

# Material Safety Data Sheet

## tert-Butyl methyl ether, 99%

ACC# 00978

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** tert-Butyl methyl ether, 99%

**Catalog Numbers:** AC177040010, AC177040025, AC177040250, AC177042500, AC378720010, AC378720025, AC610271000, BP2605-100, E127-4, E127J4, E127RS200, NC9271792, NC9272602, NC9310701

**Synonyms:** t-Butyl methyl ether; MBE; 2-Methoxy-2-methylpropane; 2-Methyl-2-methoxypropane; MTBE; Methyl t-butyl ether.

**Company Identification:**

Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**For CHEMTREC assistance, call:** 800-424-9300

**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
1634-04-4	tert-Butyl methyl ether	99	216-653-1

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: clear, colorless liquid. Flash Point: -28 deg C.

**Danger!** Extremely flammable liquid and vapor. Vapor may cause flash fire. Causes eye, skin, and respiratory tract irritation. Aspiration hazard if swallowed. Can enter lungs and cause damage. May cause central nervous system depression.

**Target Organs:** Kidneys, central nervous system, reproductive system.

#### Potential Health Effects

**Eye:** Causes eye irritation.

**Skin:** Causes skin irritation. A single prolonged skin exposure is not likely to result in the material being absorbed in harmful amounts.

**Ingestion:** May cause effects similar to those for inhalation exposure. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal.

**Inhalation:** Causes respiratory tract irritation. May cause kidney damage. May cause drowsiness, unconsciousness, and central nervous system depression. Vapors may cause dizziness or suffocation.

**Chronic:** Chronic inhalation may cause effects similar to those of acute inhalation. May cause cancer according to animal studies.

Adverse reproductive effects have been reported in animals. MTBE has been reported to induce lymphomas, leukemias, and testicular tumors in rats exposed by the oral route. It has induced liver tumors in mice by the inhalation route, while kidney tumors occurred in rats.

### Section 4 - First Aid Measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.

**Skin:** In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.

**Ingestion:** Potential for aspiration if swallowed. Get medical aid immediately. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward.

**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Combustion generates toxic fumes. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire. May form explosive peroxides. Extremely flammable liquid and vapor. Vapor may cause flash fire. This liquid floats on water and may travel to a source of ignition and spread fire.

**Extinguishing Media:** For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Water may be ineffective. Do NOT use straight streams of water.

**Flash Point:** -28 deg C ( -18.40 deg F)

**Autoignition Temperature:** 435 deg C ( 815.00 deg F)

**Explosion Limits, Lower:** 1.6%

**Upper:** 8.4%

**NFPA Rating:** (estimated) Health: 2; Flammability: 3; Instability: 1

### Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Remove all sources of ignition. Provide ventilation. A vapor suppressing foam may be used to reduce vapors.

## Section 7 - Handling and Storage

**Handling:** Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Avoid ingestion and inhalation. If peroxide formation is suspected, do not open or move container. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Use only with adequate ventilation. Keep away from heat, sparks and flame. Do not allow to evaporate to near dryness.

**Storage:** Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. In the presence of atmospheric oxygen, ethers generally form unstable peroxides, but no peroxides were detected in unstabilized MTBE after storage for 52 months. MTBE has a significantly decreased formation of peroxides compared with other ethers.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
tert-Butyl methyl ether	50 ppm TWA	none listed	none listed

**OSHA Vacated PELs:** tert-Butyl methyl ether: No OSHA Vacated PELs are listed for this chemical.

### Personal Protective Equipment

**Eyes:** Wear chemical splash goggles.

**Skin:** Wear appropriate protective gloves to prevent skin exposure. Chemical-resistant nitrile rubber gloves should be worn during routine handling. Disposable nitrile gloves may be suggested for intermittent use. PVC, Neoprene, Viton, Butyl or natural rubber are NOT recommended.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** 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.

## Section 9 - Physical and Chemical Properties

**Physical State:** Liquid

**Appearance:** clear, colorless

**Odor:** hydrocarbon-like - unpleasant odor

**pH:** Not available.

**Vapor Pressure:** 249 mm Hg @ 25 deg C

**Vapor Density:** 0.2 (air=1)

**Evaporation Rate:** Not available.

**Viscosity:** Not available.

**Boiling Point:** 55.2 deg C

**Freezing/Melting Point:** -109 deg C

**Decomposition Temperature:** Not available.

**Solubility:** 4.8g/100g water

**Specific Gravity/Density:** 0.74 (water=1)

**Molecular Formula:** C<sub>5</sub>H<sub>12</sub>O

**Molecular Weight:** 88.15

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable at room temperature in closed containers under normal storage and handling conditions.

**Conditions to Avoid:** Ignition sources, excess heat, prolonged exposure to air.

**Incompatibilities with Other Materials:** Strong oxidizing agents, strong acids.

**Hazardous Decomposition Products:** Carbon monoxide, carbon dioxide, formic acid, butyl formate, methyl radicals, acetone.

**Hazardous Polymerization:** Has not been reported.

## Section 11 - Toxicological Information

### RTECS#:

**CAS#** 1634-04-4: KN5250000

### LD50/LC50:

**CAS#** 1634-04-4:

Inhalation, mouse: LC50 = 141 gm/m<sup>3</sup>/15M;

Inhalation, mouse: LC50 = 28000 mg/m<sup>3</sup>/2H;

Inhalation, rat: LC50 = 23576 ppm/4H;  
Inhalation, rat: LC50 = 41000 mg/m3/4H;  
Oral, mouse: LD50 = 5960 uL/kg;  
Oral, rat: LD50 = 4 gm/kg;

#### Carcinogenicity:

CAS# 1634-04-4:

- **ACGIH:** A3 - Confirmed animal carcinogen with unknown relevance to humans
- **California:** Not listed.
- **NTP:** Not listed.
- **IARC:** Not listed.

**Epidemiology:** No information found

**Teratogenicity:** See actual entry in RTECS for complete information.

**Reproductive Effects:** TCLo (Inhalation, rat) = 8000 ppm/6H; Effects on Newborn - viability index (e.g., # alive at day 4 per # born alive)TCLo (Inhalation, mouse) = 4000 ppm/6H; Reproductive - Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus); Developmental Abnormalities - musculoskeletal system.

**Mutagenicity:** No information found

**Neurotoxicity:** No information found

**Other Studies:**

## Section 12 - Ecological Information

**Ecotoxicity:** Fish: Fathead Minnow: LC50 = 110 mg/L; 96 Hr.; UnspecifiedFish: Fathead Minnow: LC50 = 706 mg/L; 30 days old; Flow-through; 24-26 degreesBacteria: Phytobacterium phosphoreum: EC50 = 11.4-55 mg/L; 5,15,30 minutes; Microtox test; 15 degrees C No data available.

**Environmental:** Not biodegradable.

**Physical:** No information available.

**Other:** No information available.

## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

## Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	METHYL TERT-BUTYL ETHER	METHYL TERT-BUTYL ETHER
<b>Hazard Class:</b>	3	3
<b>UN Number:</b>	UN2398	UN2398
<b>Packing Group:</b>	II	II
<b>Additional Info:</b>		FLASHPOINT -28 C

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 1634-04-4 is listed on the TSCA inventory.

#### Health & Safety Reporting List

CAS# 1634-04-4: Effective 12/15/86, Sunset 12/15/96

#### Chemical Test Rules

CAS# 1634-04-4: Test for Health Effects

#### Section 12b

None of the chemicals are listed under TSCA Section 12b.

#### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

#### CERCLA Hazardous Substances and corresponding RQs

CAS# 1634-04-4: 1000 lb final RQ; 454 kg final RQ

#### SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

#### SARA Codes

CAS # 1634-04-4: immediate, delayed, fire.

#### Section 313

This material contains tert-Butyl methyl ether (CAS# 1634-04-4, 99%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

#### Clean Air Act:

CAS# 1634-04-4 is listed as a hazardous air pollutant (HAP).

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

**Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

**OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

**STATE**

CAS# 1634-04-4 can be found on the following state right to know lists: New Jersey, Pennsylvania, Minnesota, Massachusetts.

**California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

**European/International Regulations**

**European Labeling in Accordance with EC Directives**

**Hazard Symbols:**

XI F

**Risk Phrases:**

R 11 Highly flammable.

R 38 Irritating to skin.

**Safety Phrases:**

S 16 Keep away from sources of ignition - No smoking.

S 24 Avoid contact with skin.

S 9 Keep container in a well-ventilated place.

**WGK (Water Danger/Protection)**

CAS# 1634-04-4: 1

**Canada - DSL/NDSL**

CAS# 1634-04-4 is listed on Canada's DSL List.

**Canada - WHMIS**

This product has a WHMIS classification of D2B, B2.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

**Canadian Ingredient Disclosure List**

**Section 16 - Additional Information**

**MSDS Creation Date:** 6/24/1999

**Revision #7 Date:** 3/29/2006

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.*