

SPI Supplies Division

Structure Probe, Inc.

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Manufacturer's CAGE: 1P573

Material Safety Data Sheet

Date Effective: October 26, 2011

SPI #02850-AA and 02850-AB Methyl Ethyl Ketone

Section 1: Identification

Chemical Name/Synonyms.....Methyl Ethyl Ketone, 2-Butanone, MEK

Chemical family.....Aliphatic ketone

Emergencies

Contacting CHEMTREC:

24 Hour Emergency Use Only #'s...

Worldwide phone: 1-(703)-527-3887

Worldwide FAX: 1-(703)-741-6090

Toll-free phone: 1-(800)-424-9300 USA only

Product or Trade Name.....SPI #02850 Methyl Ethyl Ketone

CAS #'s.....78-93-3

Chemical Formula.....C₄H₈O

Hazardous Material Information System USA

Health.....1

Fire Hazard.....3

Reactivity.....0

Personal Protection.....

NFPA Rating (estimated)

Health.....1

Flammability.....3

Reactivity.....0

Section 2: Composition

CAS # 78-93-3 Methyl Ethyl Ketone - 100%

Section 3: Hazard Identification

Clear, colorless liquid. Flash point -7°C Extremely flammable liquid and vapor.

Potential health effects (acute and chronic):

Symptoms of exposure:

Effects of eye exposure: Causes eye irritation. May result in corneal injury.

Effects of skin contact: May be absorbed through the skin in harmful amounts. Prolonged and/or repeated contact may cause irritation and/or dermatitis.

Effects of ingestion: May cause irritation of the digestive tract. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure.

Effects of inhalation: Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. Causes respiratory tract irritation. Irritation may lead to chemical pneumonitis and pulmonary edema. May produce numbness in the extremities.

Target Organs: Central nervous system, eyes, skin, mucous membranes.

Routes of entry: Inhalation, ingestion or eye or skin contact.

Section 4: First Aid Measures

Emergency and first aid procedures:

Get medical assistance for all cases of over-exposure.

Skin: Get medical aid. Immediately flush skin thoroughly with water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse.

Eyes: Get medical aid immediately. Immediately flush thoroughly with water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Do not allow victim to rub or keep eyes closed.

Inhalation: Get medical aid immediately. Remove to fresh air immediately. Artificial respiration if breathing has stopped. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased, apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

Ingestion: Do NOT induce vomiting. If conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Notes to Physician: Treat symptomatically and supportively.

Section 5: Fire Fighting Measures

Flash Point.....-7°C
Autoignition Temperature.....404°C

Explosion Limits.....Lower 1.4 vol % at 200°F
Upper 11.4 vol % at 200°F

Fire Extinguishing Media:

For small fires use dry chemical, CO₂, or "alcohol" foam, water spray to cool fire-exposed containers and disperse vapor; water on fire itself may be ineffective. For large fires, use water spray, fog or alcohol-resistant foam. Do NOT use straight streams of water. Cool containers with flooding quantities of water until well after fire is out.

Firefighting Procedure:

Wear self-contained breathing apparatus in pressure-demand full protective gear.

Fire and explosion hazards:

Vapor can travel distance to ignition source and flash back. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Can release vapors that form explosive mixtures at temperatures above the flashpoint. Use water spray to keep fire-exposed containers cool. Water may be ineffective. Material is lighter than water and a fire may be spread by the use of water. Vapors may be heavier

than air. They can spread along the ground and collect in low or confined areas. May polymerize explosively when involved in a fire. Containers may explode when heated.

Section 6: Accidental Release Measures

Spill Response:

Evacuate the area of all unnecessary personnel. Wear suitable protective equipment listed under exposure/personal Protection, including self contained breathing apparatus. Eliminate any ignition sources until the area is determined to be free from explosion or fire hazards. Contain the release and eliminate its source, if this can be done without risk. Absorb spill with an absorbent, non-combustible material such as earth, sand or vermiculite. Scoop up with non-sparking tool and containerize for proper disposal. Comply with federal, state, and local regulations on reporting release. Refer to regulatory information for reportable quantity and other regulatory data.

Disposal considerations:

EPA (Environmental Protection Agency) waste numbers:

CAS# 78-93-3 - waste number U159 (Ignitable waste, Toxic waste)

Section 7: Handling and Storage

Handling:

Use only in a well-ventilated area. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Avoid contact with eyes, skin and clothing. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof = equipment. Avoid contact with heat, sparks and flame. Empty containers may contain residue - do not pressurize, or expose empty containers to heat, sparks or open flames. Do not take internally. Eye wash and safety equipment should be readily available.

Storage:

Keep away from sources of ignition. Store in a flammables area. Store in cool, dry well ventilated area.

Section 8: Exposure Controls and Personal Protection

An eyewash facility and a safety shower should be available. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Airborne Exposure Limits:

| Chemical Name | ACGIH | NIOSH | OSHA - Final PEL |
|---------------------|---------------|---------------------------|---------------------------|
| Methyl Ethyl Ketone | 200 ppm TWA | 200 ppm TWA | 200ppm TWA |
| | 300 ppm STEL | 590 mg/m ³ TWA | 590 mg/m ³ TWA |
| | 3000 ppm IDHL | | |

OSHA Vacated PELS:

Methyl Ethyl Ketone 200 ppm TWA; 590 mg/m³ TWA; 300 ppm STEL; 885 mg/m³ = STEL

Personal Protective Equipment:

Eyes: Wear chemical safety goggles as described by OSHA's eye and face = protection regulations in 29 CFR 1910.133 or the European Standard = EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29CFR = 1910.134 or the European Standard EN149. Always use a NIOSH or European = Standard approved respirator when necessary.

Section 9: Physical and Chemical Properties

Boiling Point.....80°C
Formula Weight.....72.11 g/mol
Coeff. of Water/Oil Dist.....NOT DETERMINED
pH (Liquids Only).....NOT DETERMINED
Melting Point.....-87°C
Vapor Pressure.....71.2 mm Hg
Vapor Density/Air is 1.....2.5
Solubility In Water.....insoluble
Appearance and Color.....clear, colorless liquid
Specific Gravity(H₂O =3D 1).....0.8050
Evaporation Rate.....2.7(butyl acetate=1)
Odor.....sweet smell

Section 10: Stability and Reactivity

Stable: Yes

Hazardous Polymerization: Has not been reported.

Hazardous Decomposition Products: CO_x (Carbon Dioxide / Carbon Monoxide), irritating and toxic fumes and gases

Conditions to avoid: Heat, Incompatible ignition sources, Contact with ignition source.

Materials to avoid: Oxidizing agents; Reducing agents; Caustics and strong bases, such as sodium hydroxide, ammonium hydroxide, potassium hydroxide, calcium hydroxide, ammonia; copper; amines; isocyanates; chlorosulfonic acid; sulfuric acid; nitric acid; hydrogen peroxide.

Section 11: Toxicological Information

RTECS #: CAS# 78-93-3: EL6475000

Toxicity data: CAS# 78-93-3 CAS# 108-10-1
Draize test, Rabbit, skin:500mg/24H Moderate
Inhalation, Mouse LC₅₀ 32 gm/m³/4H
Inhalation, rat LC₅₀ 23500 mg/m³/8H
Oral, Mouse LD₅₀ 3000 mg/kg
Oral, rat LD₅₀ 2737 mg/kg

Carcinogenicity: CAS# 78-93-3: Not listed by ACGIH, IARC, NIOSH, NTP or OSHA

Epidemiology: No information available

Teratogenicity: CAS# 78-93-3 Embryo or Fetus:death ihl-rat TCL₀=1000ppm

Developmental Abnormalities: ihl-rat TCL₀=3000ppm/6H

Musculoskeletal abnormalities: ihl-rat TCL₀+ 1000ppm

Reproductive effects: No information available

Neurotoxicity: No information available

Mutagenicity: CAS# 78-93-3: Sex chromosome loss: S.cerevisiae 33800 = ppm. See entry in RTECS for complete information.

Section 12: Ecological Information

Ecotoxicity: CAS# 78-93-3

Fish: Fathead Minnow LC₅₀ 3220 mg/L; 96H; Unspecified ria:

Phytobacterium phosphoreum: EC₅₀=51.9 mg/L; 25min; Microtox test ria: Phytobacterium phosphoreum: EC₅₀=3373 mg/L; 30 min; Microtox test Fathead minnow LC₅₀=3220 mg/L/96H.

Environmental: CAS# 78-93-3: Evaporates in water with half life of 3 days for rivers to 12 days for lakes; is not expected to bioconcentrate in aquatic organisms. Photodegrades in air with half life of 2.3 days.

Other: No other information available.

Section 13: Disposal Considerations

Consult state and local hazardous waste regulations to ensure complete and accurate classification.

US EPA guidelines for hazard classification determination are listed in 40 CFR Parts 261.3.

RCRA P-Series: None listed

RCRA U-Series: CAS# 78-93-3: waste number U159 (Ignitable, Toxic Waste)

Section 14: Transport Information

Domestic USA (Land, US DOT) CAS# 78-93-3

Proper shipping name: Methyl Ethyl Ketone

Hazard class: 3

UN/NA: UN 1193

Packing Group: II

International (Water, I.M.O.) Methyl Ethyl Ketone

Hazard class: 3

UN/NA: UN 1193

Packing Group: II

Section 15: Regulatory Information

CAS# 78-93-3

TSCA: Listed on TSCA inventory

| | | |
|---------------------------------|-----------|-------------------|
| Health & Safety Reporting List: | Effective | Date Oct. 4, 1982 |
| | Sunset | Date Oct. 4, 1992 |

Chemical Test Rules: None of the chemicals in this product are under a = Chemical Test Rule.

Section 12b: None of the chemicals in this product are listed under TSCA Section 12b

TSCA Significant New Use Rule: None of the chemicals in this material have a SNUR under TSCA.

Section 302 (RQ): CAS# 78-93-3: final RQ =3D 5000 pounds (2270 kg)

Section 302 (TPQ): None of the chemicals in this product have a TPQ.

SARA Codes: CAS# 78-93-3: acute, flammable

Section 313: This material contains Methyl ethyl ketone (CAS# 78-93-3, >99%)

Which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act: CAS# 78-93-3 is listed as an hazardous air pollutants (HAP). This material does not contain any Class 1 Ozone depleters, nor any Class 2 Ozone depleters.

Clean Water ACT. None of the chemicals in this product are listed as hazardous Substances under the CWA, nor as Priority Pollutants under the CWA, nor as Toxic Pollutants under the CWA.

OSHA: None of the chemicals in this product are considered highly hazardous by OSHA.

State Right to Know Lists: CAS# 108-93-3 is listed with California, Florida, Massachusetts, Minnesota, New Jersey, and Pennsylvania. California No Significant Risk Level: None of the chemicals in this product are listed.

INTERNATIONAL REGULATIONS

Hazard Symbols: CAS# 78-93-3: XI F

Risk Phrases: R11 Highly flammable
R36 Irritating to eyes and respiratory system
R66 Repeated exposure may cause skin dryness or cracking
R67 Vapors may cause drowsiness and dizziness

Safety Phrases: S9 Keep container in a well-ventilated place
S16 Keep away from sources of ignition - No smoking

WGK (Water Danger/Protection): CAS# 78-93-3: 1

CANADA LISTS: CAS# 78-93-3 is listed on Canada's DSL = List and on

Canada's Ingredient Disclosure List. CAS# 78-93-3 has a WHMIS classification of B2, D2A.

Section 16: Other Information

Disclaimer of Liability:

Caution! Do not use SPI Supplies products or materials in applications involving implantation within the body; direct or indirect contact with the blood pathway; contact with bone, tissue, tissue fluid, or blood; or prolonged contact with mucous membranes. Products offered by SPI Supplies are not designed or manufactured for use in implantation in the human body or in contact with internal body fluids or tissues. SPI Supplies will not provide to customers making devices for such applications any notice, certification, or information necessary for such medical device use required by US FDA (Food and Drug Administration) regulation or any other statute. SPI Supplies and Structure Probe, Inc. make no representation, promise, express warranty or implied warranty concerning the suitability of these materials for use in implantation in the human body or in contact with internal body tissues of fluids.

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