



Methyl Ethyl Ketone

Material Safety Data Sheet

Arkema Inc.

1 PRODUCT AND COMPANY IDENTIFICATION

Thio and Fine Chemicals

Arkema Inc.
2000 Market Street
Philadelphia, PA 19103

EMERGENCY PHONE NUMBERS:

Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887
Medical: Rocky Mountain Poison Control Center
(866) 767-5089 (24Hrs)

Information Telephone Numbers	Phone Number	Available Hrs
Customer Service	1-800-628-4453	8:30 to 5:30 EST

Product Name Methyl Ethyl Ketone
Product Synonym(s)
Chemical Family Ketone
Chemical Formula C₄H₈O
Chemical Name 2-Butanone
EPA Reg Num
Product Use Solvent for natural and synthetic resins.

2 COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name	CAS RegistryNumber	Typical Wt. %	OSHA
Methyl ethyl ketone	78-93-3	99.8%	Y

The substance(s) marked with a "Y" in the OSHA column, are identified as hazardous chemicals according to the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200)

This material is classified as hazardous under Federal OSHA regulation.

The components of this product are all on the TSCA Inventory list.

3 HAZARDS IDENTIFICATION

Emergency Overview

Colorless liquid with characteristic odor.

WARNING!

FLAMMABLE LIQUID AND VAPOR.

MAY CAUSE EYE AND SKIN IRRITATION.

PROLONGED EXPOSURE TO HIGH VAPOR CONCENTRATIONS CAN CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION INCLUDING HEADACHE, DIZZINESS, WEAKNESS, CONFUSION, NAUSEA, AND LOSS OF CONSCIOUSNESS.

Potential Health Effects

Inhalation and skin contact are expected to be the primary routes of occupational exposure to this material. Based on single exposure animal tests, it is considered to be no more than slightly toxic if swallowed, practically non-toxic if inhaled or absorbed through skin and moderately irritating to eyes and skin. Prolonged or repeated contact removes oils from the skin and may dry skin and cause irritation, redness and rash. High vapor concentrations are irritating to the eyes and respiratory tract, and may result in central nervous system (CNS) effects such as weakness, headache, dizziness, nausea, drowsiness and, in severe exposures, loss of consciousness. Mild to severe lung injury may occur if this material is drawn into the lungs (aspirated) during swallowing, or during vomiting after swallowing. Symptoms of injury may include increased breathing and heart rate, coughing and related signs of respiratory distress.

4 FIRST AID MEASURES

IF IN EYES, immediately flush with plenty of water for at least 15 minutes. Get medical attention.

IF ON SKIN, immediately flush with plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

IF SWALLOWED, do NOT induce vomiting. Give water to drink. Get medical attention immediately. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

IF INHALED, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

5 FIRE FIGHTING MEASURES**Fire and Explosive Properties**

Auto-Ignition Temperature	960 F (516 C)	
Flash Point	20 F (-6 C)	Flash Point Method
Flammable Limits- Upper	11.5%	
Lower	1.8%	

Extinguishing Media

Use water spray, carbon dioxide, foam, dry powder. Do NOT use water in form of a jet.

Fire Fighting Instructions

Use water spray to cool containers exposed to fire. Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand NIOSH approved or equivalent). Fire fighting equipment should be thoroughly decontaminated after use.

Fire and Explosion Hazards

Heated material can form flammable and explosive vapors with air. Vapors can travel to a source of ignition and flash back.

6 ACCIDENTAL RELEASE MEASURES**In Case of Spill or Leak**

Extinguish or turn off all ignition sources. Contain spill with inert materials. Collect with non-sparking tools to a suitable container. Flush with water. Wear appropriate personal protective equipment as indicated in section 8 of this MSDS. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

7 HANDLING AND STORAGE**Handling**

Avoid breathing vapor. Do not get in eyes, on skin or clothing. Do not taste or swallow. Wash thoroughly after handling. Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. Use grounding and bonding connection when transferring material to prevent static discharges, fire or explosion. Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed. DO NOT CUT OR WELD ON OR NEAR THIS CONTAINER.



7 HANDLING AND STORAGE

Storage

Store in well ventilated area away from heat and sources of ignition such as flame, sparks and static electricity. Ensure that all storage and handling equipment is properly rated, grounded and installed to satisfy electrical classification requirements. Static electricity may accumulate and create a fire hazard. All storage containers, including containers such as drums, cylinders and IBC's, must be bonded and grounded during filling and emptying operations. Store away from oxidizers and reactive materials. Keep container tightly closed. Observe all federal, state and local regulations and National Fire Protection Association (NFPA) Codes which pertain to the specific local conditions of storage and use, including OSHA 29 CFR 1910.106 and NFPA 30, 70, 77, and 497. Store out of direct sunlight in a cool, well-ventilated place. Store at temperatures below 30 C.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls

Investigate engineering techniques to reduce exposures below airborne exposure limits. Provide ventilation if necessary to control exposure levels below airborne exposure limits (see below). Dilution ventilation acceptable, but local mechanical exhaust ventilation preferred, if practical, at sources of air contamination such as open process equipment.

Eye / Face Protection

Where there is potential for eye contact, wear chemical goggles and have eye flushing equipment immediately available.

Skin Protection

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Wear face shield and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse contaminated skin promptly. Wash contaminated clothing and clean protective equipment before reuse. Wash skin thoroughly after handling.

Respiratory Protection

Avoid breathing vapor or mist. When airborne exposure limits are exceeded (see below), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

Other Protective Equipment

Rubber boots, Apron.

Airborne Exposure Guidelines for Ingredients

Exposure Limit		Value
Methyl ethyl ketone		
ACGIH STEL	-	300 ppm (885 mg/m3)
ACGIH TWA	-	200 ppm (590 mg/m3)
OSHA TWA PEL	-	200 ppm (590 mg/m3)

-Only those components with exposure limits are printed in this section.

-Skin contact limits designated with a "Y" above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required.

-ACGIH Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic reactions.

-WEEL-AIHA Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic skin reactions.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance/Odor	Colorless liquid with characteristic odor.
pH	NE
Specific Gravity	0.81 @ 20 C
Vapor Pressure	9687 Pa (@20 C)
Vapor Density	2.41
Melting Point	NA
Freezing Point	-124 F (-86.6 C)
Boiling Point	175.3 F (79.6 C)
Solubility In Water	Partial
Molecular Weight	72.12

10 STABILITY AND REACTIVITY**Stability**

This material is chemically stable under normal and anticipated storage and handling conditions. However, avoid temperatures above 30 C.

Hazardous Polymerization

Hazardous polymerization is not known to occur.

Incompatibility

Contact with strong oxidizers, chlorinated hydrocarbons in the presence of alkalis, potassium butoxide may cause a rapid energy release. Contact with air may form explosive peroxides.

Hazardous Decomposition Products

Oxides of carbon including toxic carbon monoxide gas can be liberated at temperatures above ambient.

11 TOXICOLOGICAL INFORMATION**Toxicological Information**

Data on this material and/or its components are summarized below.

Single exposure (acute) studies indicate:

Oral - No More than Slightly Toxic to Rats (LD50 2,700-5,600 mg/kg)

Dermal - Practically Non-toxic to Rabbits (LD50 5,000-13,000 mg/kg)

Inhalation - Practically Non-toxic to Rats (4-hr LC50 11,700 ppm)

Eye Irritation - Moderately Irritating to Rabbits

Skin Irritation - Moderately Irritating to Rabbits Methyl Ethyl Ketone

Repeated exposure of humans produced no skin irritation or skin allergy. Central nervous system (CNS) effects and peripheral neuropathy have been reported in the industrial setting following exposure to mixtures containing this material; however, these mixtures contained other solvents known to cause nervous system injury.

Following repeated inhalation exposure, slight changes in organ weights and blood chemistry were reported in rats. No evidence of nervous system injury following long-term inhalation exposure has been observed in rats, chickens, mice or cats. Animal studies have shown an increased severity of, or shortened onset of, irreversible nervous system effects due to n-hexane and methyl butyl ketone, as well as effects of chloroform and carbon tetrachloride. No increase in the incidence of tumors was observed in long-term skin application studies in mice. A small number of major birth defects were reported in the offspring of rats exposed by inhalation during pregnancy at a level that produced toxic effects in the offspring, but not in the mothers. However, no birth defects were found in a second study with rats using very similar exposure conditions, while adverse effects were noted in the mothers and their offspring. In mice exposed by inhalation during pregnancy, toxic effects were observed in the mothers (mild effects only) and their offspring. Generally, no genetic changes were

11 TOXICOLOGICAL INFORMATION

observed in tests using bacteria, animal cells or animals.

12 ECOLOGICAL INFORMATION**Ecotoxicological Information**

Data on this material and/or its components are summarized below.

Methyl Ethyl Ketone

This material is practically non-toxic to goldfish, brine shrimp, Daphnia magna, fathead minnow, mosquito fish, bluegill sunfish and golden orfe (LC50s >1,000 mg/l). It inhibits fungal growth and is reported to be bacteriostatic to several microorganisms at levels of 10-100 mg/l. Growth inhibition has also been reported for freshwater algae at levels ranging from 120 mg/l (blue-green algae) to 4,300 mg/l (green algae).

Chemical Fate Information

Data on this material and/or its components are summarized below.

Methyl Ethyl Ketone

This material is readily biodegradable (89% after 20-days). It is practically not bioaccumulable (log Pow 0.29) and is slightly adsorbed in soils and sediments (log Koc 0.71). This material is rapidly degraded by OH radicals in air (half-life 6.9-days) and has an evaporation half-life of 27.1-hours. It is non-toxic to sludge microorganisms at concentrations up to 800 ug/l.

13 DISPOSAL CONSIDERATIONS**Waste Disposal**

Incineration is the recommended method for disposal observing all local, state and federal regulations. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

14 TRANSPORT INFORMATION

DOT Name	Ethyl Methyl Ketone
DOT Technical Name	
DOT Hazard Class	3
UN Number	UN 1193
DOT Packing Group	PG II
RQ	5,000 lbs.

15 REGULATORY INFORMATION**Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370)**

Immediate (Acute) Health	Y	Fire	Y
Delayed (Chronic) Health	N	Reactive	N
		Sudden Release of Pressure	N

The components of this product are all on the TSCA Inventory list.



Methyl Ethyl Ketone

Material Safety Data Sheet

Arkema Inc.

Ingredient Related Regulatory Information:

SARA Reportable Quantities

Methyl ethyl ketone

CERCLA RQ

SARA TPQ

5000 LBS

SARA Title III, Section 313

This product does contain chemical(s) which are defined as toxic chemicals under and subject to the reporting requirements of, Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. See Section 2

Methyl ethyl ketone

DEA - precursor element

This product does contain the following chemical(s), as indicated below, currently on the DEA Final Precursors and Essential Chemicals Listed Components list.

Methyl ethyl ketone

Massachusetts Right to Know

This product does contain the following chemical(s), as indicated below, currently on the Massachusetts Right to Know Substance List.

Methyl ethyl ketone

New Jersey Right to Know

This product does contain the following chemical(s), as indicated below, currently on the New Jersey Right-to-Know Substances List.

Methyl ethyl ketone

Pennsylvania Environmental Hazard

This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Environmental Hazard List.

Methyl ethyl ketone

Pennsylvania Right to Know

This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Hazardous Substance List.

Methyl ethyl ketone

16 OTHER INFORMATION

Revision Information

Revision Date 28 DEC 2004

Revision Number 7

Supersedes Revision Dated 11-OCT-2004

Revision Summary

Product moved to new division

Key

NE= Not Established NA= Not Applicable (R) = Registered Trademark

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