



SAFETY DATA SHEET

1. Identification

Product identifier	Tert-Butylmethyl Ether	
Other means of identification		
Catalog number	1083303	
CAS number	1634-04-4	
Synonyms	Methyl t-butyl ether	
Chemical name	2-Methoxy-2-methylpropane	
Recommended use	For analytical laboratory use only.	
Recommended restrictions	Not for use as a drug. Not for administration to humans or animals.	
Manufacturer/Importer/Supplier/Distributor information		
Manufacturer		
Company name	U. S. Pharmacopeia	
Address	12601 Twinbrook Parkway Rockville MD 20852-1790 United States	
Telephone	Customer Service	301-881-0666
Website	www.usp.org	
E-mail	RSTECH@usp.org	
Emergency phone number	CHEMTREC within US & Canada	1-800-424-9300
	CHEMTREC outside US & Canada	+1 703-527-3887

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 2
Health hazards	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
	Aspiration hazard	Category 1
Environmental hazards	Not classified.	
OSHA defined hazards	Not classified.	
Label elements		



Signal word Danger

Hazard statement Highly flammable liquid and vapor. Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation. May cause drowsiness or dizziness. May be fatal if swallowed and enters airways.

Precautionary statement

Prevention

Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take action to prevent static discharge. Wear protective gloves/protective clothing/eye protection/face protection/hearing protection. Avoid breathing dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area.

Response

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before re-use. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. If swallowed: Immediately call a poison center/doctor. Do NOT induce vomiting. In case of fire: Use appropriate media to extinguish.

Storage

Store in a well-ventilated place. Keep cool. Keep container tightly closed. Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)

None known.

Supplemental information

None.

3. Composition/information on ingredients

Substance

Chemical name	Common name and synonyms	CAS number	%
Tert-Butylmethyl Ether	Methyl t-butyl ether	1634-04-4	100

Information provided in the SDS is not specific to the lot provided. Refer to the label and USP Certificate/Product Information Sheet/Certificate of Analysis for the assigned value of a particular lot.

4. First-aid measures

Inhalation

Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact

Remove contaminated clothing immediately and wash skin with soap and water. If skin irritation occurs: Get medical advice/attention.

Eye contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion

If swallowed: Immediately call a poison center or doctor/physician. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Rinse mouth.

Most important symptoms/effects, acute and delayed

Aspiration may cause pulmonary edema and pneumonitis. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea.

Indication of immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically.

General information

Remove from exposure. Remove contaminated clothing. For treatment advice, seek guidance from an occupational health physician or other licensed health-care provider familiar with workplace chemical exposures. In the United States, the national poison control center phone number is 1-800-222-1222. If person is not breathing, give artificial respiration. If breathing is difficult, give oxygen if available. Persons developing serious hypersensitivity (anaphylactic) reactions must receive immediate medical attention.

5. Fire-fighting measures

Suitable extinguishing media

Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical

By heating and fire, harmful vapors/gases may be formed.

Special protective equipment and precautions for firefighters

Use protective equipment appropriate for surrounding materials.

Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk. As with all fires, evacuate personnel to a safe area. Firefighters should use self-contained breathing equipment and protective clothing.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	Highly flammable liquid and vapor.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Wear appropriate personal protective equipment. Avoid inhalation of vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Absorb spillage with suitable absorbent material. Remove sources of ignition. Keep combustibles (wood, paper, oil, etc.) away from spilled material. Clean surface thoroughly to remove residual contamination. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	As a general rule, when handling USP materials, avoid all contact and inhalation of dust, mists, and/or vapors associated with the material. Clean equipment and work surfaces with suitable detergent or solvent after use. After removing gloves, wash hands and other exposed skin thoroughly. Select and use containment devices and personal protective equipment based on a risk assessment of material potency and exposure potential.
Conditions for safe storage, including any incompatibilities	Store in tight container. This material should be handled and stored per label instructions to ensure product integrity.

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values (TLV)

Material	Type	Value
Tert-Butylmethyl Ether (CAS 1634-04-4)	TWA	50 ppm

Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Cover all containers for solutions and slurries while being transferred. No open handling. For laboratory operations, conduct powder handling operations in an isolator or equivalent. Put powder into solution or a tightly capped container prior to removal from containment. Isolator should be equipped with bag out ports or transfer chamber. Use closed and sealed systems for tasks with the potential for aerosol generation (vortexing, pipetting, pumping). Control the potential for spills and leaks by securing all connections. Control exposures to below the occupational exposure level (if available). Select and use containment devices and personal protective equipment based on a risk assessment of exposure potential. Explosion-proof general and local exhaust ventilation.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields, chemical splash goggles, or full face shield, if necessary. Base the choice of protection on the job activity and potential for contact with eyes or face. An emergency eye wash station should be available.
Skin protection	
Hand protection	Wear double gloves. Wear nitrile or other impervious gloves if skin contact is possible. When the material is dissolved or suspended in an organic solvent, wear gloves that provide protection against the solvent.
Other	Wear disposable laboratory coat and disposable sleeve covers appropriate to the task, two pairs of gloves, and safety glasses with side shields. An anteroom or transition area is recommended for gowning and degowning. Base the choice of skin protection on the job activity, potential for skin contact and solvents and reagents in use. Do not wear protective garments in common areas (e.g., cafeterias) or out-of-doors.
Respiratory protection	Choose respiratory protection appropriate to the task and the level of existing engineering controls. Use a tight-fitting full-face respirator with HEPA filters for spill cleanup.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations Handling practices in this SDS are recommendations for laboratory use of USP materials.

9. Physical and chemical properties

Appearance Appearance descriptions are general information and not specific to any USP lot.

Physical state Liquid.

Form Liquid.

Color Colorless.

Odor Characteristic ether-like odor.

Melting point/freezing point -164.2 °F (-109 °C) / -163.48 °F (-108.6 °C)

Boiling point or initial boiling point and boiling range 131.36 °F (55.2 °C)

129.2 °F (54 °C)

Flammability Not applicable.

Upper/lower flammability or explosive limits

Explosive limit - lower (%) 1.6 %

Explosive limit - upper (%) 15.1 %

Flash point -18.4 °F (-28.0 °C) (CC)

Auto-ignition temperature 707 °F (375 °C)

Decomposition temperature Not available.

pH Not available.

Kinematic viscosity 0.409 mm²/s (104 °F (40 °C))

Solubility

Solubility (water) Slightly soluble.

Solubility (other) Ethyl ether: Very soluble Ethyl alcohol: Very soluble

Partition coefficient (n-octanol/water) 0.94

Vapor pressure 209.3 mm Hg at 20 °C

Density and/or relative density

Density 0.74 g/cm³ at 25 °C

Vapor density 0.741

Particle characteristics Not available.

Other information

Chemical family Ether.

Molecular formula C₅H₁₂O

Molecular weight 88.15

Surface tension 19.3 mN/m (77 °F (25 °C))

10. Stability and reactivity

Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability Material is stable under normal conditions.

Possibility of hazardous reactions No dangerous reaction known under conditions of normal use.

Conditions to avoid Avoid heat, sparks, open flames and other ignition sources. Contact with incompatible materials.

Incompatible materials Strong oxidizing agents. Strong oxidizers and strong acids.

Hazardous decomposition products Irritating and/or toxic fumes or gases. Emits toxic fumes under fire conditions.

11. Toxicological information

Information on likely routes of exposure

Inhalation Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea.

Skin contact Causes skin irritation.

Eye contact	Causes serious eye irritation.
Ingestion	Based on available data, the classification criteria are not met.
Symptoms related to the physical, chemical and toxicological characteristics	Aspiration may cause pulmonary edema and pneumonitis. Drowsiness. Incoordination. Disorientation. Cough. Headache. Nausea. Vomiting. Nasal congestion. Eye irritation. Burning sensation in nose and throat.

Information on toxicological effects

Acute toxicity May be fatal if swallowed and enters airways.

Product	Species	Test Results
Tert-Butylmethyl Ether (CAS 1634-04-4)		
Acute		
Dermal		
LD50	Rat	> 2000 mg/kg, 24 Hours
Inhalation		
LC50	Rat	85 mg/l, 4 Hours
Oral		
LD50	Rat	> 2000 mg/kg

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye irritation Causes serious eye irritation.

Local effects

Eye irritation: in vivo
Result: Only slight redness of the conjunctiva was observed.
Not irritating for the eyes in this study.
Species: Rabbit
Organ: Eye.
Skin irritation: in vivo
Result: Moderate to severe edema and moderate erythema one hour after the end of exposure was observed.
Species: Rabbit
Organ: Skin.

Respiratory or skin sensitization

Respiratory sensitization Knowledge about health hazard is incomplete.

Skin sensitization Knowledge about health hazard is incomplete.

In vivo (non-LLNA)
Result: No significant increase in the response of the challenge injection, no adverse effect observed (not sensitising).
Species: Guinea pig

Germ cell mutagenicity Knowledge about mutagenicity is incomplete.

Mutagenicity

Bacterial reverse mutation assay with and without metabolic activation
Result: Negative.
In vitro gene mutation study in bacteria
Result: Negative.
In vivo mammalian cell study: DNA damage and/or repair
Result: Negative.
Species: Mouse

Carcinogenicity Knowledge about carcinogenicity is incomplete.

Carcinogenicity

0, 0.5, 3, 7.5 mg/ml Carcinogenicity study

Result: Chronic progressive nephropathy was observed in males and females, was more severe in males, and was exacerbated in the high exposure groups. a statistically significant finding of neoplasms was seen in the brain.

Species: Rat

Test Duration: 2 yr

Carcinogenicity

Result: Produces tumours in mice and rats at concentrations ≥ 3000 ppm (10710 mg/m³) after inhalation exposure.

Species: Mouse, Rat

IARC Monographs. Overall Evaluation of Carcinogenicity

Tert-Butylmethyl Ether (CAS 1634-04-4)

3 Not classifiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity

Based on available data, the classification criteria are not met. Tert-butylmethyl ether has not induced developmental effects in rats, mice or rabbits at concentrations less than those that were toxic to the mothers.

Reproductivity

Developmental toxicity

Result: No significant effects to mouse. No adverse developmental effects observed in Sprague-Dawley rats. No developmental toxicity was demonstrated in rabbits.

Species: Mouse; Rabbit; Rat

One-generation study

Result: No effects on fertility and no parental toxicity were observed.

Species: Rat

Two-generation study

Result: General toxicity signs at 3000 and 8000 ppm (10710 and 28560 mg/m³) in both generations of parental animals (NOAEC parental toxicity: 400 ppm (893mg/m³). No significant changes were reported regarding fertility even at the highest tested concentration.

Species: Rat

Specific target organ toxicity - single exposure

May cause respiratory irritation. May cause drowsiness or dizziness.

Specific target organ toxicity - repeated exposure

Knowledge about health hazard is incomplete.

Aspiration hazard

May be fatal if swallowed and enters airways.

12. Ecological information

Ecotoxicity

Product		Species	Test Results
Tert-Butylmethyl Ether (CAS 1634-04-4)			
Aquatic			
Acute			
Crustacea	LC50	Harpacticoid copepod (Nitocra spinipes)	> 1000 mg/l, 96 hours
Fish	LC50	Bleak (Alburnus alburnus)	> 1000 mg/l, 96 hours
		Fathead minnow (Pimephales promelas)	672 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	
Mobility in soil	No data available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Dispose in accordance with all applicable regulations. Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	D001: Waste Flammable material with a flash point <140 F The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN2398
UN proper shipping name	Methyl tert-butyl ether
Transport hazard class(es)	
Class	3
Subsidiary hazard	-
Packing group	II
Environmental hazards	
Marine pollutant	No.
Packaging exceptions	150
Packaging non bulk	202
Packaging bulk	242

IATA

UN number	UN2398
UN proper shipping name	Methyl tert-butyl ether
Transport hazard class(es)	
Class	3
Subsidiary hazard	-
Packing group	II

Transport in bulk according to IMO instruments Not established.

DOT



**General information**

It is the shipper's responsibility to determine the correct transport classification at the time of shipment.

15. Regulatory information**US federal regulations**

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Toxic Substances Control Act (TSCA)**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Tert-Butylmethyl Ether (CAS 1634-04-4)

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)**SARA 302 Extremely hazardous substance**

Not listed.

SARA 311/312 Hazardous chemical

Yes

Classified hazard categories

Flammable (gases, aerosols, liquids, or solids)
Skin corrosion or irritation
Serious eye damage or eye irritation
Specific target organ toxicity (single or repeated exposure)
Aspiration hazard

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Tert-Butylmethyl Ether	1634-04-4	100

Other federal regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Tert-Butylmethyl Ether (CAS 1634-04-4)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)

Listed.

US state regulations**US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))**

Tert-Butylmethyl Ether (CAS 1634-04-4)

California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AICIS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 10-02-2006

Revision date 07-06-2026

Version # 04

Disclaimer USP materials are sold for analytical laboratory use only, and NOT for human consumption. The information contained herein is applicable solely to the chemical substance when used for analytical laboratory use and does not necessarily relate to any other use of the substance described, (i.e. at different concentrations, in drug dosage forms, or in bulk quantities). USP materials are intended for use by persons having technical skill and at their own discretion and risk. This information has been compiled by USP staff from sources considered to be scientifically reliable but has not been independently verified by USP. USP does not guarantee the accuracy or completeness of the information from these sources included herein nor should the statements contained herein be considered an official expression by USP. USP does not independently create or develop the information included in this safety data sheet. NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE is made with respect to the information contained herein.