meets USDA (according to 1998 guidelines): Registration No. – 141672
Category Code(s):
G5 Cooling and retort water treatment products
G7 Boiler, steam line treatment products – nonfood contact

US state regulations

US - Massachusetts RTK - Substance List

Sodium nitrite (CAS 7632-00-0)

US - Pennsylvania RTK - Hazardous Substances

Sodium nitrite (CAS 7632-00-0)

US - Rhode Island RTK

Sodium nitrite (CAS 7632-00-0)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. New Jersey Worker and Community Right-to-Know Act

Sodium nitrite (CAS 7632-00-0)

US. Pennsylvania Worker and Community Right-to-Know Law

Sodium nitrite (CAS 7632-00-0)

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Formaldehyde (CAS 50-00-0) Listed: January 1, 1988

US - California Proposition 65 - CRT: Listed date/Developmental toxin

No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Female reproductive toxin

No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

No ingredient listed.

16. Other information, including date of preparation or last revision

Issue date Oct-29-2014

Revision date May-06-2016

Version # 6.0

List of abbreviations

CAS: Chemical Abstract Service Registration Number
NFPA: National Fire Protection Association
ACGIH: American Conference of Governmental Industrial Hygienists
TWA: Time Weighted Average
STEL: Short Term Exposure Limit
LD50: Lethal Dose, 50%
LC50: Lethal Concentration, 50%
EC50: Effect Concentration, 50%
NOEL: No Observed Effect Level
COD: Chemical Oxygen Demand
BOD: Biochemical Oxygen Demand
TOC: Total Organic Carbon
IATA: International Air Transport Association
IMDG: International Maritime Dangerous Goods Code
TSRN indicates a Trade Secret Registry Number is used in place of the CAS number.

References: No data available

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.
Revision information	Hazard(s) identification: Hazard statement Hazard(s) identification: Response Exposure controls/personal protection: Hand protection Exposure controls/personal protection: Respiratory protection Exposure controls/personal protection: PPE Symbols Physical & Chemical Properties: Multiple Properties Physical and chemical properties: Appearance Stability and reactivity: Conditions to avoid Toxicological information: Ingestion Toxicological information: Inhalation Toxicological information: Specific target organ toxicity - repeated exposure Toxicological information: Specific target organ toxicity - single exposure Other information, including date of preparation or last revision: List of abbreviations GHS: Classification
Prepared by	This SDS has been prepared by GE Water & Process Technologies Regulatory Department (1-215-355-3300).

* Trademark of General Electric Company. May be registered in one or more countries.

GE
Water & Process Technologies

Material Safety Data Sheet

Issue Date: 02-JUN-2010
Supercedes: 25-APR-2005

NOVUS CE2653

1 Identification

Identification of substance or preparation
NOVUS CE2653

Product Application Area
Flocculant.

Company/Undertaking Identification
GE Betz, Inc.
4636 Somerton Road
Trevose, PA 19053
T 215 355-3300, F 215 953 5524

Emergency Telephone
(800) 877-1940

Prepared by Product Stewardship Group: T 215-355-3300 Prepared on: 02-JUN-2010

2 Hazard(s) identification

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*******************************************************************************
                                EMERGENCY OVERVIEW

  CAUTION

        May cause moderate irritation to the skin. May cause dermatitis.
        May cause moderate irritation to the eyes. May cause irritation to
        the upper respiratory tract. Exposure may cause dizziness,
        headache, CNS depression and chemical pneumonitis.

        DOT hazard is not applicable
        Odor: Slight Hydrocarbon; Appearance: White To Off-White, Emulsion

        Fire fighters should wear positive pressure self-contained breathing
        apparatus(full face-piece type). Proper fire-extinguishing media:
        dry chemical/CO2/foam or water--slippery condition; use sand/grit.
*******************************************************************************

                          POTENTIAL HEALTH EFFECTS

     ACUTE SKIN EFFECTS:
        Primary route of exposure; May cause moderate irritation to the
        skin. May cause dermatitis.

     ACUTE EYE EFFECTS:
        May cause moderate irritation to the eyes.

     ACUTE RESPIRATORY EFFECTS:
```

Primary route of exposure;May cause irritation to the upper respiratory tract. Exposure may cause dizziness, headache, CNS depression and chemical pneumonitis.

INGESTION EFFECTS:
May cause gastrointestinal irritation with possible nausea, vomiting, diarrhea, mental confusion, dizziness and lethargy. Small amounts aspirated during ingestion or vomiting may cause lung injury, possibly leading to death.

TARGET ORGANS:
Prolonged or repeated exposures may cause CNS depression and/or defatting-type dermatitis.

MEDICAL CONDITIONS AGGRAVATED:
Not known.

SYMPTOMS OF EXPOSURE:
Excessive dermal exposure causes defatting and drying of skin. Excessive inhalation of vapors causes dizziness, headache and nausea.

3 Composition / information on ingredients

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

Cas#	Chemical Name	Range(w/w%)
64742-47-8	ISOPARAFFINIC PETROLEUM DISTILLATE Combustible liquid; irritant; CNS depressant; IARC=3 (carcinogen status not classifiable)	15-40
24938-91-8	POLY(OXY-1,2-ETHANEDIYL), ALPHA-TRIDECYL-OMEGA-HYDROXY- Severe eye irritant; respiratory irritant; slight skin irritant	1-5

4 First-aid measures

SKIN CONTACT:
Wash thoroughly with soap and water. Remove contaminated clothing. Thoroughly wash clothing before reuse. Get medical attention if irritation develops or persists.

EYE CONTACT:
Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get immediate medical attention.

INHALATION:
Remove to fresh air. If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration. Get immediate medical attention.

INGESTION:

Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 2-8 fluid ounces (60-240 mL) of milk or water.

NOTES TO PHYSICIANS:

This product contains a hydrocarbon solvent. Aspiration into the lungs will result in chemical pneumonia and may be fatal.

5 Fire-fighting measures

FIRE FIGHTING INSTRUCTIONS:

Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).

EXTINGUISHING MEDIA:

dry chemical/CO2/foam or water--slippery condition; use sand/grit.

HAZARDOUS DECOMPOSITION PRODUCTS:

oxides of carbon and nitrogen, hydrogen chloride

FLASH POINT:

> 200F > 93C P-M(CC)

6 Accidental release measures

PROTECTION AND SPILL CONTAINMENT:

Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit.

DISPOSAL INSTRUCTIONS:

Water contaminated with this product may be sent to a sanitary sewer treatment facility,in accordance with any local agreement,a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7 Handling and storage

HANDLING:

Normal chemical handling.

STORAGE:

Shelf life = 240 days. Keep containers closed when not in use. Protect from freezing. Product is not freeze/thaw recoverable. Avoid moisture contamination, atmospheric exposure, and long term storage.

8 Exposure controls / personal protection

EXPOSURE LIMITS

CHEMICAL NAME

ISOPARAFFINIC PETROLEUM DISTILLATE
PEL (OSHA): NOT DETERMINED
TLV (ACGIH): 200 MG/M3-A3

POLY(OXY-1,2-ETHANEDIYL), ALPHA-TRIDECYL-OMEGA-HYDROXY-
PEL (OSHA): NOT DETERMINED
TLV (ACGIH): NOT DETERMINED
MISC: toxic to aquatic organisms;

ENGINEERING CONTROLS:

Adequate ventilation to maintain air contaminants below exposure limits.

PERSONAL PROTECTIVE EQUIPMENT:

Use protective equipment in accordance with 29CFR 1910 Subpart I

RESPIRATORY PROTECTION:

A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.
USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.
If air-purifying respirator use is appropriate, use organic vapor cartridges and any of the following particulate respirators: R95, R99, R100, P95, P99 or P100.

SKIN PROTECTION:

viton gloves-- Wash off after each use. Replace as necessary.

EYE PROTECTION:

splash proof chemical goggles

9 Physical and chemical properties

Spec. Grav.(70F,21C)	1.052	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	< 23	Vapor Density (air=1)	> 1.00
Freeze Point (C)	< -5		
Viscosity(cps 70F,21C)	2585	% Solubility (water)	ND

Odor		Slight Hydrocarbon
Appearance		White To Off-White
Physical State		Emulsion
Flash Point	P-M(CC)	> 200F > 93C
pH 0.5% Sol. (approx.)		4.8
Evaporation Rate (Ether=1)		< 1.00
Percent VOC:		24.0

NA = not applicable ND = not determined

10 Stability and reactivity

CHEMICAL STABILITY:

Stable under normal storage conditions.

POSSIBILITY OF HAZARDOUS REACTIONS:

Contact with oxidizers may cause fire.

INCOMPATIBILITIES:

May react with strong oxidizers.

DECOMPOSITION PRODUCTS:

oxides of carbon and nitrogen, hydrogen chloride

11 Toxicological information

No Data Available.

12 Ecological information

AQUATIC TOXICOLOGY

Daphnia magna 48 Hour Static Acute Bioassay
LC50= 3; No Effect Level= .32 mg/L
Fathead Minnow 96 Hour Static Acute Bioassay
LC50= 6; No Effect Level= 1.6 mg/L
Rainbow Trout 96 Hour Static Acute Bioassay
LC50= .37; No Effect Level= .25 mg/L

BIODEGRADATION

No Data Available.

13 Disposal considerations

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
Not applicable.

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14 Transport information

Transportation Hazard: Not Applicable
DOT: Not Regulated

DOT EMERGENCY RESPONSE GUIDE #: Not applicable
Note: Some containers may be DOT exempt, please check BOL for exact container classification
IATA: Not Regulated

IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE LIQUID, N.O.S.(QUATERNARY AMMONIUM POLYACRYLAMIDE)
9, UN 3082 PG III, MARINE POLLUTANT

15 Regulatory information

TSCA:

All components of this product are included on or are in compliance with the U.S. TSCA regulations.

CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):

Treat as oil spill

NSF Registered and/or meets USDA (according to 1998 Guidelines):

Registration number: Not Registered

SARA SECTION 312 HAZARD CLASS:

Immediate(acute);Delayed(Chronic)

SARA SECTION 302 CHEMICALS:

No regulated constituent present at OSHA thresholds

SARA SECTION 313 CHEMICALS:

No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65):

This product contains one or more ingredients known to the state of

California to cause cancer and reproductive toxicity.

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16 Other information

HMIS vII		**CODE TRANSLATION**
Health	2	Moderate Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	NONE	No special Hazard
(1) Protective Equipment	B	Goggles,Gloves

(1) refer to section 8 of MSDS for additional protective equipment recommendations.

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
MSDS status:	02-MAY-2001		** NEW **
	11-NOV-2002	12	02-MAY-2001
	01-APR-2004	15	11-NOV-2002
	02-AUG-2004	2	01-APR-2004
	25-APR-2005	2	02-AUG-2004
	02-JUN-2010	2,3,4,5,7,8,10,14,15	25-APR-2005

GE
Water & Process Technologies

Material Safety Data Sheet

Issue Date: 05-DEC-2007
Supercedes: 15-MAR-2002

POLYFLOC CE1169

1 Identification of Product and Company

Identification of substance or preparation
POLYFLOC CE1169

Product Application Area
Dewatering aid

Company/Undertaking Identification
GE Betz, Inc.
4636 Somerton Road
Trevose, PA 19053
T 215 355-3300, F 215 953 5524

Emergency Telephone
(800) 877-1940

Prepared by Product Stewardship Group: 215 355-3300

2 Composition / Information On Ingredients

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

Cas#	Chemical Name	Range(w/w%)
64742-47-8	ISOPARAFFINIC PETROLEUM DISTILLATE Combustible liquid; irritant; CNS depressant; IARC=3 (carcinogen status not classifiable)	15-40

3 Hazards Identification

****

EMERGENCY OVERVIEW

CAUTION

May cause moderate irritation to the skin. May cause moderate irritation to the eyes. Vapors, gases, mists or aerosols may cause irritation to the upper respiratory tract. Prolonged exposure may cause dizziness and headache.

DOT hazard is not applicable

Odor: Slight Hydrocarbon; Appearance: White To Off-White, Emulsion

Fire fighters should wear positive pressure self-contained breathing apparatus(full face-piece type). Proper fire-extinguishing media: dry chemical, carbon dioxide, foam or water

****

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:
Primary route of exposure; May cause moderate irritation to the skin.

ACUTE EYE EFFECTS:
May cause moderate irritation to the eyes.

ACUTE RESPIRATORY EFFECTS:
Primary route of exposure;Vapors, gases, mists or aerosols may cause irritation to the upper respiratory tract. Prolonged exposure may cause dizziness and headache.

INGESTION EFFECTS:
May cause gastrointestinal irritation with possible nausea, vomiting, diarrhea, mental confusion, dizziness and lethargy. Small amounts aspirated during ingestion or vomiting may cause lung injury, possibly leading to death.

TARGET ORGANS:
Prolonged or repeated exposures may cause CNS depression and/or defatting-type dermatitis.

MEDICAL CONDITIONS AGGRAVATED:
Not known.

SYMPTOMS OF EXPOSURE:
Excessive skin contact may cause defatting or drying of skin. Excessive inhalation of vapors may cause dizziness, headache and nausea.

4 First Aid Measures

SKIN CONTACT:
Wash thoroughly with soap and water. Remove contaminated clothing. Thoroughly wash clothing before reuse. Get medical attention if irritation develops or persists.

EYE CONTACT:
Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get immediate medical attention.

INHALATION:
Remove to fresh air. If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration. Get immediate medical attention.

INGESTION:
Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 2-8 fluid ounces (60-240 mL) of

milk or water.

NOTES TO PHYSICIANS:

This product contains a hydrocarbon solvent. Aspiration into the lungs will result in chemical pneumonia and may be fatal.

5 Fire Fighting Measures

FIRE FIGHTING INSTRUCTIONS:

Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).

EXTINGUISHING MEDIA:

dry chemical, carbon dioxide, foam or water

HAZARDOUS DECOMPOSITION PRODUCTS:

oxides of carbon

FLASH POINT:

> 200F > 93C P-M(CC)

6 Accidental Release Measures

PROTECTION AND SPILL CONTAINMENT:

Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit.

DISPOSAL INSTRUCTIONS:

Water contaminated with this product may be sent to a sanitary sewer treatment facility,in accordance with any local agreement,a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7 Handling & Storage

HANDLING:

Normal chemical handling.

STORAGE:

Keep containers closed when not in use. Store in cool ventilated location. Store away from oxidizers. Shelf life 270 days.

8 Exposure Controls / Personal Protection

EXPOSURE LIMITS

CHEMICAL NAME

ISOPARAFFINIC PETROLEUM DISTILLATE

PEL (OSHA): NOT DETERMINED

TLV (ACGIH): 200 MG/M3-A3

ENGINEERING CONTROLS:

Adequate ventilation to maintain air contaminants below exposure limits.

PERSONAL PROTECTIVE EQUIPMENT:

Use protective equipment in accordance with 29CFR 1910 Subpart I

RESPIRATORY PROTECTION:

A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.

USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.
If air-purifying respirator use is appropriate, use organic vapor cartridges and any of the following particulate respirators: R95, R99, R100, P95, P99 or P100.

SKIN PROTECTION:

viton gloves-- Wash off after each use. Replace as necessary.

EYE PROTECTION:

splash proof chemical goggles

9 Physical & Chemical Properties

Specific Grav.(70F,21C)	1.080	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	< 23	Vapor Density (air=1)	> 1.00
Freeze Point (C)	< -5		
Viscosity(cps 70F,21C)	1498	% Solubility (water)	ND

Odor		Slight Hydrocarbon
Appearance		White To Off-White
Physical State		Emulsion
Flash Point	P-M(CC)	> 200F > 93C
pH 1% Sol. (approx.)		4.4
Evaporation Rate (Ether=1)		< 1.00
Percent VOC:		30.0

NA = not applicable ND = not determined

10 Stability & Reactivity

STABILITY:

Stable under normal storage conditions.

HAZARDOUS POLYMERIZATION:

Will not occur.

INCOMPATIBILITIES:

May react with strong oxidizers.

DECOMPOSITION PRODUCTS:

oxides of carbon

INTERNAL PUMPOUT/CLEANOUT CATEGORIES:

"B"

11 Toxicological Information

Oral LD50 RAT:	>5,000 mg/kg
Dermal LD50 RABBIT:	>5,000 mg/kg
Inhalation LC50 RAT:	>2,500 ppm/4hr

12 Ecological Information

AQUATIC TOXICOLOGY

Bluegill Sunfish 96 Hour Static Acute Bioassay
LC50= 2.5 mg/L
Daphnia magna 48 Hour Static Acute Bioassay
LC50= .36; No Effect Level= .28 mg/L

Fathead Minnow 96 Hour Static Acute Bioassay
LC50= 2.4; No Effect Level= .87 mg/L
Rainbow Trout 96 Hour Static Acute Bioassay
LC50= .94 mg/L

BIODEGRADATION

BOD-28 (mg/g): 262
BOD-5 (mg/g): 109
COD (mg/g): 970
TOC (mg/g): 430

13 Disposal Considerations

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
Not applicable.

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14 Transport Information

DOT HAZARD: Not Applicable
PROPER SHIPPING NAME:

DOT EMERGENCY RESPONSE GUIDE #: Not applicable
Note: Some containers may be DOT exempt, please check BOL for exact container classification

15 Regulatory Information

TSCA:
All components of this product are included on or are in compliance with the U.S. TSCA regulations.

CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):
Treat as oil spill

SARA SECTION 312 HAZARD CLASS:
Immediate(acute);Delayed(Chronic)

SARA SECTION 302 CHEMICALS:
No regulated constituent present at OSHA thresholds

SARA SECTION 313 CHEMICALS:
No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65):
No regulated constituents present

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16 Other Information

NFPA/HMIS		CODE TRANSLATION
Health	2	Moderate Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	NONE	No special Hazard
(1) Protective Equipment	B	Goggles,Gloves

(1) refer to section 8 of MSDS for additional protective equipment recommendations.

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
MSDS status:	29-JAN-1997		** NEW **
	19-AUG-1997	15	29-JAN-1997
	27-FEB-1998	12	19-AUG-1997
	29-JUL-1998	12	27-FEB-1998
	22-MAY-2000	4	29-JUL-1998
	08-JAN-2002	15	22-MAY-2000
	28-JAN-2002	3,4	08-JAN-2002
	15-MAR-2002	15	28-JAN-2002
	05-DEC-2007	2,4,5,7,8,9,10	15-MAR-2002

Safety Data Sheet

syngenta®

HYDROCHLORIC ACID (DILUTE)

Date: 2/16/2016
Replaces: 7/6/2011

1. PRODUCT IDENTIFICATION

Product identifier on label: **HYDROCHLORIC ACID (DILUTE)**

Product No.: CA82U

Use: Inorganic Acid

Manufacturer: Syngenta Crop Protection, LLC
Post Office Box 18300
Greensboro NC 27419

Manufacturer Phone: 1-800-334-9481

Emergency Phone: 1-800-888-8372

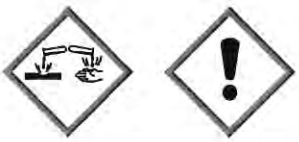
2. HAZARDS IDENTIFICATION

Classifications:
Corrosive to Metals: Category 1
Specific Target Organ Toxicity: Respiratory Irritation Category 3
Skin Corrosion/Irritation: Category 1
Eye Damage/Irritation: Category 1

Signal Word (OSHA): Danger

Hazard Statements:
May be corrosive to metals
Causes severe skin burns and eye damage
Causes serious eye damage
May cause respiratory irritation

Hazard Symbols:



Precautionary Statements:
Keep only in original container.
Do not breathe mist, vapors, spray.
Wash hands and face thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves, protective clothing, eye protection.
If swallowed: Rinse mouth. Do NOT induce vomiting.
If on skin or hair: Take off immediately all contaminated clothing. Rinse skin with water.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
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, doctor or Syngenta.
Wash contaminated clothing before reuse.

Absorb spillage to prevent material damage.

Store locked up.

Store in corrosive resistant plastic, plastic-lined steel, stainless steel or fiberglass container.

Dispose of contents and container in accordance with local regulations.

Other Hazard Statements: None

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Common Name	CAS Number	Concentration
Other ingredients	Other ingredients	Trade Secret	~ 89%
Hydrochloric Acid	Hydrogen Chloride	7647-01-0	~ 11%

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

4. FIRST AID MEASURES

Have the product container, label or Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison control center or doctor, or going for treatment.

Ingestion: DO NOT INDUCE VOMITING. Dilute immediately with water or milk, then neutralize with milk of magnesia. If vomiting occurs spontaneously, continue to administer fluids. Seek medical attention. Never give anything by mouth to an unconscious person.

Eye Contact: Immediately rinse eyes with a large amount of running water. Hold eye lids apart to rinse the entire surface of the eyes and lids. Do not apply any medicating agents except on the advice of a physician.

Skin Contact: Wash with plenty of soap and water, including hair and under fingernails. Do not apply any medicating agents except on the advice of a physician. Remove contaminated clothing and decontaminate prior to use.

Inhalation: Move victim from contaminated area to fresh air. Apply artificial respiration if necessary, preferably by mechanical means. Avoid mouth-to-mouth resuscitation.

Most important symptoms/effects:

Eye irritation

Skin irritation

Respiratory irritation

Indication of immediate medical attention and special treatment needed:

There is no specific antidote if this product is ingested.

Check for possible mucosal damage before beginning gastric lavage.

Treat symptomatically.

Probable mucosal damage may contraindicate gastric lavage.

Contact with eyes may require specialized ophthalmologic attention.

Do not induce emesis.

Do not administer oxygen under positive pressure if cardiovascular failure is possible.

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use dry chemical, foam or CO2 extinguishing media. If water is used to fight fire, dike and collect runoff.

Specific Hazards:

Thermal decomposition may release corrosive HCl. Reacts with light metals to produce hydrogen, therefore, explosive air mixtures are possible. This compound may react explosively with many organic chemicals. Reacts exothermically with water or steam to produce toxic and corrosive vapors.

Special protective equipment and precautions for firefighters:

Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

Follow exposure controls/personal protection outlined in Section 8.

Methods and materials for containment and cleaning up:

Wear chemical goggles and a face shield, butyl or Neoprene rubber gloves and boots, chemical protective clothing and a NIOSH-approved supplied-air respirator or a self-contained breathing apparatus (operated in pressure demand) for concentrations > 20 ppm. Concentrations <= 20 ppm, wear a NIOSH-approved supplied-air respirator with full-face shield or a chemical cartridge respirator with HCl cartridges and a full-face shield. For small spills, neutralize cautiously with dilute alkaline solution, cover with an absorbent material, sweep up and place in an approved chemical container. Wash the spill area with water containing a strong detergent, absorb with pet litter or other absorbent material, sweep up and place in a chemical container. Seal the container and handle in an approved manner. Flush the area with water to remove any residue. Do not allow wash water to contaminate water supplies.

7. HANDLING AND STORAGE

Precautions for safe handling:

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Conditions for safe storage, including any incompatibilities:

Store locked up.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

Occupational Exposure Limits:

Chemical Name	OSHA PEL	ACGIH TLV	Other	Source
Other ingredients	Not Established	Not Established	Not Established	Not Applicable
Hydrogen Chloride	5 ppm STEL/CEIL(C)	2 ppm STEL/CEIL(C)	5 ppm STEL/CEIL(C)	NIOSH

Appropriate engineering controls:

Use effective engineering controls to comply with occupational exposure limits (if applicable).

Individual protection measures:

Ingestion:

Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Eye Contact:

Wear chemical goggles and a face shield.

Skin Contact:

Butyl or neoprene rubber gloves, boots, and chemical protective clothing.

Inhalation:

NIOSH-approved supplied-air respirator (operated in pressure demand mode) for concentrations > 20 ppm. In concentrations of HCl <= 20 wear a full-face piece NIOSH-approved supplied-air respirator or a full-face piece chemical cartridge respirator with HCl cartridges.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Colorless to yellow fuming liquid

Odor: Pungent; choking

Odor Threshold: Not Available

pH: 1.1

Melting point/freezing point: Not Applicable

Initial boiling point and boiling range: 385 °F

Flash Point (Test Method): Not Applicable

Flammable Limits (% in Air): Not Available

Flammability: Not Applicable

Vapor Pressure: Hydrogen Chloride 166.991 mmHg @ 21.1°C

Vapor Density: Not Available

Relative Density: 1.05 - 1.10

Solubility (ies): Hydrogen Chloride 82.3 % @ 68°F (20°C)

Partition coefficient: n-octanol/water: Not Available

Autoignition Temperature: Not Applicable

Decomposition Temperature: Not Available

Viscosity: Not Available

Other: None

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical stability: Stable under normal use and storage conditions.

Possibility of hazardous reactions: Will not occur.

Conditions to Avoid: None known.

Incompatible materials: None known.

Hazardous Decomposition Products: None known.

11. TOXICOLOGICAL INFORMATION

Health effects information

Likely routes of exposure: Dermal, Inhalation

Symptoms of exposure: Eye irritation, Skin irritation, Respiratory irritation

Delayed, immediate and chronic effects of exposure: Eye irritation, Skin irritation, Respiratory system effects

Numerical measures of toxicity (acute toxicity/irritation studies (finished product))

Ingestion:	Oral (LD50 Rabbit) :	~ 900 mg/kg body weight
Dermal:	Dermal (LD50 Rat) :	Not Available
Inhalation:	Inhalation (LC50 Rat) :	Not Available
Eye Contact:	Corrosive (Rabbit)	
Skin Contact:	Corrosive (Rabbit)	
Skin Sensitization:	Not Available	

Reproductive/Developmental Effects

Hydrogen Chloride: Reproductive effects in animals.

Chronic/Subchronic Toxicity Studies

Hydrogen Chloride: Digestive disorders, lung and kidney damage, mucosal sores, erosion and discoloration of exposed teeth.

Carcinogenicity

Hydrogen Chloride: IARC Potential Carcinogen: Inadequate Human and Animal Data.
ACGIH A4: Not classifiable as a human carcinogen.

Chemical Name	NTP/IARC/OSHA Carcinogen
Other ingredients	No
Hydrochloric Acid	IARC Group 3

Other Toxicity Information

None

Toxicity of Other Components

Other ingredients

Not Established

Target Organs

Active Ingredients

Hydrogen Chloride: Lung, kidney, gastrointestinal tract, skin, teeth

Inert Ingredients

Other ingredients: Not Established

12. ECOLOGICAL INFORMATION

Eco-Acute Toxicity

Hydrogen Chloride:

Not Available

Environmental Fate

Hydrogen Chloride:

Not Available

13. DISPOSAL CONSIDERATIONS

Disposal:

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification. If this material is disposed of as supplied it is a corrosive characteristic hazardous waste with EPA Waste Code D002.

Characteristic Waste: Corrosive D002

Listed Waste: Not listed.

14. TRANSPORT INFORMATION

DOT Classification

Ground Transport - NAFTA
Proper Shipping Name: Hydrochloric Acid
Hazard Class: Class 8
Identification Number: UN 1789
Packing Group: PG II

Comments

Water Transport - International
Proper Shipping Name: Hydrochloric Acid
Hazard Class: Class 8
Identification Number: UN 1789
Packing Group: PG II

Air Transport
Proper Shipping Name: Hydrochloric Acid
Hazard Class: Class 8
Identification Number: UN 1789
Packing Group: PG II

RQ = 5000 pounds

15. REGULATORY INFORMATION

Pesticide Registration:
Not applicable

EPA Registration Number(s):
Not Applicable

EPCRA SARA Title III Classification:

Section 311/312 Hazard Classes: Acute Health Hazard
Chronic Health Hazard

Section 313 Toxic Chemicals: Hydrogen Chloride ~ 11% (CAS No. 7647-01-0)

CERCLA/SARA 304 Reportable Quantity (RQ):
Report product spills > 545 gal (based on hydrogen chloride [RQ = 5000 lbs.] content in the formulation)

RCRA Hazardous Waste Classification (40 CFR 261):
Corrosive

TSCA Status:
On TSCA Inventory

16. OTHER INFORMATION

NFPA Hazard Ratings		HMIS Hazard Ratings	
Health:	3	Health:	3
Flammability:	0	Flammability:	0
Instability:	0	Reactivity:	0

Syngenta Hazard Category: C,S

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme
*	Chronic

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 5/15/1997
Revision Date: 2/16/2016 Replaces: 7/6/2011
Section(s) Revised: 1-16

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: ..... Calcium Hypochlorite Granular 65%
Product ID: 0310
SYNONYMS: ..... Calcium Hypochlorite Granular; Cal Hypo Granules; $Ca(OCl)_2$; MSDS No. 0310
ISSUE DATE: 10/04/2007
EDITION NO.: 12

PPG Industries, Inc.
One PPG Place, Pittsburgh, PA 15272, USA
24-hour Emergency Telephone Number: 1-412-434-4515
For Product Information (8am-5pm Eastern time):
1-800-245-2974 (Cal Hypo)

PREPARER: Product Safety, Chemicals

2. COMPOSITION/INFORMATION ON INGREDIENTS

Material/CAS Number	Percent
Calcium Hypochlorite 7778-54-3	>65
Calcium Chlorate 10137-74-3	<2
Calcium Carbonate 471-34-1	<2
Calcium Hydroxide 1305-62-0	<2
Magnesium 7439-95-4	0.1834

Note: Minimum 65% Available Chlorine. 35% inert ingredients (includes 5.5-8.5% water).

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

DANGER! Corrosive - Causes severe and irreversible burns to eye and skin. Harmful if inhaled. May cause irritation and inflammation to the respiratory tract. Harmful or fatal if swallowed. Strong Oxidizing Agent! Mix only with water. Never add water to product. Always add the product to large quantities of water. Do not mix with any other chemicals. Contamination with moisture, acids, organic

materials and other easily combustible materials such as petroleum, paint products, wood or paper may cause fire or explosion and the liberation of hazardous gases. Do not add this product to any dispensing device containing remnants of any other product. Such use may cause violent reaction leading to fire or explosion. Very toxic to aquatic organisms.

Precautions: Do not get in eyes, on skin, or on clothing. Avoid breathing dust. Irritating to nose and throat. Do not swallow. Do not eat, drink or smoke in work area. Wash hands after handling. Remove and wash contaminated clothing before reuse. Keep out of reach of children.

4. FIRST AID MEASURES

INHALATION: Remove from area to fresh air. If symptomatic, contact a poison control center, emergency room or physician for treatment information.

EYE/SKIN CONTACT: EYE: Remove contact lens and pour a gentle stream of warm water through the affected eye for at least 15 minutes. Contact a poison control center, emergency room or physician right away as further treatment will be necessary. SKIN: Run a gentle stream of water over the affected area for 15 minutes. A mild soap may be used if available. Contact a poison control center, emergency room or physician right away as further treatment will be necessary.

INGESTION: Gently wipe or rinse the inside of the mouth with water. Sips of water may be given if person is fully conscious. Never give anything by mouth to an unconscious or convulsing person. Do Not induce vomiting. Contact a poison control center, emergency room or physician right away as further treatment will be necessary.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not Applicable.

EXTINGUISHING MEDIA: Drench with large quantities of water only. Do not use dry chemicals or foams. Product supplies own oxygen, therefore attempts to smother fire with a wet blanket, carbon dioxide, dry chemical extinguisher or other means are not effective.

SPECIAL FIREFIGHTING PROCEDURES: Product decomposes at approximately 338-356°F (170-180°C) releasing oxygen gas. Container may rupture. Fire-fighters must wear NIOSH approved, pressure demand, self-contained breathing apparatus with full face piece for possible exposure to hazardous gases. Emits toxic fumes under fire conditions.

6. ACCIDENTAL RELEASE MEASURES

ACTION TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:
Use extreme caution in handling spilled material. Do not mix with any other chemicals. Contamination with moisture, acids, organics or other easily combustible materials such as petroleum, paint products, wood or paper may cause fire or violent decomposition. If fire or decomposition occurs in area of spill, immediately douse with plenty of water. Otherwise, sweep up all visible material using a clean (new, if possible), dry shovel and broom and dissolve material in water. Spilled material that has been swept up and dissolved in water should be used immediately in the normal application for which this product is being consumed.

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN DURING HANDLING AND STORAGE:
Store in a cool, dry, well-ventilated place. Keep in original container. Keep container closed when not in use. Keep away from heat, sparks, flames, direct sunlight, and other sources of heat, including lighted tobacco products. Use only a clean (new, if possible), dry scoop made of metal or plastic each time product is taken from the container. Do not add this product to any dispensing device containing remnants of any other product. Such use may cause violent reaction leading to fire or explosion. Add this product only to water. Never add water to product. Always add the product to large quantities of water. May cause fire or explosion if mixed with other chemicals. Fire may result if contaminated with acids, organic materials and other easily combustible materials such as oil, kerosene, gasoline, paint products wood and paper. Do not reuse container. Residual material remaining in empty container can react to cause fire. Thoroughly flush empty container with water then destroy by placing in trash collection. Do not contaminate water, food, or feed by storage or disposal of this product.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:
8-hour Time Weighted Average (TWA); 15-minute Short-Term Exposure Limit (STEL)

OSHA: The OSHA exposure limit(s) for chlorine: 0.5 ppm TWA. 1 ppm STEL. Calcium hydroxide: 5 mg/m^3 TWA. Calcium carbonate: 15 mg/m^3 (total dust) 5 mg/m^3 (respirable dust) (1989 Vacated PEL's)

ACGIH: The ACGIH exposure limit(s) for chlorine: 0.5 ppm TWA. 1 ppm STEL. Calcium hydroxide: 5 mg/m^3 TWA Calcium carbonate: 10 mg/m^3 (total dust) 3 mg/m^3 (respirable nuisance particulate) TWA.

ONTARIO: The Ontario Exposure limit(s) for Chlorine: 0.5 ppm TWAEV 1 ppm STEV (Short Term Exposure Value) Calcium hydroxide: 5 mg/m^3Calcium carbonate: 10 mg/m^3TWAEV

RESPIRATORY PROTECTION: Where the potential for exposure to dust exists, use the appropriate regulatory compliant full facepiece air-purifying respirator with acid gas cartridge and particulate prefilter. Carefully read and follow the respirator manufacturer's instructions and information.

VENTILATION: Use local exhaust or general room/dilution ventilation sufficient to maintain employee exposure below permissible exposure limits.

EYE AND FACE PROTECTION: Splashproof goggles and faceshield.

PROTECTIVE GLOVES: Butyl rubber. Neoprene. Nitrile.

OTHER PROTECTIVE EQUIPMENT: Boots, aprons, or chemical suits should be used when necessary to prevent skin contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point: ..... Decomposes at approximately 338-356°F (170-180°C)
Vapor Density (Air=1): ..... NA
Specific Gravity (Water=1): ..... NA

pH: Alkaline
FREEZING/MELTING POINT: NA
SOLUBILITY (wt.% in water): 217 g/l @ 27°C
Bulk Density (kg/M3): 65-67 lbs./cu.ft.
VOLUME % VOLATILE: NA
VAPOR PRESSURE: NA
Evaporation Rate: NA
HEAT OF SOLUTION: Slightly exothermic
Physical State: Granules
Odor: slight chlorine
COLOR: White

10. STABILITY AND REACTIVITY

Stability: Unstable above 338°F (170°C).

HAZARDOUS POLYMERIZATION: Will not occur.

INCOMPATIBILITY (CONDITIONS/MATERIALS TO AVOID):
Contamination. Excessive heat above 338°F (170°C). Moisture. Acids. Reducing agents. Organics. Combustible materials. Petroleum products. Paint products. Wood and paper.

HAZARDOUS THERMAL DECOMPOSITION/COMBUSTION PRODUCTS:
Acid or ammonia contamination will release toxic gases. Excessive heat will cause decomposition resulting in the release of oxygen and chlorine gas.

11. TOXICOLOGICAL INFORMATION

ACUTE INHALATION LC50: No mortality at 3.5 mg/l (rat) (1 hour) Slight to very low toxicity.
ACUTE DERMAL LD50: >1000 mg/kg. (rabbit) Slight to very low toxicity.
SKIN IRRITATION: Corrosive.
EYE IRRITATION: Corrosive.
ACUTE ORAL LD50: 850 mg/kg. (rat) Moderate toxicity.

CARCINOGENICITY STATUS: This product is NOT listed as a carcinogen or suspected carcinogen by NTP, IARC, ACGIH, or OSHA.

MEDICAL CONDITIONS AGGRAVATED: None known.

EFFECTS OF OVEREXPOSURE:

ACUTE:

Inhalation: Inhalation of calcium hypochlorite dust and deposition of particles in the respiratory tract can lead to irritation of the tissue and cause a variety of effects. These effects are dependent on concentration and include: upper respiratory tract irritation, nasal congestion, coughing, sore throat, laryngitis and shortness of breath. In operations where there are high concentrations of respirable particulates, pulmonary edema (fluid in the lung) may be produced. If not treated immediately,

pulmonary edema can be life threatening. Since this product is in granular or tablet form, particles of respirable size are not generally encountered.

Eye/Skin: Calcium hypochlorite is corrosive to the eyes. Contact of calcium hypochlorite dust with the eyes, even a minute amount for a short duration, can cause severe irritation and even blindness. Contact with the skin may cause severe irritation, burns, or tissue destruction. In studies utilizing rabbits, the skin irritation score was 8/8 and the eye irritation score was 98.5/110.

Ingestion: Calcium hypochlorite, if swallowed, causes severe burns to the digestive tract and can be fatal.

CHRONIC:

Genotoxicity: Calcium hypochlorite produced positive responses in in-vitro assays using bacterial systems (the Ames test) and chromosomal aberrations in Chinese hamster fibroblasts. In a whole animal experiment (mouse micronucleus test), exposures ranging from 20 to 160 mg/kg produced no compound related chromosomal abnormalities.

Carcinogenisis: Although no study has been conducted with calcium hypochlorite, the carcinogenic potential of sodium hypochlorite was studied in F344 rats. After 104 weeks of drinking water containing up to 2000 ppm sodium hypochlorite, there was no evidence that this chemical produced any carcinogenic response. In addition, this exposure did not result in any adverse effects

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION:
0.088 mg/l (Bluegill) 96-hour LC50. Extreme toxicity.

ENVIRONMENTAL FATE:
No data at this time.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD:
Spilled material that has been swept up and dissolved in water should be used immediately in the normal application for which this product is being used. If this is not possible, dissolve material in water and carefully neutralize dissolved material by adding hydrogen peroxide (one pint of 35% hydrogen peroxide solution per pound of calcium hypochlorite to be neutralized) then dilute the neutralized material with plenty of water and flush to sewer. Note: Only properly neutralized material should be flushed to sewer. Unneutralized material can cause environmental damage to receiving water or can interfere with treatment plant operation. Care must be taken when using or disposing of chemical materials and/or their containers to prevent environmental contamination. It is your duty to dispose of the chemical materials and/or their containers in accordance with the U.S. Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, as well as any other relevant Federal, State, or local laws/regulations regarding disposal.

14. TRANSPORT INFORMATION

Proper Shipping Name: ..... Calcium Hypochlorite, Hydrated
Hazard Class: ..... 5.1 (Oxidizer)

UN Number: UN2880
Packing Group: II
USA-RQ, Hazardous Substance and Quantity: 10 lbs./4.5 kg. (calcium hypochlorite)
Marine Pollutant: None
Additional Information: USA Shipments Only - Hazardous Substances are regulated in the USA when shipped above their Reportable Quantity (RQ).

15. REGULATORY INFORMATION

USA TSCA: All components of this product are listed on the TSCA Inventory.
EU EINECS: All components in this product are listed on EINECS.
CANADA DOMESTIC SUBSTANCES LIST (DSL): This product and/or all of its components are listed on the Canadian DSL.
AUSTRALIA AICS: All components of this product are listed on AICS.
KOREA ECL: All components in this product are listed on the Korean Existing Chemicals Inventory (KECI).
JAPAN MITI (ENCS): All components in this product are listed on the Japanese Existing and New Chemical Substances (ENCS) chemical inventory.
PHILIPPINES PICCS: All of the components in this product are listed on the Philippines Inventory of Chemicals and Chemical Substances (PICCS).
CHINA IECSC: All components of this product are listed on the Inventory of Existing Chemical Substances in China (IECSC) or otherwise exempt.

SARA TITLE III:
SARA (311, 312) Hazard Class:
Acute Health Hazard. Reactive Hazard. Fire Hazard.
SARA (313) Chemicals:
Not listed.
SARA Extremely Hazardous Substance:
Not listed.

CERCLA Hazardous Substance:
The following materials are listed as CERCLA Hazardous Substances in Table 302.4 of 40 CFR Part 302: Calcium Hypochlorite (7778-54-3) RQ = 10 lbs./4.54 kg.

CANADA REGULATIONS (WHMIS): Class C - Oxidizing material.

FIFRA:
This product is registered with EPA as a pesticide.

16. OTHER INFORMATION

Other Information:
NSF Drinking Water Treatment Chemicals Listing - PPG calcium hypochlorite is certified for maximum use at 15 mg/L under NSF/ANSI Standard 60.

The following has been revised since the last issue of this MSDS:
Date. Edition. Section 8 has been updated. Section 16 has been updated.

Previous revision date: 03/09/2007
Previous edition number: 11

NA = Not Available

Olin
CHLOR ALKALI
PRODUCTS

MATERIAL SAFETY DATA

Sodium Hydroxide Solution, 50%

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Δ

Manufacturer's name and address:	**Supplier's name and address:**
Olin Corporation – Chlor Alkali Products Division	**Olin Canada, ULC d/b/a Olin Chlor Alkali Products**
CLEVELAND, TN OFFICE	**MONTREAL, QC OFFICE**
490 Stuart Road NE Cleveland, TN 37312-4918 U.S. • (423) 336-4850	2020 University, Suite 2190 Montreal, Quebec H3A 2A5 Canada • (514) 397-6100

Product Name: Sodium Hydroxide Solution, 50%

CAS#: 1310-73-2

MSDS Code: NaOH(50)-E **Revision date (M/D/Y):** 02/25/2014

Synonyms: Caustic soda liquid 50%, Soda lye, Lye, Liquid Caustic, Sodium Hydrate

Product Use: Neutralizing agent, industrial cleaner, pulping and bleaching, soap manufacturing

Emergency Contacts (24 hr.)

FOR INFORMATION REGARDING ON SITE CHEMICAL EMERGENCIES INVOLVING A SPILL OR LEAK, CALL

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Canada: 1-800-567-7455

U.S.: 1-800-424-9300 – CHEMTREC

SECTION 2 – COMPOSITION / INFORMATION ON INGREDIENTS

	Hazardous Ingredient(s)	% (w/w)	ACGIH	CAS NO.
Δ	Sodium Hydroxide	49 – 52	2 mg/m^3 (TLV-C)	1310-73-2

SECTION 3 – HAZARD IDENTIFICATION

Emergency Overview: Odorless, clear, non-volatile liquid. EXTREMELY CORROSIVE! Causes severe burns on contact. Can cause blindness, permanent scarring and death. Aerosols can cause lung injury – effects may be delayed. Highly reactive. Can react violently with water and numerous commonly encountered materials, generating enough heat to ignite nearby combustible materials. Contact with many organic and inorganic chemicals may cause fire or explosion. Reacts with some metals to liberate hydrogen gas, which can form explosive mixtures with air. Will not burn. Harmful to aquatic life. Read the entire MSDS for a more thorough evaluation of the hazards.

Potential Health Effects:

Δ **Routes of exposure:** Inhalation, skin contact, eye contact and ingestion.