

SAFETY DATA SHEET

Methyl tert-Butyl Ether (MTBE)

This MSDS is valid for all grades that start with catalog number 357

1. IDENTIFICATION OF SUBSTANCE / MIXTURE AND OF SUPPLIER

Product Identifier: High Purity Chemicals
Synonyms: 2-Methoxy-2-methylpropane; tert-Butyl methyl ether; Methyl 1,1-dimethyl ethyl ether: MTBE; butyl methyl ether; t-butyl methyl ether
Other means of identification: CAS No. 1634-04-4
EINECS No. 216-653-1

Recommended use of the chemical and restrictions on use:

Commonly used as an additive in fuel

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
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CCN17213



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

2. HAZARDS IDENTIFICATION

OSHA Hazards:

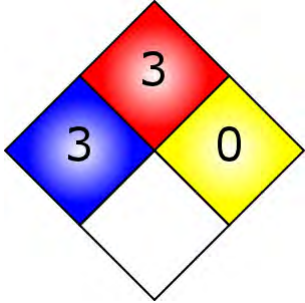
Flammable liquid, Irritant

Target Organs:

Central nervous system, Kidney

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NFPA



GHS label elements, including precautionary statements



Signal Word:

DANGER!

Hazard statement(s)

H225

Highly flammable liquid and vapor.

H315

Causes skin irritation.

Precautionary statement(s)

P302 + P352

IF ON SKIN: Wash with plenty of soap and water.

P210

Keep away from heat, sparks, open flames, and hot surfaces. No smoking.

P403 + P235

Store in a well-ventilated place. Keep cool.

P243

Take precautionary measures against static discharge.

P280

Wear protective gloves and eye and face protection.

GHS Classification(s)

Flammable Liquids (Category 2)

Skin irritation (Category 2)

Other hazards which do not result in classification:

Potential Health Effects:

Organ	Description
Eyes	Irritating to the eyes.

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Ingestion	Can be harmful through ingestion
Inhalation	Can be fatal if inhale. Product can be irritating to the respiratory tract.
Skin	Can be irritating to the skin. Can cause harm if absorbed through the skin.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Chemical identity:	Methyl tert-Butyl Ether
Common name / Synonym:	2-Methoxy-2-methylpropane; tert-Butyl methyl ether; Methyl 1,1-dimethyl ethyl ether: MTBE; butyl methyl ether; t-butyl methyl ether
CAS number:	1634-04-4
EINECS number:	216-653-1
ICSC number:	1164
RTECS #:	KN5250000
UN #:	2398
EC #:	603-181-00-X

% Weight	Material	CAS
100	Methyl tert-Butyl Ether	1634-04-4

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

Flush eyes with water as a precaution.

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.

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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

-27 °C (-17 °F) - Closed Cup

Autoignition temperature

435 °C (815 °F)

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

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.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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

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Occupational Exposure Limits

Component	Source	Type	Value	Note
Methyl tert-Butyl Ether	US (ACGIH)	TWA	50 ppm	ACGIH Threshold Limit Value

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 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 (physical state, color, etc.)	Liquid.
Odor	Terpene-like
Odor threshold	Specific data not available
pH	Specific data not available
Freezing point	-109 °C (-164 °F)
Initial boiling point and boiling range	55 °C (131 °F)
Flash point	-27 °C (-17 °F) - Closed Cup
Evaporation rate	Specific data not available
Flammability (solid, gas)	Specific data not available

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Upper / Lower flammability or explosive limits	8.4 %(V) / 1.6 %(V)
Vapor pressure	279 hPa (209 mmHg) at 20 °C (68 °F)
Vapor Density	Specific data not available
Relative Density	0.74 g/cm ³ at 25 °C (77 °F)
Solubility(ies)	Soluble in water
Partition coefficient n-octanol/water(ies)	log Pow: 1.06
Auto-ignition temperature	435 °C (815 °F)
Decomposition temperature	Specific data not available
Formula (METHYL TERT-BUTYL ETHER)	C ₅ H ₁₂ O
Molecular Weight (METHYL TERT-BUTYL ETHER)	88.15 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.
Incompatible materials	Strong acids, oxidizing agents
Hazardous decomposition products	Carbon oxides are expected to be, under fire conditions, the primary hazardous decomposition products.

11. TOXICOLOGICAL INFORMATION

- Methyl tert-Butyl Ether 1634-04-4

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 single or repeated exposure.

Acute Toxicity:

LC50 (Inhalation)	Rat	23,576 ppm	4 hours
LD50 (Oral)	Rat	4,000 mg/kg	

Irritation:

Eyes

Rabbit - no eye irritation

Respiratory or Skin Sensitization

No data available

Skin

Rabbit - skin irritation

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Carcinogenicity

IARC: Not classifiable as a human carcinogen.

ACGIH: No data is available.

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

Organ	Description
Eyes	Irritating to the eyes.
Ingestion	Can be harmful through ingestion.
Inhalation	Can be irritating to the respiratory tract if inhaled.
Skin	Can be irritating to the skin.

12. ECOLOGICAL INFORMATION

- Methyl tert-Butyl Ether 1634-04-4

Ecotoxicity (aquatic and terrestrial, where available):

Acute Fish Toxicity (METHYL TERT-BUTYL ETHER)

LC50 / 96 hours / Fathead Minnow - 672 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:

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Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION

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

UN number	2398
UN proper shipping name	Methyl tert-butyl ether
Transport hazard class(es)	3
Packing group (if applicable)	II

Reportable Quantity

1,000 lbs

IMDG

UN-Number: 2398 Class: 3 Packing Group: II

EMS-No: F-E, S-D

Proper shipping name: METHYL TERT-BUTYL ETHER)

Marine pollutant: No

IATA

UN-Number: 2398 Class: 3 Packing Group: II

Proper shipping name: Methyl tert-butyl ether

15. REGULATORY INFORMATION

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

OSHA Hazards

Flammable liquid, Irritant

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

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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

The following components are subject to reporting levels established by SARA Title III, Section 313: METHYL TERT-BUTYL ETHER CAS-No. 1634-04-4 Revision Date 2007-07-01

SARA 311/312 Hazards

Acute Health Hazard
Chronic Health Hazard
Fire Hazard

CERCLA

Methyl tert-Butyl Ether CAS-No. 1634-04-4, RQ: 1,000 lbs

Massachusetts Right To Know Components

Methyl tert-Butyl Ether CAS-No. 1634-04-4 Revision Date 2007-07-01

Pennsylvania Right To Know Components

Methyl tert-Butyl Ether CAS-No. 1634-04-4 Revision Date 2007-07-01

New Jersey Right To Know Components

Methyl tert-Butyl Ether CAS-No. 1634-04-4 Revision Date 2007-07-01

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

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