

SPI Supplies Division

Structure Probe, Inc.

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Manufacturer's CAGE: 1P573

Safety Data Sheet

Date Effective: December 29, 2017

SPI Catalog # 02850-AA, 02850-AB

SPI-Chem™ Methyl Ethyl Ketone

Section 1.1: Identification

Chemical Name/Synonyms Methyl ethyl ketone; 2-Butanone

Product or Trade Name SPI-Chem™ Methyl Ethyl Ketone

CAS #'s 78-93-3

Chemical Formula..... C₂H₅COCH₃

Section 1.2: Relevant Uses/Restrictions

Laboratory chemical for use as solvent.

Section 1.3: Supplier of the Safety Data Sheet

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Section 1.4: Emergency telephone number

Emergencies

Contacting CHEMTREC:

24 Hour Emergency Use Only #'s...

Worldwide phone: 1-(703)-741-5970

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

Section 2: Hazard Identification

2.1 Classification of the substance

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquid (Category 2)

Eye irritation (Category 2A)

Specific target organ systemic toxicity – single exposure (central nervous system) (Category 3)

2.2 Label elements

Pictogram



Signal Word: Danger

Hazard statements:

- H225 Highly flammable liquid and vapor.
- H319 Causes serious eye irritation.
- H336 May cause drowsiness or dizziness.

Precautionary statements:

- P210 Keep away from heat/ sparks/ open flames/ hot surfaces. – No smoking.
- P233 Keep container tightly closed.
- P240 Keep container tightly closed.
- P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
- P242 Use only non-sparking tools
- P243 Take precautionary measures against static discharge.
- P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
- P264 Wash skin thoroughly after handling.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P303 + P361 + 353 IF ON SKIN (or hair): Remove/ take off immediately all contaminated clothing. Rinse skin with water/ shower.
- P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P312 Call a POISON CENTER/ doctor if you feel unwell.
- P337 + P313 If eye irritation persists: Get medical advice/ attention.
- P370 + P378 In case of fire: Use dry sand, dry chemical, or alcohol-resistant foam for extinction.
- P403 + P233 + P235 Store in a well-ventilated place. Keep container tightly closed. Keep cool.
- P405 Store locked up.
- P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Other Hazards:

None known.

NFPA Rating (estimated)

Health 1
Flammability 3
Reactivity 0

Section 3: Composition

3.1 Substances:

Ethyl methyl ketone CAS # 78-93-3 C₂H₅COCH₃ 95-99 Weight Percent

Section 4: First Aid Measures

4.1 Description of first aid measures:

Inhalation:

After inhalation: Remove to fresh air. Consult a physician.

Skin Contact:

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

Eye Contact:

After eye contact: rinse out with plenty of water. Call an ophthalmologist.

Ingestion:

After swallowing: Caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately.

Subsequently administer: activate charcoal (20-40 grams in 10% slurry).

Do not give milk. No digestible oils.

Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed:

Irritant effects: Cough, Shortness of breath, Drowsiness, Dizziness, Narcosis, Inebriation, Nausea, Vomiting, Somnolence, CNS disorders.

Repeated exposure may cause skin dryness or cracking.

The following applies to ketones in general: when vapors/ aerosols occur, mucosal irritations, coughing, and dyspnea after inhalation. The absorption of large quantities leads to: CNS depression (narcosis). Repeated skin contact leads to a degreasing effect, with secondary inflammation possible. Toxic effects on the liver and kidneys cannot be excluded after high doses. The inhalation of droplets may result in the formation of oedemas in the respiratory tract.

4.3 Indication of any immediate medical attention and special treatment needed:

Laxative: Sodium sulfate (1 tablespoon in ¼ liter of water).

After swallowing of large amounts: Gastric lavage.

Section 5: Fire Fighting Measures

5.1 Extinguishing media:

Suitable extinguishing media: Carbon dioxide (CO₂), Foam, Dry powder, Water

Unsuitable extinguishing media: For this substance/mixture there are no limitations of extinguishing agents given.

5.2 Special hazards arising from the substance or mixture:

Combustible.

Vapors are heavier than air and may spread along floors.

Pay attention to flashback.

Forms explosive mixtures with air at ambient temperatures.

Development of hazardous combustion gases or vapors possible in the event of fire.

5.3 Advice for firefighters:

Special protective equipment:

Stay in danger area only with self-contained breathing apparatus.

Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information: Prevent fire extinguishing water from contaminating surface water or the ground water system. Suppress (knock down) gases/ vapors/ mists with a water spray jet. Remove container from danger zone and cool with water.

Section 6: Accidental Release Measures

6.1 Personal precautions:

Advice for non-emergency personnel: Do not breathe vapors, aerosols.

Avoid substance contact.

Keep away from heat sources of ignition.

Ensure adequate ventilation.

Evacuate the danger area, observe emergency procedures, and consult an expert.

Advice for emergency responders: Protective equipment see Section 8.

6.2 Environmental precautions:

Do not let product enter drains.

Risk of explosion.

6.3 Methods and material for containment and cleaning up:

Cover drains.

Collect, bind, and pump off spills.

Observe possible material restrictions (see Sections 7 and 10).

Take up with liquid-absorbent material.

Dispose of properly.

Clean up affected area.

6.4 Reference to other sections:

See Section 13 for disposal.

Section 7: Handling and Storage

7.1 Precautions for safe handling:

Work under a hood.

Do not inhale substance/ mixture.

Avoid generation of vapors/ aerosols.

Observe label precautions.

Protective measures:

Keep away from open flames, hot surfaces, and sources of ignition.

Take precautionary measures against static discharge.

7.2 Conditions for safe storage, including any incompatibilities:

Keep container tightly closed in a dry and well-ventilated place.

Keep away from heat and sources of ignition.

Protect from light.

Store at room temperature.

7.3 Specific end uses:

Laboratory chemical for use as solvent.

This material is not being offered for clinical or diagnostic applications, agricultural uses or for human or animal consumption.

Section 8: Exposure Controls and Personal Protection

8.1 Control parameter and Personal Protection:

Workplace exposure limits: Methyl ethyl ketone, CAS# 78-93-3

Basis	Value	Threshold limits
ACGIH	Time Weighted Average (TWA)	200 ppm
	Short Term Exposure Limit (STEL)	300 ppm
NIOSH/GUIDE	Recommended Exposure Limit (REL)	200 ppm; 590 mg/m ³
	Short Term Exposure Limit (STEL)	300 ppm; 885 mg/m ³
OSHA	Transitional	
	Permissible Exposure Limit (PEL)	200 ppm; 590 mg/m ³
	Table Z1-Air	Time Weighted Average (TWA)
Table Z1-Air	Short Term Exposure Limit (STEL)	300 ppm; 885 mg/m ³

Biological limit values: No additional data available.

8.2 Exposure controls:

8.2.1 Appropriate engineering controls:

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

8.2.2 Individual protection measures:

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures:

Change contaminated clothing.
Preventive skin protection recommended.
Wash hands after working with substance.

Eye/Face Protection:

Safety glasses.

Hand protection:

Splash contact: Butyl-rubber gloves, 0.7 mm thickness, break through time >240 min.

The protective gloves to be used must comply with the specification of EC Directive 89/686/EEC and the related standard EN374, for example Butoject® by KCL GmbH.

Other protective equipment:

Flame retardant antistatic protective clothing.

Respiratory protection:

Required when vapors/ aerosols are generated.
Recommended filter type: Filter A (according to DIN 3181) for vapors of organic compounds. The entrepreneur has to ensure that maintenance, cleaning, and testing of respiratory protective devices are performed according to the instructions of the producer. These measures have to be properly documented.

8.2.3 Environmental exposure controls:

Prevent further leakage or spillage if safe to do so.
Do not let product enter drains or ground water systems.

Section 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties:

Appearance: Colorless liquid

Odor: Pleasant, pungent, and similar to acetone

Odor threshold: 5 ppm

pH: Neutral at 68 °F (20 °C)

Melting point/Freezing point: -123 °F (-86 °C)

Boiling point/Boiling point range: 175.3 °F (79.6 °C) at 1,013 hPa

Flash Point: 25 °F (-4 °C) (Method: DIN 51755 Part 1)

Evaporation rate: No data available

Flammability (solid, gas): No data available

Upper/lower flammability or explosive limits:

Lower explosion limit: 1.8 %(V)

Upper explosion limit: 11.5 %(V)

Vapor Pressure: 105 hPa at 68 °F (20 °C)

Relative vapor density: 2.48

Density: 0.805 g/cm³ at 68 °F (20 °C)

Solubility in water: 292 g/l at 38°F (20 °C)

Partition coefficient (n-octanol/water): log Pow: 0.29 (experimental) (Lit.: Bioaccumulation is not expected)

Auto-ignition temperature: No data available

Decomposition temperature: No data available

Viscosity, dynamic: 0.40 mPa.s at 68 °F (20 °C)

Explosive properties: Not classified as explosive

Oxidizing Properties: None

Ignition temperature: 957 °F (514 °C) (Method: DIN 51794)

Conductivity: <0.1 µS/cm

9.2 Other information: No further relevant information available.

Section 10: Stability and Reactivity

10.1 Reactivity:

Vapors may form explosive mixture with air.

10.2 Chemical Stability:

Sensitivity to light and to air.

10.3 Possibility of Hazardous Reactions:

Risk of ignition or formation of inflammable gases or vapors with oxidizing agents, alkali hydroxides, chromium (VI) oxide.

Risk of exothermic reaction with oxidizing agents, alkali hydroxides, chromium (VI) oxide.

Risk of explosion with hydrogen peroxide, nitric acid, conc. Sulfuric acid.

10.4 Conditions to avoid:

Warming.

10.5 Incompatible materials:

Various plastics, oxidizing agents, alkali hydroxides, chromium (VI) oxide, hydrogen peroxide, nitric acid, conc. sulfuric acid.

10.6 Hazardous decomposition products:

Peroxides.

Section 11: Toxicological Information

Information on the likely routes of exposure:

Likely routes of exposure: Inhalation, Eye contact, Skin contact.

Target organs: Eyes, Skin, Respiratory system, Central nervous system.

11.1 Information on toxicological effects:

A. Acute toxicity:

Acute oral toxicity: LD50 Rat: 3,400 mg/kg OECD Test Guideline 401

Symptoms: Nausea, Vomiting, Risk of aspiration upon vomiting.

Aspiration may cause pulmonary edema and pneumonitis.

Acute inhalation toxicity:

Symptoms: Possible damages: mucosal irritations.

Acute dermal toxicity: LD50 Rabbit: >8,000 mg/kg (Lit.)

Absorption.

B. Skin corrosion/irritation:

Repeated exposure may cause skin dryness or cracking.

C. Serious eye damage/irritation:

Rabbit: Result: Severe irritations OECD Test Guideline 405

Causes serious eye irritation.

D. Respiratory or skin sensitization:

Sensitization test: Guinea pig Result: negative OECD Test Guideline 406

E. Germ cell mutagenicity:

Mutagenicity (mammal cell test): chromosome aberration Result: negative
(National Toxicology Program)

F. Carcinogenicity:

IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a probable, possible, or confirmed human carcinogen by IARC.

OSHA: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a

known or anticipated carcinogen by NTP.

ACGIH: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH>

G. Reproductive toxicity:

Genotoxicity in vitro: Ames test Result: negative IUCLID

H. STOT-single exposure:

May cause drowsiness or dizziness.
Target Organs: Central nervous system.

I..STOT-repeated exposure:

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

J. Aspiration hazard:

Regarding the available data, the classification criteria are not fulfilled.

Further information:

After absorption of large quantities: CNS disorders, Dizziness, Inebriation, Drop in blood pressure, Narcosis.

Causes impaired function of: Respiratory tract, Cardiac system.

The following applies to ketones in general:

When vapors/ aerosols occur, mucosal irritations, coughing, and dyspnea after inhalation.
The absorption of large quantities leads to: CNS depression (narcosis).
Repeated skin contact leads to a degreasing effect, with secondary inflammation possible.
Toxic effects on the liver and kidneys cannot be excluded after high doses.
The inhalation of droplets may result in the formation of oedemas in the respiratory tract.
Handle in accordance with good industrial hygiene and safety practice.

Section 12: Ecological Information

12.1 Toxicity:

Toxicity to fish:

LC50 Pimephales promelas (fathead minnow): 3,220 mg/l; 96 h (IUCLID)

Toxicity to daphnia and other aquatic invertebrates:

EC50 Daphnia magna (Water flea): 5,091 mg/l; 48 h (IUCLID)

Toxicity to algae:

IC5 Scenedesmus quadricauda (Green algae): >= 4,300 mg/l; 7 d (IUCLID)

Toxicity to bacteria:

EC5 Pseudomonas putida: 1,150 mg/l; 16 h (IUCLID)

12.2 Persistence and degradability:

Bio-degradability: Readily biodegradable.

Theoretical oxygen demand (ThOD): 2,440 mg/g (Lit.)

Ratio BOD/ThBOD: BOD5: 76% (IUCLID)

Ratio COD/ThBOD 95% (Lit)

12.3 Bio-accumulative potential:

Partition coefficient: n-octanol/water:
Log Pow: 0.29 (experimental)
(Lit.) Bio-accumulation is not expected.

12.4 Mobility in soil:

No data available.

12.5 Results of PBT and vPvB assessment:

No data available.

12.6 Other adverse effects:

No data available.

Section 13: Disposal Considerations

13.1 Waste treatment methods:

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national, and local laws and regulations.

Section 14: Transport Information

DOT:

UN number: UN 1193
Proper shipping name: ETHYL METHYL KETONE
Class: 3
Packing group: II
Environmentally hazardous: --

IATA:

UN number: UN 1193
Proper shipping name: ETHYL METHYL KETONE
Class: 3
Packing group: II
Environmentally hazardous: --

IMDG:

UN number: UN 1193
Proper shipping name: ETHYL METHYL KETONE
Class: 3
Packing group: II
Environmentally hazardous: --
Special precautions for user: yes
EmS: F-E S-D

Section 15: Regulatory Information

15.1 Safety, health and environmental regulations/ legislation specific for the substance or mixture

United States of America:

SARA 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.

SARA 302:

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

Clean Water Act:

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

DEA List I: Not listed.

DEA List II: Listed.

Ingredients: ethyl methyl ketone

US State Regulations:

Ethyl methyl ketone, CAS # 78-93-3, is listed in the **Massachusetts Right to Know List**, in the **Pennsylvania Right to Know List**, and in the **New Jersey Right to Know List**.

California Prop 65 Components: This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

Notification status:

TSCA: All components of the product are listed in the TSCA Inventory.

DSL: All components of this product are listed on the Canadian DSL List.

15.2 Chemical Safety Assessment

Date of Preparation: 29 December 2017.

Abbreviations and acronyms

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

CMRG: Chemical Manufacturer's Recommended Guidelines

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

AIHA: American Industrial Hygiene Association

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

EC50: Concentration midway between maximum response and minimum response

IC50: Concentration at half maximal inhibitory response

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bio-accumulative and Toxicological

vPvB: very Persistent and very Bio-accumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety Health
ATE: Acute Toxicity Estimates
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
STEL: Short Term Exposure Limit
CEIL: Ceiling

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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