

MSDS

Material Safety Data Sheets

Material Safety Data Sheet

Tert-Butyl Methyl Ether

1. Chemical Product Identification

Product Name: Tert-Butyl Methyl Ether

Supplier: Zista Group

Synonyms: 2-Methyl-2-methoxy propane; MTBE; Methyl tert-butyl ether

CAS No.: 1634-04-4

2. Composition/Information on Ingredients

- **Composition:**

Name	CAS #	% by Weight
Methyl tert-butyl ether	1634-04-4	>95

3. Hazards Identification

- **Emergency Overview:** Flammable liquid and vapor. Irritating to eyes and skin. May cause irritation of respiratory tract.
 - ✓ **Appearance:** Colorless
 - ✓ **Physical State:** Liquid
 - ✓ **Odor:** Petroleum distillates
- **Target Organs:** Skin, Eyes, Central nervous system (CNS), Liver, Kidney, Blood
 - ✓ **Eye:** Irritating to eyes
 - ✓ **Skin:** Irritating to skin. May be harmful in contact with skin.
 - ✓ **Inhalation:** May cause irritation of respiratory tract. Inhalation may cause central nervous system effects. May be harmful if inhaled.
 - ✓ **Ingestion:** May be harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
 - ✓ **Chronic Effects:** Tumorigenic effects have been reported in experimental animals. Experiments have shown reproductive toxicity effects on laboratory animals. May cause adverse liver effects. May cause adverse kidney effects.
- **Aggravated Medical Conditions:** No information available.

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4. First Aid Measures

- **Eye Contact:** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.
- **Skin Contact:** Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.
- **Inhalation:** Move to fresh air. If breathing is difficult, give oxygen. Get medical attention immediately if symptoms occur.
- **Ingestion:** Do not induce vomiting. Obtain medical attention.
- **Notes to Physician:** Treat symptomatically.

5. Fire-fighting Measures

- **Flash Point:** -28°C / -18.4°F
- **Auto ignition Temperature:** 224°C / 435.2°F
- **Explosion Limit:**
 - Upper: 15.1 vol %
 - Lower: 1.6 vol %
- **Suitable Extinguishing Media:** Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Cool closed containers exposed to fire with water spray.
- **Unsuitable Extinguishing Media:** No information available.
- **Hazardous Combustion Products:** No information available.
- **Specific Hazards Arising from the Chemical:** Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.
- **Protective Equipment and Precautions for Firefighters:** As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

6. Accidental Release Measures

- **Personal Precautions:** Use personal protective equipment. Remove all sources of ignition. Take precautionary measures against static discharges.

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- **Environmental Precautions:** Should not be released into the environment.
- **Methods for Containment and Clean Up:** Soak up with inert absorbent material. Keep in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

7. Handling and Storage

- **Handling:** Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. Use explosion-proof equipment. Take precautionary measures against static discharges. Use only under a chemical fume hood.
- **Storage:** Keep containers tightly closed in a dry, cool and well-ventilated place. Flammables area. Keep away from heat and sources of ignition.

8. Exposure Controls/Personal Protection

- **Engineering Measures:** Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting/equipment.
- **Exposure Guidelines:**

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
Methyl tert-butyl ether	TWA: 50 ppm		

Component	Quebec	Mexico OEL (TWA)	Ontario TWAEV
Methyl tert-butyl ether	TWA: 144 mg/m ³ TWA: 40 ppm		TWA: 40 ppm

- **Personal Protective Equipment:**
 - ✓ **Eye/face Protection:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
 - ✓ **Skin and body protection:** Wear appropriate protective gloves and clothing to prevent skin exposure.

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- ✓ **Respiratory Protection:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

9. Physical and Chemical Properties

Physical State	<i>Liquid.</i>
Appearance	<i>Colorless</i>
odor	<i>Petroleum distillates</i>
Odor Threshold	<i>No information available</i>
pH	<i>No information available</i>
Vapor Pressure	<i>268 mbar @ 20 °C</i>
Vapor Density	<i>0.2 (Air = 1.0)</i>
Viscosity	<i>0.36 mPa.s at 20 °C</i>
Boiling Point/Range	<i>54 - 56°C / 129.2 - 132.8°F</i>
Melting Point/Range	<i>-110°C / -166°F</i>
Decomposition temperature °C	<i>No information available.</i>
Flash Point	<i>-28°C / -18.4°F</i>
Evaporation Rate	<i>No information available.</i>
Specific Gravity	<i>0.740</i>
Solubility	<i>Slightly soluble in water</i>
log Pow	<i>No data available</i>
Molecular Weight	<i>88.15</i>
Molecular Formula	<i>C5 H12 O</i>

10. Stability and Reactivity

- **Stability:** Stable under normal conditions.
- **Conditions to Avoid:** Incompatible products. Excess heat. Keep away from open flames, hot surfaces and sources of ignition.
- **Incompatible Materials:** Strong oxidizing agents

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- **Hazardous Decomposition Products:** Carbon monoxide (CO), Carbon dioxide (CO₂)
- **Hazardous Polymerization:** Hazardous polymerization does not occur.
- **Hazardous Reactions:** None under normal processing

11. Toxicological Information

- **Acute Toxicity**

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Methyl tert-butyl ether	4 g/kg (Rat)	10000 mg/kg (Rabbit) 2000 mg/kg (Rat)	23576 ppm (Rat) 4 h 85 mg/L (Rat) 4 h

- **Irritation:** Irritating to eyes and skin
- **Toxicologically Synergistic Products:** No information available.

- **Chronic Toxicity**

- **Carcinogenicity:** The table below indicates whether each agency has listed any ingredient as a carcinogen. Limited evidence of a carcinogenic effect.

Component	ACGIH	IARC	NTP	OSHA	Mexico
Methyl tert-butyl ether	A3	group 3	Not listed	Not listed	Not listed

- **Sensitization:** No information available.
- **Mutagenic Effects:** Mutagenic effects have occurred in experimental animals.
- **Reproductive Effects:** Experiments have shown reproductive toxicity effects on laboratory animals.
- **Developmental Effects:** Developmental effects have occurred in experimental animals.
- **Teratogenicity: Teratogenic** effects have occurred in experimental animals..
- **Other Adverse Effects:** Tumorigenic effects have been reported in experimental animals. See actual entry in RTECS for complete information.

12. Ecological Information

- **Ecotoxicity:** Do not empty into drains.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Methyl tert-butyl ether	EC50 72 h >800 mg/L EC50 96 h 184 mg/L	Not listed	EC50 = 11.4 mg/L 30 min EC50 = 8.23 mg/L 5 min EC50 = 9.67 mg/L 15 min	EC50 48 h 542 mg/L

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- **Persistence and Degradability:** No information available
- **Bioaccumulation/ Accumulation:** No information available
- **Mobility**

Component	log Pow
Methyl tert-butyl ether	1.06

13. Disposal Considerations

- **Waste Disposal Methods:** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification

14. Transport Information

- **DOT**
 - ✓ **UN-No: UN2398**
 - ✓ **Proper Shipping Name: METHYL TERT-BUTYL ETHER**
 - ✓ **Hazard Class: 3**
 - ✓ **Packing Group: II**
- **TDG**
 - ✓ **UN-No: UN2398**
 - ✓ **Proper Shipping Name: METHYL TERT-BUTYL ETHER**
 - ✓ **Hazard Class: 3**
 - ✓ **Packing Group: II**
- **IATA**
 - ✓ **UN-No: UN2398**
 - ✓ **Proper Shipping Name: METHYL TERT-BUTYL ETHER**
 - ✓ **Hazard Class: 3**
 - ✓ **Packing Group: II**
- **IMDG/IMO:**
 - ✓ **UN-No: UN2398**
 - ✓ **Proper Shipping Name: METHYL TERT-BUTYL ETHER**
 - ✓ **Hazard Class: 3**

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✓ *Packing Group: II*

15. Regulatory Information

- *International Inventories:*

<i>Component</i>	<i>TSCA</i>	<i>DSL</i>	<i>NDSL</i>	<i>EINECS</i>	<i>ELINCS</i>	<i>NLP</i>	<i>PICCS</i>	<i>ENCS</i>	<i>AICS</i>	<i>CHINA</i>	<i>KECL</i>
Methyl tert-butyl ether	X	X	-	216-653-1	-		X	X	X	X	KE-23648 X

16. Other Information

References:

-Guide de la loi et du règlement sur le transport des marchandises dangereuses au Canada. Centre de conformité international Ltée. 1986. -Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -SAX, N.I. Dangerous Properties of Industrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma- Aldrich Library of Chemical Safety Data, Edition II.