METHYL ETHYL KETONE
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DPM 535

REC'D MAR 01 1988

MATERIAL SAFETY DATA SHEET

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SUBSTANCE IDENTIFICATION

CAS-NUMBER 78-93-3

SUBSTANCE: **METHYL ETHYL KETONE**

TRADE NAMES/SYNONYMS:
BUTANONE; 2-BUTANONE; ETHYL METHYL KETONE; METHYL ACETONE; M-208; M-208-S; M-209; M-209-S; ACC14460

CHEMICAL FAMILY:
KETONE, ALIPHATIC

MOLECULAR FORMULA: C4-H8-O MOL WT: 72.12

CERCLA RATINGS (SCALE 0-3): HEALTH=1 FIRE=3 REACTIVITY=0 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=1 FIRE=3 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: METHYL ETHYL KETONE PERCENT: 100

EXPOSURE LIMITS:
200 PPM (590 MG/M3) OSHA TWA; 200 PPM ACGIH TWA;
300 PPM ACGIH STEL

PHYSICAL DATA

DESCRIPTION: COLORLESS LIQUID WITH AN ACETONE-LIKE ODOR.

THE ODOR IS CONSIDERED TO BE AN ADEQUATE WARNING PROPERTY.

BOILING POINT: 176 F (80 C) MELTING POINT: -123 F (-86 C)

SPECIFIC GRAVITY: 0.8 VAPOR PRESSURE: 71.2 MMHG @ 20 C

EVAPORATION RATE: (ETHER=1) 2.7 TTE SOLUBILITY IN WATER: 29%

ODOR THRESHOLD: 25 PPM VAPOR DENSITY: 2.5

SOLVENT SOLUBILITY: MISCIBLE WITH ALCOHOL, ETHER, AND BENZENE

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
DANGEROUS FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME. MODERATE EXPLOSION HAZARD WHEN EXPOSED TO FLAME. THIS VOLATILE LIQUID CAN READILY FORM EXPLOSIVE OR FLAMMABLE MIXTURES WITH AIR. VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO SOURCE OF IGNITION AND FLASH BACK.

FLASH POINT: 16 F (-9 C) UPPER EXPLOSIVE LIMIT: 11.4% @ 200 F

LOWER EXPLOSIVE LIMIT: 1.4% @ 200 F AUTOIGNITION TEMP.: 759 F (404 C)

FLAMMABILITY CLASS(OSHA): IB

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR FOAM
(1984 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.3).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR ALCOHOL FOAM
(1984 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.3).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF POSSIBLE. COOL FIRE-EXPOSED CONTAINERS WITH WATER FROM SIDE UNTIL WELL AFTER FIRE IS OUT. FOR MASSIVE FIRE IN STORAGE AREA, USE UNMANNED HOSE HOLDER OR MONITOR NOZZLES, ELSE WITHDRAW FROM AREA AND LET FIRE BURN. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF STORAGE TANK DUE TO FIRE (1984 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.3, GUIDE PAGE 26).

EXTINGUISH ONLY IF FLOW CAN BE STOPPED; USE WATER IN FLOODING AMOUNTS AS FOG, SOLID STREAMS MAY NOT BE EFFECTIVE. COOL CONTAINERS WITH FLOODING QUANTITIES OF WATER. APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING VAPORS, KEEP UPWIND (BUREAU OF EXPLOSIVES, EMERGENCY HANDLING OF HAZARDOUS MATERIALS IN SURFACE TRANSPORTATION, 1981).

WATER MAY BE INEFFECTIVE (NFPA FIRE PROTECTION GUIDE ON HAZARDOUS MATERIALS, EIGHTH EDITION).

ALCOHOL FOAM (NFPA FIRE PROTECTION GUIDE ON HAZARDOUS MATERIAL, EIGHTH EDITION).

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49CFR172.101:
FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49CFR172.101 AND 172.402:
FLAMMABLE LIQUID

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TOXICITY

100 PPM INHALATION-HUMAN TCLO; 2000 PPM/4HR INHALATION-RAT LCLO; 3.0 GM/KG SKIN-RAT LD50; 13 GM/KG ORAL-RAT LD50; REPRODUCTIVE EFFECTS DATA (RTECS); CARCINOGEN STATUS: NONE.

METHYL ETHYL KETONE IS AN EYE, MUCOUS MEMBRANE AND SKIN IRRITANT AND CENTRAL NERVOUS SYSTEM DEPRESSANT. PERSONS WITH A HISTORY OF CHRONIC RESPIRATORY OR SKIN DISEASE MAY BE AT AN INCREASED RISK FROM EXPOSURE.

HEALTH EFFECTS AND FIRST AID

INHALATION:
IRRITANT/NARCOTIC. 3000 PPM IMMEDIATELY DANGEROUS TO LIFE AND HEALTH.

ACUTE EXPOSURE- INHALATION OF VAPOR OR MIST CONCENTRATIONS OF 100 PPM CAUSES SLIGHT NOSE AND THROAT IRRITATION. 200 PPM CAUSES MILD IRRITATION OF THE EYES; AND 300 PPM IS OBJECTIONABLE, CAUSING HEADACHE AND THROAT IRRITATION. CENTRAL NERVOUS SYSTEM EFFECTS OF DIZZINESS AND DROWSINESS OCCURS IF EXTREMELY HIGH CONCENTRATIONS ARE INHALED.

CHRONIC EXPOSURE- SLIGHTLY FETOTOXIC TO RATS. DERMATITIS AND NUMBNESS OF THE EXTREMITIES REPORTED AT 300-600 PPM. SEE ANIMAL REPRODUCTIVE EFFECTS REFERENCE IN TOXICITY SECTION.

SKIN CONTACT:
IRRITANT.

ACUTE EXPOSURE- SKIN CONTACT WITH LIQUID, VAPOR, OR MIST PRODUCES IRRITATION AND DERMATITIS FROM ITS DEFATTING ACTION. THE SUBSTANCE IS ABSORBED PRODUCING SYMPTOMS OF HEADACHE, NUMBNESS OF EXTREMITIES, CENTRAL NERVOUS SYSTEM DEPRESSION, AND IRRITATION.

CHRONIC EXPOSURE- MAY PRODUCE DERMATITIS.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTILNO EVIDENCE OF CHEMICAL REMAINS. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.

EYE CONTACT:
IRRITANT.

ACUTE EXPOSURE- DIRECT CONTACT OF THE LIQUID WITH THE EYES CAUSES A PAINFUL IRRITATION AND TEMPORARY CORNEAL INJURY. VAPOR CAUSES IRRITATION AT 200 PPM (50% OF PERSONS TESTED). IRRITATION BY MIST MAY BE OF THE SAME ORDER.

CHRONIC EXPOSURE- THERE ARE NO DATA AVAILABLE ON THE EFFECTS OF CHRONIC EYE EXPOSURE IN MAN.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING THE UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15 MINUTES). GET MEDICAL ATTENTION AS SOONAS POSSIBLE.

INGESTION:
NARCOTIC/IRRITANT.

ACUTE EXPOSURE- INGESTION CAUSES IRRITATION OF THE GASTROINTESTINAL TRACT WITH NAUSEA AND VOMITING. SEVERAL OUNCES CAN CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION WITH SYMPTOMS OF DIZZINESS, DROWSINESS, AND LETHARGY. (1 OUNCE IS EQUAL TO 30 ML)

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FIRST AID- IF VICTIM IS CONSCIOUS, IMMEDIATELY GIVE 2 TO 4 GLASSES OF WATER, AND INDUCE VOMITING BY TOUCHING FINGER TO BACK OF THROAT. GET MEDICAL ATTENTION IMMEDIATELY.

REACTIVITY

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
STRONG OXIDIZING AGENTS, 3 EXAMPLES FOLLOW:

METHYL ETHYL KETONE:
- HYDROGEN PEROXIDE AND NITRIC ACID: PRODUCES SHOCK AND HEAT SENSITIVE OILY PEROXIDE.
- ISOPROPANOL: ACCELERATES PEROXIDATION OF THE ALCOHOL BY SENSITIZING THE PHOTOCHEMICAL OXIDATION PRODUCING AN EXPLOSIVE PRODUCT.
- STRONG OXIDIZERS: POSSIBLE FIRE AND EXPLOSION HAZARD.
- POTASSIUM TERT-BUTOXIDE: IGNITION.
- CHLOROFORM: VIGOROUS, EXOTHERMIC REACTION IN THE PRESENCE OF BASE.
- OLEUM: INCREASE IN TEMPERATURE AND PRESSURE IN CLOSED CONTAINERS.
- CHLOROSULFONIC ACID: INCREASE IN TEMPERATURE AND PRESSURE IN CLOSED CONTAINERS.

DECOMPOSITION:
COMBUSTION IS PREDICTED TO YIELD CARBON MONOXIDE AND CARBON DIOXIDE.

POLYMERIZATION:
WILL NOT OCCUR.

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CONDITIONS TO AVOID

MAY BE IGNITED BY HEAT, SPARKS OR FLAMES. CONTAINER MAY EXPLODE IN HEAT OF FIRE. VAPOR EXPLOSION HAZARD INDOORS, OUTDOORS OR IN SEWERS. RUN-OFF TO SEWER MAY CREATE FIRE OR EXPLOSION HAZARD.

WILL ATTACK SOME FORMS OF PLASTICS, RUBBER, AND COATINGS.

CONTACT WITH OR STORAGE WITH INCOMPATIBLE MATERIALS LISTED ABOVE AND EXCESSIVE HEAT.

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SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL:
PROVIDE VENTILATION AND PERSONAL PROTECTION. SHUT OFF IGNITION SOURCES. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER NONCOMBUSTIBLE ABSORBENT MATERIAL AND PLACE IN CONTAINERS FOR LATER DISPOSAL. CLOSE CONTAINERS AND LABEL "FLAMMABLE". FOR LARGER SPILLS, FIKE AS CLOSE TO SOURCE OF SPILL AS IS PRACTICAL AND EFFECTIVE, IN ORDER TO REDUCE THE AREA CONTAMINATED AND THE AMOUNT OF MATERIAL FOR LATER DISPOSAL. NO SMOKING, FLAMES, OR FLARES IN HAZARD AREA. MONITOR LARGE SPILL RECOVERY WITH FIRE HOSE TEAM AND A BACK-UP TEAM. KEEP UNNECESSARY PEOPLE AWAY.

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WHEN MATERIAL NOT INVOLVED IN FIRE:
KEEP OPEN FLAMES, SPARKS OR OTHER IGNITION SOURCES AWAY.
DO NOT ALLOW MATERIAL TO CONTAMINATE SEWERS OR WATER SOURCES.
BUILD DIKES FOR CONTAINMENT OF SPILL FLOW.
STOP LEAK IF YOU CAN DO IT WITHOUT RISK.
KNOCK DOWN VAPORS WITH WATER SPRAY.
PRODUCT MAY BE SUBJECT TO FEDERAL AND /OR STATE REPORTING REQUIREMENTS.
CHECK WITH APPROPRIATE AGENCIES.

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE LOCAL EXHAUST VENTILATION SYSTEM TO MEET PERMISSIBLE EXPOSURE LIMIT REQUIREMENTS. VENTILATION EQUIPMENT MUST BE EXPLOSION-PROOF.

RESPIRATOR:
EXPOSURE LIMIT TO 1000 PPM- CHEMICAL CARTRIDGE RESPIRATOR WITH AN ORGANIC VAPOR CARTRIDGE AND A FULL FACEPIECE.

>1000 PPM INCLUDING IDLH LEVEL OF 3000 PPM (0.3%)- SELF-CONTAINED BREATHING APPARATUS WITH A FULL FECEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE OR USE EQUIVALENT RESPIRATOR.

FIREFIGHTING- SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE CLOTHING AND EQUIPMENT AS NECESSARY TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
PROTECTIVE GLOVES ARE REQUIRED BUT AS NECESSARY TO AVOID REPEATED OR PROLONGED CONTACT WITH LIQUID. PREFFERED MATERIAL: BUTYL RUBBER, BASED ON LIMITED DATA.

EYE PROTECTION:
WEAR SPLASH-PROOF SAFETY GOGGLES. DO NOT WEAR CONTACT LENSES WHEN WORKING WITH CHEMICALS.

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-ADDITIONAL INFORMATION-

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