

CAMEO Chemicals

Chemical Datasheet

METHYL TERT-BUTYL ETHER



Chemical Identifiers

CAS Number 1634-04-4

UN/NA Number 2398 **DOT Hazard Label** Flammable Liquid **CHRIS Code** MBE

NFPA 704

data unavailable

General Description

A colorless liquid with a distinctive anesthetic-like odor. Vapors are heavier than air and narcotic. Boiling point 131°F. Flash point 18°F. Less dense than water and miscible in water. Used as a octane booster in gasoline.

Hazards

Reactivity Alerts

Highly Flammable

Neroxidizable Compound

Air & Water Reactions

Highly flammable. Oxidizes readily in air to form unstable peroxides that may explode spontaneously [Bretherick 1979. p.151-154, 164]. A mixture of liquid air and diethyl ether exploded spontaneously [MCA Case History 616. 1960].

Fire Hazard

Special Hazards of Combustion Products: May contain irritating and toxic gases.

Behavior in Fire: May be ignited by heat, sparks or flames. Containers may explode in heat of fire. Vapor explosion hazard indoors, outdoors, or in sewers. (USCG, 1999)

Health Hazard

INHALATION: May cause dizziness or suffocation. Contact may irritate or burn eyes or skin. May be harmful if swallowed. (USCG, 1999)

Reactivity Profile

Ethers, such as METHYL TERT-BUTYL ETHER, can act as bases. They form salts with strong acids and addition complexes with Lewis acids. The complex between diethyl ether and boron trifluoride is an example.

Ethers may react violently with strong oxidizing agents. In other reactions, which typically involve the breaking of the carbon-oxygen bond, ethers are relatively inert.

Belongs to the Following Reactive Group(s)

• Ethers

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

Excerpt from GUIDE 127 [Flammable Liquids (Polar / Water-Miscible)]:

As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.

LARGE SPILL: Consider initial downwind evacuation for at least 300 meters (1000 feet).

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2012)

Firefighting

Excerpt from GUIDE 127 [Flammable Liquids (Polar / Water-Miscible)]:

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

SMALL FIRE: Dry chemical, CO2, water spray or alcohol-resistant foam.

LARGE FIRE: Water spray, fog or alcohol-resistant foam. Do not use straight streams. Move containers from fire area if you can do it without risk.

FIRE INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. (ERG, 2012)

Non-Fire Response

Excerpt from GUIDE 127 [Flammable Liquids (Polar / Water-Miscible)]:

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean non-sparking tools to collect absorbed material.

LARGE SPILL: Dike far ahead of liquid spill for later disposal. Water spray may reduce vapor; but may not prevent ignition in closed spaces. (ERG, 2012)

Protective Clothing

Wear goggles, self-contained breathing apparatus, rubber gloves, boots and overclothing. (USCG, 1999)

DuPont Tychem® Suit Fabrics

Normalized Breakthrough Times (in Minutes)

Chemical	CAS Number	State	QC	SL	TF	ТР	C3	BR	LV	RC	тк	RF
Methyl tert-butyl ether	1634-04-4	Liquid		>480	>480	>480	>480	>480	>480	>480	>480	>480

> indicates greater than.

A blank cell indicates the fabric has not been tested. The fabric may or may not offer barrier.

Special Warnings from DuPont

- 1. Serged and bound seams are degraded by some hazardous liquid chemicals, such as strong acids, and should not be worn when these chemicals are present.
- 2. CAUTION: This information is based upon technical data that DuPont believes to be reliable. It is subject to revision as additional knowledge and experience are gained. DuPont makes no guarantee of results and assumes no obligation or liability...

(DuPont, 2013)

First Aid

INHALATION: Move victim to fresh air; call emergency medical care. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

EYES OR SKIN: Flush with running water for at least 15 minutes; hold eyelids open if necessary. Remove and isolate contaminated clothing and shoes at the site. Keep victim quiet and maintain normal body temperature.

INGESTION: If victim is unconscious or having convulsions, do nothing except keep victim warm. (USCG, 1999)

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Chemical Formula: C5H12O

Flash Point: -14 ° F (USCG, 1999)

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: data unavailable

Melting Point: -164.2 ° F (USCG, 1999)

Vapor Pressure: data unavailable

Vapor Density (Relative to Air): data unavailable

Specific Gravity: 0.7405 at 68.0 ° F (USCG, 1999)

Boiling Point: 131.4 ° F at 760.0 mm Hg (USCG, 1999)

Molecular Weight: 88.15 (USCG, 1999)

Water Solubility: data unavailable

IDLH: data unavailable

AEGLs (Acute Exposure Guideline Levels)

Interim AEGLs for Methyl-tertiary-butyl ether (MTBE) (1634-04-4)

Exposure Period	AEGL-1	AEGL-2	AEGL-3
10 minutes	50 ppm	1400 ppm	13000 ppm 👋 👋

http://cameochemicals.noaa.gov/report?key=CH7091

3/9/2015

Report | CAMEO Chemicals | NOAA

30 minutes	50 ppm	800 ppm	7500 ppm 👋
60 minutes	50 ppm	570 ppm	5300 ppm 👋
4 hours	50 ppm	400 ppm	2700 ppm 👋
8 hours	50 ppm	400 ppm	1900 ppm 👋

Lower Explosive Limit (LEL) = 16000

W indicates value is 10-49% of LEL. Safety consideration against explosions must be taken into account.

♦ ♦ indicates value is 50-99% of LEL. Extreme safety consideration against explosions must be taken into account.

(NAC/NRC, 2013)

ERPGs (Emergency Response Planning Guidelines)

Chemical	ERPG-1	ERPG-2	ERPG-3	
Methyl tert-Butyl Ether (MTBE) (1634-04- 4)	50 ppm 🕸	1000 ppm	5000 ppm 👋	LEL = 16000 ppm

Indicates that odor should be detectable near ERPG-1.

✤ indicates value is 10-49% of LEL.

(AIHA, 2013)

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3	
Methyl tert-butyl ether; (MTBE) (1634-04- 4)	50 ppm	570 ppm	5300 ppm 👋	LEL = 16000 ppm

indicates value is 10-49% of LEL.

(SCAPA, 2012)

Regulatory Information

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112(r) RMP TQ
Methyl tert-butyl ether	1634-04-4			1000	313		

(EPA List of Lists, 2012)

Alternate Chemical Names

- 1,1-DIMETHYLETHYL METHYL ETHER
- ETHER, TERT-BUTYL METHYL
- 2-METHOXY-2-METHYL PROPANE
- 2-METHOXY-2-METHYLPROPANE
- METHYL 1,1-DIMETHYLETHYL ETHER
- METHYL TERT BUTYL ETHER
- METHYL TERT-BUTYL ETHER
- METHYL TERTIARY BUTYL ETHER
- 2-METHYL-2-METHOXY PROPANE
- 2-METHYL-2-METHOXYPROPANE

- MTBE
- T-BUTYL METHYL ETHER
- TERT-BUTOXYMETHANE
- TERT-BUTYL METHYL ETHER