



Zeon Chemicals L. P.

Material Safety Data Sheet

Form: 239
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MSDS Number: Z00999

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Manufacturer / Importer:
Zeon Chemicals L.P.
4111 Bells Lane
Louisville, Kentucky 40211

Telephone Number:
1-800-735-3388
(502)-775-2000

Emergency Telephone Number:
1-800-776-2460 Ext 7650
(502) 774-8126

Chemical Family:
Methyl Isobutyl Ketone C₆H₁₂O

Uses:
Electronic Applications

This MSDS applies to the following product(s):

ZMD-D

Section 2 - COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredients	CAS #	Amount	Exposure Limits			
			OSHA PEL		ACGIH TLV	
Methyl Isobutyl Ketone	108-10-1	>99 %	100 ppm	TWA	50 ppm	TWA
					75 ppm	STEL

Other Ingredients	CAS #	Amount	Notes
			TWA = Time Weighted Average TLV = Threshold Limit Value AL = Action Level RD = Respirable Dust TD = Total Dust STEL = Short Term Exposure Limit Skin = Skin contact may be a significant route of exposure A2 = ACGIH Suspected Human Carcinogen A3 = ACGIH Animal Carcinogen A4 = ACGIH Not Classifiable as a Human Carcinogen PNOC = Particulates Not Otherwise Classified

Section 3 - HAZARDS IDENTIFICATION

Emergency Overview:	This material is a clear, colorless thin liquid with a characteristic ketone odor. Flammable liquid and vapors. Harmful if inhaled, ingested, or absorbed through skin. May produce vapors or mists that can cause eye, skin, and respiratory tract irritation. Prolonged or repeated exposure to vapors may cause drowsiness, nausea, dizziness, or headaches. Toxic combustion products may be released under fire conditions.
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Potential Health Effects From Overexposure: Possible routes of entry include skin & eye contact and process vapor or mist inhalation.

Contact with liquid, vapors, or mists may cause irritation to the eyes, skin, nose, throat, and respiratory tract. Inhalation of high vapor or mist concentrations may produce narcotic effects and unconsciousness. Accidental ingestion may cause gastrointestinal irritation with nausea, vomiting, and diarrhea. Repeated or prolonged overexposure may cause dermatitis and is reported to cause central nervous system effects and possible liver and kidney effects. Processing under conditions of inadequate ventilation may produce symptoms of nausea, dizziness, tearing, coughing, or headaches. Typically these effects are reversible upon removal from exposure and no lasting effects are expected. Most importantly, the potential for irritation will depend on the effectiveness of exhaust ventilation provided to the process area.

Appropriate precautions should be taken to minimize potential exposure to accidental ingestion, inhalation of process vapors or mists, and skin contact.

Overexposure to decomposition or combustion products may cause irritation of the eyes, skin, and respiratory tract. Symptoms such as coughing, tearing, and irritation should be regarded as potentially hazardous and measures taken to avoid exposure. See Section 10 for information on combustion products.

Section 4 - FIRST AID MEASURES

If irritation occurs or persists from any route of exposure, remove the affected individual from the area and seek medical assistance.

Ingestion: If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Seek medical assistance immediately.

Eye Contact: Flush eyes with running water for several minutes while holding eyelids open. Consult a physician if irritation persists.

Skin Contact: Remove contaminated clothing. Wash skin with soap and water. Seek medical attention if irritation / allergic skin reaction develops. Launder contaminated clothing before reuse.

Vapor Inhalation (processing vapors or decomposition products): Remove the affected individual to fresh air and seek medical assistance immediately.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media: Carbon dioxide, dry chemical, water fog or alcohol resistant foam is recommended for small fires. For large fires use aqueous foam or water fog. Use water spray or fog to cool fire exposed containers.

Special Firefighting Procedures: Wear positive pressure self-contained breathing apparatus (SCBA) during the attack phase of firefighting operations and during cleanup in enclosed or poorly ventilated areas immediately after a fire. Personnel not having suitable respiratory protection must leave the area to prevent significant exposure to toxic combustion gases from any source.

Unusual Fire and Explosion Hazards: Flammable liquid and vapors. Vapor can flow along surfaces to distant ignition sources and flash back. Closed containers may rupture due to pressure buildup under fire conditions. Toxic gases may be formed upon combustion and represents a hazard to firefighters. See Section 10 for additional information on combustion products.

Section 6 - ACCIDENTAL RELEASE MEASURES

Wear respiratory protection and protective clothing, ventilate area, remove all ignition sources, and use non-sparking tools and equipment to contain spill and recover as much as possible. Absorb remaining residue with inert material and place into closed containers to await disposal. Wash spill area with soap and water. Do not allow product to enter municipal sewers or waterways. Spills or releases to the environment may be reportable to the National Response Center (800) 424-8802 and to state and / or local agencies. The Reportable Quantity (RQ) for Methyl Isobutyl Ketone is 5000 lbs.)

Section 7 - HANDLING AND STORAGE

Use only in well ventilated areas. Avoid contact with eyes, skin, and clothing. Store in a well ventilated location away from heat, sparks, flame, and direct sunlight. Keep container closed when not in use. Do not eat, smoke, or drink where the product is handled, processed, or stored. Wash hands thoroughly before eating or smoking. Evaluate transfer operations for potential static charge buildup and ground and bond accordingly. Use non-sparking tools and equipment. Empty containers may retain product residue (liquid and / or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks, open flames, or incompatible materials.

Section 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation: Enclose operations and / or provide local exhaust ventilation to draw fumes, vapors, or mists away from workers. Ventilation must be adequate to maintain the ambient workplace atmosphere below the limits listed in Section 2.

Respiratory Protection: For protection against process vapors or mists, wear a NIOSH approved respirator suitable for the anticipated airborne concentration. Wear a positive pressure air-supplied respirator in situations where there may be potential for elevated airborne exposure.

Protective Equipment: During processing operations, splash proof goggles or safety glasses with face shield suitable for keeping liquid material out of the eyes should be worn when potential exists for eye contact. Rubber gloves and apron should be worn when skin contact is anticipated. Provide an eye wash facility and safety shower.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Specific Gravity (H₂O=1): 0.8

Flash Point: 64° F (17.6° C)

Boiling Point: 244° F (117° C)

Upper Explosion Limit: 3.5

Solubility in Water: Slight

Vapor Pressure: 15.7 mm Hg @ 20° C

Evaporation Rate: 1.6 (butyl acetate=1)

Lower Explosion Limit: 0.8

% Volatile by Weight: 100

Vapor Density: 3.5 (air=1)

Autoignition Temp: 840° F (444° C)

Appearance and Odor: Thin colorless liquid with a characteristic ketone odor.

Section 10 - STABILITY AND REACTIVITY

Stability: Stable

Hazardous Polymerization: Will not occur

Conditions to Avoid: Overheating, open flames, sparks, and contact with ignition sources.

Materials to Avoid: Oxidizing agents, reducing agents, and strong bases.

Hazardous Decomposition Products: Fumes produced when heated to decomposition temperatures may contain carbon monoxide, carbon dioxide, ketones, and aromatic and aliphatic hydrocarbons. Combustion products must be considered toxic.

Section 11 - TOXICOLOGICAL INFORMATION

Oral LD₅₀ (rat) - 2080 mg/kg Skin LD₅₀ (rabbit) - 20 mg/kg Inhalation LC₅₀ (mouse) – 23,300 mg/m³
Methyl Isobutyl Ketone has been reported to cause cardiac and CNS abnormalities in laboratory tests with animals.

Section 12 - ECOLOGICAL INFORMATION

In soil MIBK will undergo direct photolysis, volatilization, or aerobic biodegradation. In water will undergo direct photolysis and volatilization. In air will react with hydroxyl radicals or undergo direct photolysis. MIBK is slightly persistent in water with a half life of between 2 and 20 days. MIBK has slight acute and chronic toxicity to aquatic life and high toxicity to birds.

Section 13 - DISPOSAL CONSIDERATIONS

Waste resulting from this product as supplied may be classified as hazardous because of ignitability per the current listings and characteristics contained in 40 CFR Part 261, and its Appendices. It is the generator's responsibility to determine, per the regulation, the applicability of the Resource Conservation and Recovery Act (RCRA), as well as all state, local, or other governmental agency waste disposal regulations, to the particular waste materials prior to treatment or disposal. Disposal of liquid wastes and solids containing free liquids by land filling is prohibited in most jurisdictions. Incinerate or use biological treatment in accordance with federal, state, and local regulations. Containers of this product may be hazardous when emptied. Empty containers may retain product liquid and vapors.

Section 14 - TRANSPORTATION INFORMATION

For domestic transportation purposes, this product is defined or designated as a hazardous material by the U.S. Department of Transportation under Title 49 of the Code of Federal Regulations.

DOT Hazard Class	3
DOT Proper Shipping Name	Methyl Isobutyl Ketone, 3, UN 1245, PG II
DOT Label	Class 3
UN/NA Hazard No.	UN 1245

Section 15 - REGULATORY INFORMATION

TSCA Inventory Status: This product and all components are listed on the U.S. EPA Toxic Substances Control Act Inventory.

TSCA 12(b) Export Notification Status: This product does not contain any components subject to export notification requirements.

SARA 313 Status: This product contains Methyl Isobutyl Ketone (CAS 108-10-1) exceeding the exceeding the *de minimus* amount subject to reporting under Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR 372.

Additional Right-to-Know Information on Components:

Component	CAS #	Key (See below)	
Methyl Isobutyl Ketone	108-10-1	4, 9, 12, 14	*

Key	Description	Key	Description
1.	Reserved	8.	MA Extraordinary Hazardous Substance above 1 ppm
2.	CA Listed Carcinogen	9.	MA Toxic or Hazardous Substance above 1%
3.	CA Listed Reproductive Toxin	10.	NJ Hazardous Substance above 1%
4.	PA Special Hazardous Substance above 0.01%	11.	NJ Special Health Hazard Substance above 0.1%
5.	PA Hazardous Substance above 1%	12.	NJ Environmental Hazardous Substance above 1%
6.	PA Non-Hazardous Substance above 3%	13.	NJ Non-Hazardous Substance above 1%
7.	PA Non-Hazardous Substance above 5%	14.	Canadian WHMIS Ingredient Disclosure List Substance

Section 16 - ADDITIONAL INFORMATION

Hazard Rating System Classifications:

	NFPA	HMIS	Key: 0=least; 1=slight; 2=moderate; 3=high; 4=extreme
Health	2	2	National Fire Protection Association rating identifies hazards during a fire emergency.
Flammability	3	3	Hazardous Materials Identification System rating applies to products as packaged.
Reactivity	0	0	

It may be possible under certain processing and handling conditions, e.g. processes that create vapors, mists, or dust, to release unreacted monomers and other substances in airborne concentrations in excess of their established exposure limits or guidelines. Customers and processors should do sufficient in-house industrial hygiene monitoring to assure compliance of their operations.

Reason for (Re)issue: Revise Section 15.

User's Responsibility

This bulletin cannot cover all possible situations which the user may experience during processing. Each aspect of your operation must be examined to determine if, or where, additional precautions may be necessary. All health and safety information contained in this bulletin must be provided to your employees or customers. It is your responsibility to use this information to develop appropriate work practice guidelines and employee instructional programs for your operation.

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