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## SAFETY DATA SHEET

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### 1. IDENTIFICATION

#### 1.1 Product identifier

**Product Name:** MTBE

**Product Number(s):** 40900

**Synonyms:** Methyl tert-Butyl Ether; tert-Butyl Methyl Ether; Methyl-1,1-Dimethylethyl Ether; 2-Methoxyl-2-Methyl Propane

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

#### 1.2 Recommended use of the chemical and restrictions on use

**Uses:** Octane booster for gasolines; manufacture of isobutene; extraction solvent, etc.

**Restrictions:** No data available

#### 1.3 Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

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Houston, TX 77015 USA

281-452-5951

Fax: 281-457-1127

[sds@jhaltermann.com](mailto:sds@jhaltermann.com)

E-mail contact for SDS

#### 1.4 Emergency telephone number

832-376-2026

24 HR Emergency Assistance

800-424-9300

24 HR CHEMTREC

### 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

**Classification according to 29 CFR §1910.1200 (d)**

Flammable liquids (Category 2)

Skin irritation (Category 2)

#### 2.2 Label elements

**Labeling according to 29 CFR §1910.1200 (f)**

**Pictograms(s):**



**Signal word:** Danger

**Hazard statement(s):**

Highly flammable liquid and vapor.  
Causes skin irritation.

**Precautionary statement(s):**

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.  
Keep container tightly closed.  
Ground/bond container and receiving equipment.  
Use explosion-proof electrical, ventilating, and lighting equipment.  
Use only non-sparking tools.  
Take precautionary measures against static discharge.  
Avoid breathing mist/vapors/spray.  
Wash thoroughly after handling.  
Do no eat, drink or smoke when using this product.  
Use only outdoors or in a well-ventilated area.  
Wear protective gloves/protective clothing/eye protection/face protection.

**2.3 Other hazards**                      **None**

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

**3.1 Substances**

<b>Chemical Name</b>	<b>CAS #</b>	<b>EINECS</b>	<b>Index Number</b>	<b>Amount</b>
METHYL TERT-BUTYL ETHER	1634-04-4	216-653-1	603-181-00-X	100%

**4. FIRST AID MEASURES**

**4.1 Description of first aid measures**

**General advice**

IF exposed or concerned: Get medical advice/attention.  
Show this this safety data sheet to the doctor in attendance.

**Inhalation**

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
Call a POISON CENTER or doctor/physician if you feel unwell.

**Skin Contact**

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
If skin irritation occurs: Get medical advice/attention.

**Eye Contact**

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.

**Ingestion**

If swallowed, rinse mouth and rest. Call physician or poison control center immediately.

Give slurry of activated charcoal in water to drink.

Do NOT induce vomiting.

**Advice to Physician**

Potential for chemical pneumonitis. Consider: gastric lavage with protected airway, administration of activated charcoal.

**4.2 Most important symptoms and effects, both acute and delayed****Acute**

The substance and the vapor is irritating to the skin. Skin irritation signs and symptoms may include dry skin and redness.

If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever. The onset of respiratory symptoms may be delayed for several hours after exposure.

Exposure far above the OEL can cause lowering of consciousness.

**Delayed**

No data available.

**4.3 Indication of any immediate medical attention and special treatment needed**

No data available.

**5. FIRE FIGHTING MEASURES****5.1 Suitable Extinguishing Media**

In case of fire: Use powder, AFFF, foam, or carbon dioxide to extinguish.

Use water spray to cool fire exposed containers.

**Unsuitable Extinguishing Media**

No data available.

**5.2 Specific hazards arising from the chemical**

The vapor mixes well with air, explosive mixtures may be formed.

Vapor is heavier than air and may travel along the ground. Distant ignition is possible.

**5.3 Special protective equipment and precautions for fire-fighters**

As in any fire, wear self-contained breathing apparatus pressure-demand (OSHA/NIOSH approved or equivalent) and full protective gear.

## 5.4 Further information

### NFPA Rating:

Health:	2
Flammability:	3
Reactivity:	0

## 6. ACCIDENTAL RELEASE MEASURES

### 6.1 Personal precautions, protective equipment and emergency procedures

#### Protective Measures

Evacuate spill area.

Isolate hazard area and deny entry to unnecessary or unprotected personnel. Stay upwind and keep out of low area. Remove all possible sources of ignition in the surrounding area.

Personal protection: see Section 8.

Ventilate contaminated area thoroughly shut off leaks if possible without personal risk.

### 6.2 Methods and material for containment and cleaning up

Collect leaking and spilled liquid in sealable glass containers as far as possible.

Absorb remaining liquid in sand or inert absorbent and remove to safe place.

### 6.3 Environmental precautions

Do NOT wash away into sewer. Do NOT let this chemical enter the environment.

Use appropriate containment of product and fire fighting water to avoid environmental contamination. Prevent from spreading or entering drains, ditches, or rivers by using sand, earth, or other appropriate barriers.

Notify authorities if any exposure to the general public or environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained.

### 6.4 Reference to other sections

Refer to Section 8 for personal protection advice and Section 13 for disposal information.

## 7. HANDLING AND STORAGE

### 7.1 Precautions for safe handling

Wear protective gloves/protective clothing/eye protection/face protection.

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

Keep container tightly closed.

Avoid breathing vapors or mists. Avoid contact with eyes or skin.

Do not eat, drink or smoke when using this product.

Take precautionary measures against static discharge.

Use only non-sparking tools.

Use only outdoors or in a well-ventilated area.

Wash thoroughly after handling.

## 7.2 Conditions for safe storage, including any incompatibilities

Store in a well-ventilated place. Keep cool.

Keep container tightly closed.

Store locked up.

Ensure that all local regulations regarding handling and storage facilities are followed.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Permissible Exposure Limits

Compound Name	CAS #	Value 1	Value 2	BEI/Skin Notation
METHYL TERT-BUTYL ETHER	1634-04-4	ACGIH TWA: 50 ppm	N.D.	N.D.

N.D. - No data available

ACGIH: American Conference of Governmental Industrial Hygienists

OSHA: U.S. Occupational Health and Safety Administration

TWA: Time weighted average

STEL: Short Term Exposure Limit

BEI: Biological Exposure Determinants

### 8.2 Appropriate Engineering Controls

The level of protection and types of controls necessary will vary depending upon potential exposure conditions.

Select controls based on a risk assessment of local circumstances. Appropriate measures may include the following:

Use sealed systems as far as possible. Adequate explosion-proof ventilation to control airborne concentrations below the exposure limits. Local exhaust ventilation is recommended.

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

### 8.3 Personal Protective Equipment

Wear protective gloves/protective clothing/eye protection/face protection.

All personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers for more information.

#### Respiratory Protection

Use only with adequate ventilation. If engineering controls do not maintain airborne concentrations at a level which is adequate to protect worker health, an approved respirator should be used.

When there is potential for airborne exposures in excess of applicable limits, wear NIOSH/MSHA approved respiratory protection. Contact respirator supplier for specific recommendations.

For situations where high concentrations of vapors may be present, use an approved supplied air respirator operated in positive pressure mode.

#### Hand Protection

Where hand contact with this material may occur, use gloves that meet applicable standards.

Specific glove information is provided based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending upon the specific use conditions.

Contact glove manufacturer for advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves.

### Eye Protection

Chemical splash goggles which meet the national standards should be used when handling this material.

### Skin Protection

Chemical resistant apron or coat and gloves should be used when handling this material.

### Specific Hygiene Measures

Do not eat, drink, or smoke when handling this material. Wash hands thoroughly after handling.

Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned.

### Monitoring Methods

Monitoring of the vapor concentrations of chemicals in the workplace may be required to confirm compliance with OEL and adequacy of exposure controls.

Sources for recommended air monitoring methods include:

USA: National Institute of Occupational Safety and Health (NIOSH): Manual of Analytical Methods, <http://www.cdc.gov/niosh/nmam/nmammenu.html>.

USA: Occupational Safety and Health Administration (OSHA): Sampling and Analytical Methods, <http://osha.gov/dts/sltc/methods/toc.html>.

### Environmental Exposure Controls

Local guidelines for emissions limits for volatile substances must be observed for the discharge of exhaust air containing vapors.

See Sections 6, 7, 12, and 13 for more information on environmental exposure controls.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

(a) Appearance	Form:	Liquid			
	Color:	Colorless			
(b) Odor		Terpene-like			
(c) Odor threshold		No data available			
(d) pH		No data available			
(e) Melting/freezing point		-108.6	°C	-163.5	°F
(f) Initial boiling point and boiling range		55.0	°C	131.0	°F
(g) Flash point		-33	°C	-27.4	°F
(h) Evaporation rate		No data available			closed cup
(i) Flammability (solid, gas)		No data available			
(j) Upper/lower flammability or explosive limits		1.5 - 8.5	volume % in air		
(k) Vapor pressure		250.0	mm Hg at 25°C		
(l) Vapor density		3.0	(Air = 1)		

(m) Relative density	0.74	(water = 1)		
(n) Solubility (ies) in water	4	g/100 g		
(o) Partition coefficient: n-octanol/water	1.06			
(p) Auto-ignition temperature	374	°C	705.2	°F
(q) Decomposition temperature	No data available			
(r) Viscosity	No data available			

## 9.2 Other information

Chemical formula	C <sub>5</sub> H <sub>12</sub> O
Molecular weight	88.2

## 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

No data available

### 10.2 Chemical Stability

This material is expected to be stable under normal conditions of use.  
Hazardous polymerization will not occur.

### 10.3 Possibility of hazardous reactions

Reacts violently with strong oxidants causing a fire hazard.

### 10.4 Conditions to Avoid

No data available

### 10.5 Incompatible materials

Avoid contact with strong oxidizing agents. This material decomposes on contact with acids.

### 10.6 Hazardous Decomposition Products

In the event of fire, oxides of carbon, hydrocarbons, fumes, and smoke may be produced.

## 11. TOXICOLOGICAL INFORMATION

### 11.1 Likely routes of exposure

Likely routes of exposure include: inhalation, eye and skin contact, and ingestion.

### 11.2 Signs and symptoms of exposure

Eye irritation signs and symptoms may include redness.

Skin irritation signs and symptoms may include dryness and redness.

Inhalation may cause drowsiness, dizziness, headache, weakness, and unconsciousness.

Ingestion may cause abdominal pain, nausea, vomiting, drowsiness, dizziness, headache, weakness, and unconsciousness.

### 11.3 Delayed and immediate effects/Chronic effects from short- and long-term exposure

#### **Eye**

Contact with eyes may cause redness.

#### **Skin**

This substance is irritating to the skin.

#### **Inhalation**

Inhalation of this material may cause: drowsiness, dizziness, headache, weakness, and unconsciousness.

#### **Ingestion**

Ingestion of this material may cause abdominal pain, nausea, vomiting, drowsiness, dizziness, headache, weakness, and unconsciousness.

If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis.

#### **Chronic effects**

No data available.

#### **Subchronic effects**

This substance and vapor is irritating to the skin. If swallowed, aspiration into the lungs may result in chemical pneumonitis. Exposure far above the OEL may result in lowering of consciousness.

#### **Respiratory or skin sensitization**

No data available.

#### **Germ cell mutagenicity**

No data available.

#### **Reproductive toxicity**

No data available.

#### **Specific target organ toxicity - single exposure**

No data available.

#### **Specific target organ toxicity - repeat exposure**

No data available.

#### **Aspiration hazard**

Swallowing this liquid may cause aspiration into the lungs with the risk of chemical pneumonitis.

#### **Potential health effects**

Irritating to the respiratory system and eyes. Vapors may cause drowsiness and dizziness.

Harmful: danger of serious damage to health by prolonged exposure through inhalation.



## 11.4 Acute Toxicity Estimates

Compound Name	CAS #	TEST - SPECIES - RESULT
METHYL TERT-BUTYL ETHER	1634-04-4	Oral LD50 - Rat: 4000 mg/kg; Dermal LD50 - Rat: > 2000 mg/kg; Inhalation LC50 - Rat: 85 mg/L/4 hr

## 11.5 Carcinogenicity

This material is not carcinogenic according to IARC (International Agency for Research on Cancer), NTP (National Toxicology Program), or OSHA (U.S. Occupational Health and Safety Administration).

## 12. ECOLOGICAL INFORMATION

### 12.1 Ecotoxicity

Compound Name	CAS #	TEST-SPECIES-RESULTS
METHYL TERT-BUTYL ETHER	1634-04-4	LC 50 - Pimephales Promelas: 929 mg/L/96 Hr; LC 50 - Oncorhynchus Mykiss: 887 mg/L/96 Hr

### 12.2 Persistence and Degradability

This material is expected to be highly biodegradable.

### 12.3 Bioaccumulative potential

The potential for bioconcentration in aquatic organisms is low.

### 12.4 Mobility in soil

This material is expected to have high mobility in soil.

### 12.5 Other adverse effects

No data available.

## 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

#### Product disposal

Recover or recycle if possible.

It is the responsibility of the waste generator to determine the physical characteristics and toxicity of the material generated in order to properly designate the waste classification and disposal methods in compliance with applicable regulations.

This material may be disposed of in a chemical incinerator.

Do not dispose into the environment, in drains, or allow to enter waterways. Waste product should not be allowed to contaminate soil or water.

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

**Container disposal**

Follow all MSDS/label precautions even after container is emptied because they may retain product residues.

Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed.

Empty containers should be taken for recycling, recovery, or disposal through a suitable qualified or licensed contractor and in accordance with governmental regulations.

Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition as this may cause them to explode.

**14. TRANSPORT INFORMATION****Land (U.S. DOT)**

<b>14.1 UN number:</b>	2398
<b>14.2 Proper Shipping Name:</b>	Methyl tert-butyl ether
<b>14.3 Transport Hazard Class:</b>	3
<b>14.4 Packing Group:</b>	II
<b>14.5 Environmental Hazards:</b>	
IMDG Marine pollutant:	No
<b>14.6 Special precautions for the user</b>	
ERG (Emergency Response Guide) Number:	129
Hazard Identification Number (HIN):	30

**Sea (IMDG)**

<b>14.1 UN number:</b>	2398
<b>14.2 Proper Shipping Name:</b>	Methyl tert-butyl ether
<b>14.3 Transport Hazard Class:</b>	3
<b>14.4 Packing Group:</b>	II
<b>14.5 Environmental Hazards:</b>	
IMDG Marine pollutant:	No
<b>14.6 Special precautions for the user</b>	
EMS:	F-E, S-D
Hazard Identification Number (HIN):	30

**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and IBC Code**

<b>MARPOL Category:</b>	Z
<b>IBC Code:</b>	IBC02

**15. REGULATORY INFORMATION****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety datasheet complies with the requirements of 29 CFR §1910.1200

This material or all of its components are listed on the Inventory of Existing Chemical Substances under the Toxic Substance Control Act (TSCA) or are exempt from reporting.

#### FEDERAL REGULATORY LISTS:

Compound Name	CAS #	SARA 313	CERCLA	RCRA	CAA
METHYL TERT-BUTYL ETHER	1634-04-4	313	1,000	N.L.	N.L.

N.L. - Not listed on regulatory list

#### CALIFORNIA REGULATIONS:

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

#### PENNSYLVANIA REGULATIONS:

The following product components are cited on the Pennsylvania Hazardous Substances List and/or the Pennsylvania Environmental Hazardous Substances List, and are present at levels which require reporting.

Compound Name	CAS #	LISTING	AMOUNT
METHYL TERT-BUTYL ETHER	1634-04-4	PA RTK	100%

To the best of our knowledge, this product does not contain any components cited on the Pennsylvania Special Hazardous Substances List.

#### ADDITIONAL STATE REGULATIONS:

Components of this product are found on the following state lists.

Compound Name	CAS #	STATE LISTS
METHYL TERT-BUTYL ETHER	1634-04-4	DE, MN, NJ, NY, WI

#### CANADIAN REGULATIONS:

This material or all of its components are listed on the Canadian Domestic Substances List (DSL) or Non-Domestic Substances List (NDSL).

WHMIS INFORMATION: The Canadian Workplace Hazardous Materials Information System (WHMIS) classification for this product is:

B2 - Flammable liquid with a flash point of <37.8° C (100° F).

D2B - Eye or skin irritant.

Compound Name	CAS #	REPORTING LIMIT (%)
METHYL TERT-BUTYL ETHER	1634-04-4	0.0

Refer elsewhere in the MSDS for specific warnings and safe handling information.

Refer to the employer's workplace education program.

CPR STATEMENT: This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

**16. OTHER INFORMATION**

**Reason for Issue:** This revision updates SDS formatting according to OSHA Hazard Communications Standard (HCS) promulgated on March 20, 2012 .

**Approval date:** December 6, 2012

**Supersedes date:** November 23, 2009

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END OF MSDS

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