

SAFETY DATA SHEET

MIBK(METHYL ISOBUTYL KETONE)

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1. IDENTIFICATION

A. Product name

- MIBK(METHYL ISOBUTYL KETONE) [SDS-004]

B. Recommended use and restriction on use

- General use : Coatings and ink, Solvent in paint manufacture, Rubber antioxidants, Solvent in electrical manufacture
 - Restriction on use : Not available

C. Manufacturer / Supplier / Distributor information

o Manufacturer information

- Company name : Kumho P&B Chemicals.
 - Address : Yeosu-sandan 2ro, Yeosu-city, Jeollanam-do, Korea
 - Dept. : Environment & Safety Team
 - Telephone number : +82-61-688-3682,0 +82-61-688-3684
 - Emergency telephone number : +82-61-688-3507
 - Fax number : +82-61-688-3686

o Supplier/Distributor information

- Company name : KUMHO P&B CHEMICALS.INC
 - Address : East Wing 8F, Signature Towers Seoul, 100 Cheonggyecheon-ro, Jung gu, Seoul, Korea
 - Dept. : MIBK
 - Telephone number : +82-2-6961-1114
 - Emergency telephone number : +82-2-6961-1114
 - Fax number : +82-2-6961-3490,3492
 - E-mail address : epoxy_domestic@kpb.co.kr

2. HAZARD IDENTIFICATION

A. GHS Classification

- Flammable liquids : Category2
 - Acute toxicity (inhalation: vapor) : Category4
 - Carcinogenicity : Category2
 - Specific target organ toxicity(Single exposure) : Category3(Narcotic effects)
 - Specific target organ toxicity(Single exposure) : Category3(Respiratory tract irritation)

B. GHS label elements

o Hazard symbols



o Signal words

- Danger

o Hazard statements

- H225 Highly flammable liquid and vapour
 - H332 Harmful if inhaled

- H335 May cause respiratory irritation.
- H336 May cause drowsiness and dizziness.
- H351 Suspected of causing cancer

o **Precautionary statements**

1) Prevention

- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P233 Keep container tightly closed.
- P240 Ground/bond container and receiving equipment.
- P241 Use explosion-proof electrical/ventilating/lighting/equipment.
- P242 Use only non-sparking tools. Flammable liquids (chapter 2.6) 1, 2, 3
- P243 Take precautionary measures against static discharge.
- P261 Avoid breathing gas/mist/vapours/spray.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P281 Use personal protective equipment as required.

2) Response

- P303+P361+P353 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.
- P308+P313 If exposed or concerned: Get medical advice/attention.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- P370+P378 In case of fire: Use Suitable extinguishing media for extinction(Refer Section MSDS 5).

3) Storage

- P403+P233 Store in a well-ventilated place. Keep container tightly closed.
- P403+P235 Store in a well-ventilated place. Keep cool.
- P405 Store locked up.

4) Disposal

- P501 Dispose of contents/container in accordance with local/regional/national/international regulation

C. Other hazards which do not result in classification : (NFPA Classification)

o **NFPA grade (0 ~ 4 level)**

- Health : 1 , Flammability : 3, Reactivity : 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
4-Methyl-2-pentanone ; Methylisobutyl ketone, MIBK	-	108-10-1	100

4. FIRST AID MEASURES

A. Eye contact

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.
- Get medical attention immediately.

B. Skin contact

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Laundering enough contaminated clothing before reuse.
- Get medical attention immediately.

C. Inhalation contact

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.
- Get medical attention immediately.
- If breathing is stopped or irregular, give artificial respiration and supply oxygen.

D. Ingestion contact

- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.
- Get medical attention immediately.

E. Delayed and immediate effects and also chronic effects from short and long term exposure

- Not available

F. Notes to physician

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.
- If exposed or concerned, get medical attention/advice.

5. FIREFIGHTING MEASURES**A. Suitable (Unsuitable) extinguishing media**

- Dry chemical, carbon dioxide, regular foam extinguishing agent, spray
- Avoid use of water jet for extinguishing

B. Specific hazards arising from the chemical

- Not available

C. Special protective actions for firefighters

- Move containers from fire area, if you can do without the risk.
- Cool containers with water until well after fire is out.
- Keep unauthorized personnel out.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Wear appropriate protective equipment.
- Keep containers cool with water spray.
- Vapor or gas is burned at distant ignition sources can be spread quickly.
- Due to the extremely low flash point, irrigating fire extinguishing may be less effective when put out a fire.

6. ACCIDENTAL RELEASE MEASURES**A. Personal precautions, protective equipment and emergency procedures**

- Ventilate closed spaces before entering.
- Must work against the wind, let the upwind people to evacuate.
- Remove all sources of ignition.
- Do not direct water at spill or source of leak.
- Cleanup and disposal under expert supervision is advised.
- Keep unauthorized people away, isolate hazard area and deny entry.

B. Environmental precautions

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.

C. Methods and materials for containment and cleaning up

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notification to central government, local government. When emissions at least of the standard amount
- Dispose of waste in accordance with local regulation.
- Appropriate container for disposal of spilled material collected.
- Small leak: sand or other non-combustible material, please let use absorption.
- Wipe off the solvent.
- Dike for later disposal.
- Do not use plastic containers.

7. HANDLING AND STORAGE

A. Precautions for safe handling

- Comply with all applicable laws and regulations for handling
- Get the manual before use.
- Dealing only with a well-ventilated place.
- Do not inhale the steam prolonged or repeated.
- Avoid contact with heat, sparks, flame or other ignition sources.
- Contaminated work clothing should not be allowed out of the workplace.

B. Conditions for safe storage, including any incompatibilities

- Do not apply direct heat.
- Keep in the original container.
- Please pay attention to incompatibilities materials and conditions to avoid.
- Keep sealed when not in use.
- Prevent static electricity and keep away from combustible materials or heat sources.
- By specifying a storage area for carcinogenic substances.
- Collected them in sealed containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**A. Exposure limits**

- o **ACGIH TLV**
 - [4-Methyl-2-pentanone ; Methylisobutyl ketone, MIBK] : TWA, 20 ppm (82 mg/m³) STEL 75 ppm (307 mg/m³)
- o **OSHA PEL**
 - [4-Methyl-2-pentanone ; Methylisobutyl ketone, MIBK]:100ppm 410mg/m³

B. Engineering controls

- A system of local and/or general exhaust is recommended to keep employee exposures above the Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. The use of local exhaust ventilation is recommended to control emissions near the source.

C. Individual protection measures, such as personal protective equipment

- o **Respiratory protection**
 - Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
 - Respiratory protection is ranked in order from minimum to maximum.
 - Consider warning properties before use.
 - Any chemical cartridge respirator with organic vapor cartridge(s).
 - Any chemical cartridge respirator with a full facepiece and organic vaporcartridge(s).
 - Any air-purifying respirator with a full facepiece and an organic vapor canister.
 - For Unknown Concentration or Immediately Dangerous to Life or Health : Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full facepiece.
- o **Eye protection**
 - Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.
 - Provide an emergency eye wash station and quick drench shower in the immediate work area.
- o **Hand protection**
 - Wear appropriate chemical resistant glove.
- o **Skin protection**
 - Wear appropriate chemical resistant protective clothing.
- o **Others**
 - Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance	
- Appearance	Liquid
- Color	clearness
B. Odor	Not available
C. Odor threshold	0.1 ppm

D. pH	7
E. Melting point/Freezing point	-84 °C
F. Initial Boiling Point/Boiling Ranges	116.5 °C
G. Flash point	14 °C
H. Evaporation rate	5.6 (Ether=1)
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	7.5 / 1.4 %
K. Vapour pressure	2.1 kPa (20 °C)
L. Solubility	1.91g/100ml (20 °C)
M. Vapour density	3.5 (air=1)
N. Specific gravity(Relative density)	0.8 (water=1)
O. Partition coefficient of n-octanol/water	1.38
P. Autoignition temperature	460 °C
Q. Decomposition temperature	Not available
R. Viscosity	0.61 cP (20 °C)
S. Molecular weight	100.16

10. STABILITY AND REACTIVITY

A. Chemical Stability

- This material is stable under recommended storage and handling conditions.

B. Possibility of hazardous reactions

- Cylinders exposed to fire may vent and release flammable gas.

C. Conditions to avoid

- Avoid contact with incompatible materials and condition.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces
- Avoid contact with heat, sparks, flame or other ignition sources.

D. Incompatible materials

- Not available

E. Hazardous decomposition products

- May emit flammable vapour if involved in fire.

11. TOXICOLOGICAL INFORMATION

A. Information on the likely routes of exposure

- (Respiratory tracts)
 - May cause respiratory irritation.
- (Oral)
 - Not available
- (Eye-Skin)
 - Not available

B. Delayed and immediate effects and also chronic effects from short and long term exposure

- Acute toxicity
 - * Oral
 - [4-Methyl-2-pentanone ; Methylisobutyl ketone, MIBK] : LD50 2080 mg/kg Rat (NITE, ECHA)
 - * Dermal
 - [4-Methyl-2-pentanone ; Methylisobutyl ketone, MIBK] : LD50 >16,000 mg/kg rabbit (NITE), LD0≥2000 mg/kg OECD TG402,
 - * Inhalation
 - [4-Methyl-2-pentanone ; Methylisobutyl ketone, MIBK] : LC50 11.6 mg/ℓ 4h Rat (OECD TG 403)(ECHA)
- Skin corrosion/irritation
 - Not available
- Serious eye damage/irritation
 - Not available

- **Respiratory sensitization**
 - Not available
- **Skin sensitization**
 - Not available
- **Carcinogenicity**
 - * **IARC**
 - [4-Methyl-2-pentanone ; Methylisobutyl ketone, MIBK] : Group 2B
 - * **OSHA**
 - Not available
 - * **ACGIH**
 - [4-Methyl-2-pentanone ; Methylisobutyl ketone, MIBK] : A3
 - * **NTP**
 - Not available
 - * **EU CLP**
 - Not available
- **Germ cell mutagenicity**
 - Not available
- **Reproductive toxicity**
 - Not available
- **STOT-single exposure**
 - May cause drowsiness and dizziness.
 - May cause respiratory irritation.
- **STOT-repeated exposure**
 - Not available
- **Aspiration hazard**
 - Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

- **Fish**
 - [4-Methyl-2-pentanone ; Methylisobutyl ketone, MIBK] : ECHA LD50 >179 mg/l 96 hr Brachydanio rerio(OECD TG 203, GLP)
- **Crustaceans**
 - [4-Methyl-2-pentanone ; Methylisobutyl ketone, MIBK] : ECHA EC50 >200 mg/l 48 hr Daphnia magna(OECD TG 202, GLP)
- **Algae**
 - Not available

B. Persistence and degradability

- **Persistence**
 - [4-Methyl-2-pentanone ; Methylisobutyl ketone, MIBK] : ECHA 1.9 log Kow (OECD TG 117)
- **Degradability**
 - Not available

C. Bioaccumulative potential

- **Bioaccumulative potential**
 - Not available
- **Biodegradation**
 - [4-Methyl-2-pentanone ; Methylisobutyl ketone, MIBK] : ECHA 83% 28 day (OECD TG 301, GLP)

D. Mobility in soil

- [4-Methyl-2-pentanone ; Methylisobutyl ketone, MIBK] : ECHA 101.85 Koc (estimate)

E. Other adverse effects

- Not available

13. DISPOSAL CONSIDERATIONS

A. Disposal methods

- Since more than two kinds of designaed waste is mixed, it is difficult to treat seperatly, then can be reduction or stabilization by incineration or similar process.
- If water separation is possible, pre-process with Water separation process.
- Dispose by incineration.

B. Special precautions for disposal

- The user of this product must disposal by oneself or entrust to waste disposer or person who other's waste recycle and dispose, person who establish and operate waste disposal facilities.
- Dispose of waste in accordance with all applicable laws and regulations.

14. TRANSPORT INFORMATION

A. UN No. (IMDG CODE/IATA DGR)

- 1245

B. Proper shipping name

- METHYL ISOBUTYL KETONE

C. Hazard Class

- 3

D. IMDG CODE/IATA DGR Packing group

- II

E. Marine pollutant

- Not applicable

F. Special precautions for user related to transport or transportation measures

- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- EmS FIRE SCHEDULE : F-E (Non-water-reactive flammable liquids)
- EmS SPILLAGE SCHEDULE : S-D (Flammable liquids)

15. REGULATORY INFORMATION

A. National and/or international regulatory information

- **POPs Management Law**
 - Not applicable
- **Information of EU Classification**
 - * **Classification**
 - [4-Methyl-2-pentanone ; Methylisobutyl ketone, MIBK] : H225, H332, H319, H335
- **U.S. Federal regulations**
 - * **OSHA PROCESS SAFETY (29CFR1910.119)**
 - Not applicable
 - * **CERCLA Section 103 (40CFR302.4)**
 - [4-Methyl-2-pentanone ; Methylisobutyl ketone, MIBK] : 2267.995 kg 5000 lb
 - * **EPCRA Section 302 (40CFR355.30)**
 - Not applicable
 - * **EPCRA Section 304 (40CFR355.40)**
 - Not applicable
 - * **EPCRA Section 313 (40CFR372.65)**
 - [4-Methyl-2-pentanone ; Methylisobutyl ketone, MIBK] : Applicable
- **Rotterdam Convention listed ingredients**
 - Not applicable
- **Stockholm Convention listed ingredients**
 - Not applicable
- **Montreal Protocol listed ingredients**
 - Not applicable

16. OTHER INFORMATION**A. Reference**

- The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.
- This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS, NLM, SIDS, IPCS

B. Issue date

- 2013-09-26

C. Revision number and Last date revised

- 10 times, 2018-01-18

D. Other

- This SDS is prepared according to the Globally Harmonized System (GHS).