

## MIBK

Date of Preparation: September 2003

Revision: 1

## Section 1 - Chemical Product and Company Identification

**Product/Chemical Name:** MIBK**Chemical Formula:** C<sub>6</sub>H<sub>12</sub>O**Other Designations:** Methyl Isobutyl Ketone; Isobutyl Methyl Ketone, Hexone, 4-Methyl-2-Pentanone, 2-Methyl-4-Pentanone, Isopropylacetone.**General Use:** Use as a solvent, manufacture of methyl amyl alcohol, denaturant for alcohol, and in the semi-conductor industry.**Manufacturer:** Kanto Corporation, 13424 N. Woodrush Way, Portland, OR 97203,  
Customer Service: Phone (503) 283-0405, FAX (503) 240-0409**For All Transportation Emergencies Call CHEMTREC 1-800- 424-9300**

## Section 2 - Composition / Information on Ingredients

Ingredient Name	CAS Number	% wt
Methyl Isobutyl Ketone	108-10-1	99.9

## Occupational Exposure Limits

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH
	TWA	STEL	TWA	STEL	TWA	STEL	IDLH
Methyl Isobutyl Ketone	100 ppm 410 mg/m <sup>3</sup>	Not established	50 ppm 205 mg/m <sup>3</sup>	75 ppm 300 mg/m <sup>3</sup>	50 ppm 205 mg/m <sup>3</sup>	75 ppm 300 mg/m <sup>3</sup>	500 ppm

## Section 3 - Hazards Identification

## ☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Flammable. Forms explosive peroxides in air. Colorless liquid with a camphor-like odor. Irritating to eyes, skin, and respiratory tract. Causes headache, nausea, vomiting, dermatitis. Keep away from ignition sources and heat.

<b>HMIS</b>	
<b>H</b>	2
<b>F</b>	3
<b>R</b>	0
<b>PPE</b> <sup>†</sup>	
	<sup>†</sup> Sec. 8

## Potential Health Effects

**Primary Entry Routes:** Inhalation, eye contact, skin contact, and ingestion**Target Organs:** Central nervous system, eyes, respiratory system, and skin**Acute Effects:**

**Inhalation:** Vapors and mists irritate the nose, throat and respiratory tract. High concentrations of vapor may produce central nervous system depression characterized by headache, vertigo, loss of coordination, narcosis and cardiac and respiratory failure. Overexposure may produce weakness, loss of appetite, a burning sensation to the eyes, stomachache, nausea and vomiting.

**Eye:** Liquid is painful and is capable of causing a mild, temporary redness of the conjunctiva, temporary impairment of vision and other eye damages. Repeated or prolonged exposure to irritants may produce conjunctivitis. Can cause irritation and possible corneal burns in eyes.

**Skin:** Drying of the skin and dermatitis. The material may accentuate any pre-existing skin conditions. Skin redness and swelling which may progress to vesiculation, scaling and thickening of the epidermis.

**Ingestion:** The liquid is painful and toxic if swallowed. Solution causes vomiting, headache, dizziness, lowered blood pressure, depression, breathing difficulty, stupor, edema, and coma. Vomit entering the lungs by aspiration may cause potentially lethal chemical pneumonitis.

**Carcinogenicity:** Not listed.**Chronic Effects:** Dermatitis, liver and kidneys may be affected.

## Section 4 - First Aid Measures

**Eye Contact:** Gently lift eyelids and flush immediately and continuously with copious amounts of water for at least 15 minutes. Do not allow the victim to rub or keep eyes tightly shut. Consult an ophthalmologist immediately.

**Skin Contact:** Rinse with flooding amounts of water, while removing contaminated clothing, for at least 15 minutes. Wash with soap and water. Seek medical attention immediately. Wash clothing before reuse.

**Ingestion:** If the victim is conscious, give large amounts of water. Seek medical attention immediately. Never give anything by mouth to an unconscious or convulsing person.

**Inhalation:** Remove exposed person to an uncontaminated atmosphere and support breathing. If not breathing, give artificial respiration. Seek medical attention immediately.

*After first aid, seek appropriate in-plant, paramedic, or community medical support.*

### Section 5 - Fire-Fighting Measures

**Flash Point:** 23.9°C (75°F)

**Flash Point Method:** Open Cup

**Auto ignition Temperature:** 460°C (860°F)

**LEL:** 1.4% v/v

**UEL:** 7.5% v/v at 93°C

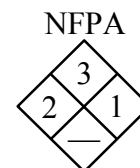
**Extinguishing Media:** Foam, dry chemical powder, carbon dioxide, water spray or fog.

**Unusual Fire or Explosion Hazards:** Extreme heat or contact with ignition source may cause explosion. Air currents may cause vapors to drift causing flash back to be a possibility. Vapors form an explosive mixture with air. Explosive peroxides may form.

**Hazardous Combustion Products:** Heating may cause expansion and decomposition with violent rupture of containers. On combustion, may emit toxic fumes of carbon monoxide.

**Fire-Fighting Instructions:** Contact fire department and tell them location and nature of hazard. Prevent spillage from entering drains or waterways. Do not approach containers suspected to be hot. Cool fire-exposed containers with water spray from a protected location. If safe to do so, remove containers from path of fire.

**Fire-Fighting Equipment:** Because fire produces toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full-face piece operated in pressure-demand or positive-pressure mode. Equipment should be thoroughly decontaminated after use.



### Section 6 - Accidental Release Measures

**Small Spills:** Remove all ignition sources. Wear proper protective equipment and respirator protection. Clean up all spills immediately. Contain and absorb small quantities with sand, earth, or vermiculite. Wipe up. Collect residues in a flammable waste container.

**Large Spills:** Clear area of personnel and move upwind. May be violently or explosively reactive. Wear proper protective equipment and respirator protection. Prevent spillage from entering drains or waterways. Remove all ignition sources. Stop leak if safe to do so. Water spray or fog may be used to disperse vapor. Contain spill with sand, earth or vermiculite. Use only spark-free equipment. Collect solid residues and seal in labeled drums for disposal. Wash area and prevent runoff into drains. If contamination of drains or waterways occurs, advise emergency services.

**Regulatory Requirements:** Comply with all applicable government regulations on spill reporting, handling and disposal of waste material.

### Section 7 - Handling and Storage

**Handling Precautions:** Wear protective clothing. Use in a well-ventilated area. Vapor may ignite on pumping or pouring due to static electricity. Do not use plastic buckets. Ground and secure metal containers when dispensing or pouring product. Use spark-free tools when handling. Avoid contact with incompatible materials. Keep containers securely sealed. Observe manufacturer's storing and handling recommendations.

**Recommended Storage Methods:** Metal cans or drums. Plastic containers may only be used if approved for flammable liquid. Store in a cool, dry, well-ventilated area out of direct sunlight. Avoid ignition sources.

**Regulatory Requirements:** Follow applicable OSHA regulations (29 CFR 1910.120).

### Section 8 - Exposure Controls / Personal Protection

#### Engineering Controls

**Ventilation:** Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

#### Administrative Controls

**Respiratory Protection:** Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA.

*Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

**Protective Clothing/Equipment:** Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

**Safety Stations:** Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.  
**Contaminated Equipment:** Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.  
**Comments:** Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

### Section 9 - Physical and Chemical Properties

<b>Physical State:</b> Liquid	<b>Water Solubility:</b> Moderately soluble in water (1-10%)
<b>Appearance and Odor:</b> Clear, colorless with medicinal alcoholic odor.	<b>Boiling Point:</b> 117°C (242°F)
<b>Vapor Pressure:</b> 16 mm Hg at 20°C	<b>Freezing/Melting Point:</b> -85°C (-120°F)
<b>Vapor Density (Air=1):</b> 3.5	<b>Evaporation Rate (Butyl Alcohol =1):</b> 1.6
<b>Formula Weight:</b> 100.16	<b>Specific Gravity (H<sub>2</sub>O=1, at 4 °C):</b> 0.80
<b>pH:</b> ~ 5.5	<b>% Volatiles:</b> 100

### Section 10 - Stability and Reactivity

**Stability:** MIBK is stable at room temperature in closed containers under normal storage and handling conditions.  
**Polymerization:** Hazardous polymerization will not occur.  
**Chemical Incompatibilities:** Attacks forms of plastics, rubber and coatings, aldehydes, chlorine, ethylene oxide, acids, isocyanates, oleum, phosgene, chromium trioxide, perchloric acid, halogens, and oxidizers. Reacts violently with potassium-tert-butoxide.  
**Conditions to Avoid:** Ignition sources, contact with heat, flame or incompatible materials, oxygen from which explosive peroxides can form.  
**Hazardous Decomposition Products:** Thermal oxidative decomposition of MIBK can produce carbon dioxide, carbon monoxide, and acrid smoke.

### Section 11- Toxicological Information\*

<b>Toxicity:</b> Oral, rat, LD <sub>50</sub> : 2080 mg/kg Oral, mouse, LD <sub>50</sub> : 1900 mg/kg Inhalation, rat, LC <sub>50</sub> : 100gm/m <sup>3</sup> Inhalation, man: 2290 mg/m <sup>3</sup> Intraperitoneal, rat, LD <sub>50</sub> : 400 mg/kg Intraperitoneal, mouse, LD <sub>50</sub> : 268 mg/kg	<b>Irritation:</b> Eye, rabbit: 500mg/24 hr - mild Skin, rabbit: 100 µL/24 hr - moderate Eye, rabbit: 40 mg – severe  <b>Chronic Effects:</b> Dermatitis, liver and kidneys may be affected. <b>Carcinogenicity:</b> Not listed <b>Reproductive:</b> CNS, fetotoxicity, musculoskeleton, circulatory system.
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\* See NIOSH, RTECS (SA975000), for additional toxicity data.

### Section 12 - Ecological Information

**Ecotoxicity:** Fathead minnow LC<sub>50</sub>: 505 mg/l 96 hr. Red-winged blackbird, oral, LD50: 100 mg/kg. Goldfish, LC<sub>50</sub>: 460 mg/l/24 hr.  
**Environmental Fate:** If released to soil, it may be removed by direct photolysis on soil surfaces, volatilization, or aerobic biodegradation. If released to water, the primary removal mechanisms are expected to be volatilization and direct photolysis.

### Section 13 - Disposal Considerations

**Disposal:** Consult manufacturer for recycling options and recycle where possible. Incinerate residue at an approved site. Recycle containers where possible, or dispose of in an authorized landfill.  
**Disposal Regulatory Requirements:** Follow all federal, state, and local regulations concerning disposal.

### Section 14 - Transport Information

#### DOT Transportation Data (49 CFR 172.101):

**Shipping Name:** Methyl Isobutyl Ketone  
**Hazard Class:** 3  
**ID No:** UN 1245  
**Packing Group:** II  
**Label:** 3  
**Special Provisions (172.102):** IB2, T4, TP1

**Packaging Authorizations**  
**Exceptions:** 173.150  
**Non-bulk Packaging:** 173.202  
**Bulk Packaging:** 173.242

**Quantity Limitations**  
**Passenger, Aircraft, or Railcar:** 5L  
**Cargo Aircraft Only:** 60L

**Vessel Stowage Requirements**  
**Vessel Stowage:** B

**Emergency Response Guidebook # 127**

**Section 15 - Regulatory Information****EPA Regulations:**

RCRA Hazardous Waste Number (40 CFR 261.33): U16 – Ignitable Waste

RCRA Hazardous Waste Classification (40 CFR 261.21): Characteristics of Ignitability

CERCLA Hazardous Substance (40 CFR 302.4) listed specific per RCRA, Sec. 3001; CWA, Sec. 311 (b)(4); CWA, Sec. 307(a), CAA, Sec. 112

CERCLA Reportable Quantity (RQ): 5000 lb (2268 kg)

SARA 311/312 Codes: Acute, Chronic, Reactive

SARA Toxic Chemical (40 CFR 372.65): Listed

SARA EHS (Extremely Hazardous Substance) 40 CFR 355 TPQ: No amount listed

TSCA: Listed

**OSHA Regulations:**

Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A): Listed under Hexone

**Section 16 - Other Information**

**Revision Notes:** Revisions to Sections 2, 11, 14, and 15.

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