

Product Information: 203.740.3471 Emergency Assistance (CHEMTREC): 1.800.424.9300 (USA)
+1.703.527.3887 (INT)

SAFETY DATA SHEET

Methyl Ethyl Ketone (MEK) 2-Butanone

This MSDS is valid for all grades and catalog #'s beginning with
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1. IDENTIFICATION OF SUBSTANCE / MIXTURE AND OF SUPPLIER

Product Identifier: High Purity Chemicals
Synonyms: 2-Butanone; Ethyl Methyl Ketone; MEK; Methyl Acetone
Other means of identification: CAS No. 78-93-3
EINECS No. 201-159-0

Recommended use of the chemical and restrictions on use:
General use organic solvent.

Supplier Details:

Pharmco Products, Inc.
1101 Isaac Shelby Drive, Shelbyville,
KY 40065, USA.
Tel: 502.232.7600
Fax: 502.633.6100
CCN17213

Pharmco Products, Inc.
58 Vale Road, Brookfield,
CT 06804, USA.
Tel: 203.740.3471
Fax: 203.740.3481
CCN17213

Emergency Contact: CHEMTREC: 1.800.424.9300 (USA) / +1.703.527.3887 (International)



2. HAZARDS IDENTIFICATION

OSHA Hazards:

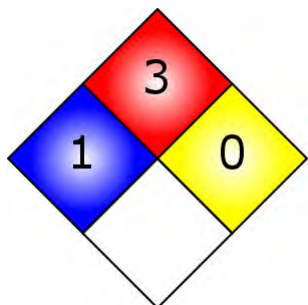
Flammable liquid, Irritant, Target organ effect

Target Organs:

Central nervous system, Eyes, Heart, Kidney, Liver

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NFPA



GHS label elements, including precautionary statements



Signal Word:

DANGER!

Hazard statement(s)

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

Precautionary statement(s)

P261	Avoid breathing dust/fumes/gas/mist/vapors.
P312	Call a POISON CENTER or doctor/ physician if you feel unwell.
P501	Dispose of contents and container to an approved waste disposal plant.
P240	Ground/bond container and receiving equipment.
P337 + P313	If eye irritation persists: Get medical attention.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical attention.
P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P303 + P361 + P353	IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P210	Keep away from heat, sparks, open flames, and hot surfaces. No

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P233	smoking.
P102	Keep container tightly closed.
P403 + P233	Keep out of reach of children.
P403 + P235	Store in a well-ventilated place. Keep container tightly closed.
P405	Store in a well-ventilated place. Keep cool.
P243	Store locked up.
P241	Take precautionary measures against static discharge.
P242	Use explosion-proof electrical, ventilating, and lighting equipment.
P271	Use only non-sparking tools.
P264	Use only outdoors or in a well-ventilated area.
P280	Wash hands thoroughly after handling.
	Wear protective gloves and eye and face protection.

GHS Classification(s)

- Eye irritation (Category 2)
- Flammable Liquids (Category 2)
- Specific target organ toxicity - single exposure (Category 3)

Other hazards which do not result in classification:

Potential Health Effects:

Organ	Description
Eyes	Irritating to the eyes.
Ingestion	Can be harmful if swallowed.
Inhalation	Can be harmful, causing irritation to the respiratory tract if inhaled. Vapors can have a narcotic effects on individuals leaving them feeling drowsy or dizzy.
Skin	Can be harmful, causing irritation, if absorbed through skin.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Chemical identity:	Methyl Ethyl Ketone
Common name / Synonym:	2-Butanone; Ethyl Methyl Ketone; MEK; Methyl Acetone
CAS number:	78-93-3
EINECS number:	201-159-0
ICSC number:	0179
RTECS #:	EL6475000
UN #:	1193
EC #:	606-002-00-3

% Weight	Material	CAS
100	Methyl Ethyl Ketone	78-93-3

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4. FIRST AID MEASURES

General advice

Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid. Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

Skin

Wash skin with soap and copious amounts of water. Seek medical attention.

Inhalation

Remove person to fresh air. If signs/symptoms continue, get medical attention. Give oxygen or artificial respiration as needed.

Eyes

Thoroughly flush the eyes with large amounts of clean low-pressure water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation persists, seek medical attention.

Ingestion

DO NOT induce vomiting. If vomiting does occur, have victim lean forward to prevent aspiration. Rinse mouth with water. Seek medical attention. Never give anything by mouth to an unconscious individual.

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products):

Carbon oxides expected to be the primary hazardous combustion product.

Special protective equipment and precautions for firefighters:

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Keep unopened containers cool by spraying with water.

Flammable Properties

Classification

OSHA/NFPA Class IB Flammable Liquid.

Flash point

-9 °C (16 °F) - Closed Cup

Autoignition temperature

404 °C (759 °F)

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

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Do not inhale vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Environmental precautions:

Stop leak. Contain spill if possible and safe to do so. Prevent product from entering drains.

Methods and materials for containment and cleaning up:

Contain spill, then collect with an electrically protected vacuum cleaner or by wet-brushing and put the material into a convenient waste disposal container. Keep container closed.

7. HANDLING AND STORAGE

Precautions for safe handling:

Do not get on skin or in eyes. Do not inhale vapor or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the buildup of electrostatic charge.

Conditions for safe storage, including any incompatibilities:

Keep container tightly closed in a cool, dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Avoid moisture.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters, e.g., occupational exposure limit values or biological limit values:

Occupational Exposure Limits

Component	Source	Type	Value	Note
Methyl Ethyl Ketone	US (ACGIH)	STEL	300 ppm	
Methyl Ethyl Ketone	US (ACGIH)	TWA	200 ppm	

Appropriate engineering controls:

General room or local exhaust ventilation is usually required to meet exposure limit(s). Electrical equipment should be grounded and conform to applicable electrical code.

Individual protection measures, such as personal protective equipment:

Respiratory protection:

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection:

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching

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glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Use equipment approved by appropriate government standards, such as NIOSH (US) or EN166 (EU) Maintain eye wash fountain and quick-drench facilities in work area.

Skin and body protection:

Wear impervious, flame retardant, antistatic protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Hygiene measures:

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (<i>physical state, color, etc.</i>)	Liquid. Colorless, clear.
Odor	Specific data not available
Odor threshold	Specific data not available
pH	Specific data not available
Freezing point	-87 °C (-125 °F)
Initial boiling point and boiling range	80 °C (176 °F)
Flash point	-9 °C (16 °F) - Closed Cup
Evaporation rate	Specific data not available
Flammability (solid, gas)	Specific data not available
Upper / Lower flammability or explosive limits	10.1%(V) / 1.8%(V)
Vapor pressure	95 hPa (71 mmHg) at 20 °C (68 °F)
Vapor Density	2.5
Relative Density	0.805 g/mL at 25 °C (77 °F)
Solubility(ies)	Miscible
Partition coefficient n-octanol/water(ies)	log Pow: 0.3
Auto-ignition temperature	404 °C (759 °F)
Decomposition temperature	Specific data not available
Formula (METHYL ETHYL KETONE)	C4H8O
Molecular Weight (METHYL ETHYL KETONE)	72.11 g/mol

10. STABILITY AND REACTIVITY

Chemical Stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	Vapors may form explosive mixture with air.
Conditions to avoid (e.g., static discharge, shock or vibration)	Heat, flames, and sparks. Extreme temperatures and direct sunlight.

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Incompatible materials	Strong oxidizing agents, strong reducing agents
Hazardous decomposition products	Carbon oxides are expected to be, under fire conditions, the primary hazardous decomposition products.

11. TOXICOLOGICAL INFORMATION

- Methyl Ethyl Ketone 78-93-3

Product Summary:

No data available for the mutagenic, teratogenic, or reproductive effects of the product. No data available to designate product as an aspiration hazard or to cause specific target organ toxicity through repeated exposure.

Acute Toxicity:

LC50 (Inhalation)	Rat	23500 mg/m ³	8 hours
LD50 (Oral)	Rat	2737 mg/Kg	
LD50 (Skin)	Rabbit	6480 mg/kg	

Irritation:

Eyes

Causes eye irritation.

Respiratory or Skin Sensitization

No data available

Skin (METHYL ETHYL KETONE)

Draize test, rabbit, skin: 500 mg/24H; Moderate skin irritation.

Specific target organ toxicity - single exposure (Globally Harmonized System)

Inhalation - May cause drowsiness, dizziness, or an overall narcotic effect. - Central Nervous System

Carcinogenicity

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

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

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

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

Other Hazards

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Organ	Description
Eyes	Irritating to the eyes. May result in corneal injury.
Ingestion	May cause irritation of the digestive tract. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure.
Inhalation	Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. Causes respiratory tract irritation. Irritation may lead to chemical pneumonitis and pulmonary edema. May cause numbness in the extremities.
Skin	May be absorbed through the skin in harmful amounts. Prolonged and/or repeated contact may cause irritation and/or dermatitis.
Chronic	Chronic inhalation may cause effects similar to those of acute inhalation. Prolonged or repeated skin contact may cause defatting and dermatitis. Animal studies have reported that fetal effects/abnormalities may occur when maternal toxicity is seen.

12. ECOLOGICAL INFORMATION

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Ecotoxicity (aquatic and terrestrial, where available):

Acute Fish Toxicity (METHYL ETHYL KETONE)

LC50 / 96 hours Fathead Minnow 3220 mg/L

Toxicity to Microorganisms (METHYL ETHYL KETONE)

EC50 / 30 min Phytobacterium phosphoreum 3373 mg/L

Persistence and degradability:

No data available

Bioaccumulative potential:

No data available

Other adverse effects:

No data available

13. DISPOSAL CONSIDERATIONS

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging:

Vapors may collect in empty containers. Treat empty containers as hazardous. Dispose of spill-clean up and other wastes in accordance with federal, state, and local regulations.

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14. TRANSPORT INFORMATION

Description of waste residues and information on their safe handling and methods of disposal:

UN number	1193
UN proper shipping name	Methyl ethyl ketone
Transport hazard class(es)	3
Packing group (if applicable)	II

Reportable Quantity

5,000 lbs

IMDG

UN-Number: 1193 Class: 3 Packing Group: II

EMS-No: F-E, S-D

Proper shipping name: METHYL ETHYL KETONE

Marine pollutant: No

IATA

UN-Number: 1193 Class: 3 Packing Group: II

Proper shipping name: Methyl ethyl ketone

15. REGULATORY INFORMATION

Safety, health and environmental regulations specific for the product in question:

OSHA Hazards

Flammable liquid, Irritant, Target organ effect

All ingredients are on the following inventories or are exempted from listing

Country	Notification
Australia	AICS
Canada	DSL
China	IECS
European Union	EINECS
Japan	ENCS/ISHL
Korea	ECL
New Zealand	NZIoC
Philippines	PICCS
United States of America	TSCA

SARA 302 Components

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

SARA 313 Components

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the

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threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards

Acute Health Hazard
Chronic Health Hazard
Fire Hazard

CERCLA

Methyl Ethyl Ketone CAS-No. 78-93-3, RQ: 5,000 lbs

Massachusetts Right To Know Components

Methyl ethyl ketone CAS-No. 78-93-3 Revision Date 2007-03-01

Pennsylvania Right To Know Components

Methyl ethyl ketone CAS-No. 78-93-3 Revision Date 2007-03-01

New Jersey Right To Know Components

Methyl ethyl ketone CAS-No. 78-93-3 Revision Date 2007-03-01

California Prop 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION: INCLUDING INFORMATION ON PREPARATION AND REVISION OF THE SDS

Disclaimer

PHARMCO-AAPER believes that the information on this MSDS was obtained from reliable sources. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, PHARMCO-AAPER does not assume responsibility and expressly disclaims liability for loss, damage, or expense arising out of or in any way connected with handling, storage, use, or disposal of this product. If the product is used as a component in another product, this MSDS information may not be applicable. Information is correct to the best of our knowledge at the date of the MSDS publication.