
 <p>National Petrochemical Company(NPC)</p>	Material Safety Data Sheet (MSDS) <i>According to the Directives 91/155/CEE-2001/58/CE-ISO 11014-1</i>	Page: 1 of 8 Revision Number: 1
	Product Name: MTBE (Methyl t-butyl ether)	 <p>Reactivity Flammability Health</p>

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/ UNDERTAKING



Identification of the substance or preparation:	Methyl t-butyl ether
Country of origin:	Iran (Islamic Republic of Iran)
CAS Number:	1634-04-4
Synonyms:	t-Butyl methyl ether; MBE; 2-Methoxy-2-methylpropane; 2-Methyl-2-methoxypropane; MTBE; Methyl t-butyl ether
Company/undertaking identification	National Petrochemical Company Iran Petrochemical Commercial Company (IPCC)
Manufacturer subcontractor:	None
Emergency phone number:	00982188881735
Contact email:	msds@petrochem-ir.net
Fax:	00982188839511
Association/Organization:	None
Use of the substance/Preparation:	As anti-knocking agent in gasoline, solvent, chemical reagent

2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous substances:	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. May form explosive peroxides.
Hazardous label(s):	dangerous product
Toxicological characteristics:	Inhalation,mouse:LC50=141gm/m3/15M; Inhalation,mouse:LC50=28000mg/m3/2H; Inhalation,rat:LC50=23576ppm/4H; Inhalation,rat:LC50=41000mg/m3/4H; Oral,mouse:LD50=5960uL/kg; Oral, rat: LD50 = 4 gm/kg;<BR.
Substances present at a concentration below the minimum danger:	N/A
Other component:	None

3. IDENTIFICATION OF HAZARDS

Risk phrases:	R 11 Highly flammable. R 19 May form explosive peroxides. R 38 Irritating to skin.
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Skin contact: Causes skin irritation. A single prolonged skin exposure is not likely to result in the material being absorbed in harmful amounts.

Eye contact: Causes eye irritation.

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

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

Other information:

4. FIRST AID MEASURES

As a general rule, in case of doubt or if symptoms persist, always call a doctor NEVER induce swallowing in an unconscious person.

In case of exposure by inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

In case of splashes or contact with eyes: In case of contact, immediately flush eyes with plenty of water for a t least 15 minutes. Get medical aid.

In case of swallowing: 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.

Note of physician:

5. FIRE FIGHTING MEASURES



Flammable class: Extremely flammable liquid and vapor.

Suitable 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.

Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases: Combustion generates toxic fumes. 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.

Special protective equipment for fire fighting : In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

Other information: None

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6. ACCIDENTAL RELEASE MEASURES

Personal precautions:
Environmental precautions:
Methods for cleaning up and disposal:

Use proper personal protective equipment
Not biodegradable.
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.

Other information:

None

7. HANDLING AND STORAGE

The regulations relating to storage premises apply to workshop where the product is handled:

Handling:



Ground and bond containers when transferring material. Keep container tightly closed. Use only with adequate ventilation. Keep away from heat, sparks and flame. Do not allow to evaporate to near dryness. 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. 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.

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.

Specific use(s):

As anti-knocking agent in gasoline



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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit values:	Tert-Butyl methyl ether: No OSHA Vacated PELs are listed for this chemical.
Exposure 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.
Personal protective equipment:	Wear appropriate protective clothing to prevent skin exposure.
Eye protection:	Wear chemical goggles.
Respiratory protection:	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.
Hand protection:	Wear appropriate protective gloves to prevent skin exposure.
Skin and body protection:	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.
Health measures:	N/A
Environmental exposure controls:	None

9. PHYSICAL AND CHEMICAL PROPERTIES

General information:	Liquid
Appearance (at 20°C):	clear
Colour:	colorless
Odour:	hydrocarbon-like - unpleasant odor
PH (at 20°C):	Not available.
Boiling point/range (°C):	55.2 °C
Flash point (°C):	-28°C
Flammability:	OSHA/NFPA Class IB Flammable Liquid.
Auto-ignition temperature:	374°C
Explosive properties:	LEL :1.3 vol% UEL : 8 vol%
Oxidising properties:	Not Applicable.
Vapour pressure (at 20°C):	249 mm Hg @ 25 °C
Density (at 20°C):	0.74 (water=1)

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Solubility (at 20°C):

water solubility: 4.8g/100g water

Viscosity:

solubility in fats:

0.3 mPa.s @ 25 °C

Evaporation rate:

1.0 (Ether = 1.0)

Other information:

None

10. STABILITY AND REACTIVITY

Stability:

Stable at room temperature in closed containers under normal storage and handling conditions. Under normal storage conditions, peroxidizable compounds can form and accumulate peroxides which may explode when subjected to heat or shock. This material is most hazardous when peroxide levels are concentrated by distillation or evaporation.

Conditions to avoid:

Ignition sources, excess heat, prolonged exposure to air.

Material to avoid:

Strong oxidizing agents, strong acids.

Hazardous decomposition products:

Carbon monoxide, carbon dioxide, formic acid, butyl formate, methyl radicals, acetone.

11. TOXICOLOGICAL INFORMATION

Acute toxicity:

Oral – Rat; 3.8 g/kg

Oral rat LD50: 4 gm/kg

Dermal – Rabbit; 10.2 g/kg

Sub chronic – chronic toxicity:

A sub chronic (90 day) study of rats dosed by gavages up to 1,200 mg/kg per day revealed recoverable anesthetic effects.

Sensibilization:

Carcinogenicity:

CAS# 1634-04-4



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.

Human experience:

Confirmed animal carcinogen with unknown relevance to humans

Other information:



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12. ECOLOGICAL INFORMATION

Ecotoxicity:	Fish: Fathead Minnow: LC50 = 110 mg/L; 96 Hr.; Unspecified Fish: Fathead Minnow: LC50 = 706 mg/L; 30 days old; Flow-through; 24-26 degrees Bacteria: Phytobacterium phosphoreum: EC50 = 11.4-55 mg/L; 5, 15, 30 minutes; Microtox test; 15 degrees C No data available.
Bioaccumulative potential:	This material is not expected to significantly bioaccumulate.
Mobility:	Transport between environmental compartments: The atmosphere is the main environmental compartment for releases of MTBE. In water, volatilization will result in substantial losses to the atmosphere with a half-life of 5-6 days.
Persistence and degradability:	Biodegradation: Two OECD 301D studies (closed bottle test) showed negligible (0-2%) biodegradation after 28 days. Not Readily biodegradable under aerobic conditions. However, degradation has been observed in non-standard tests using Pure- and mixed bacterial cultures. Bioaccumulation: Log Kow (Fish) <3 This material is not expected to bioaccumulate.
Other adverse effects:	This material does not adhere readily to soil particles and may travel rapidly and extensively in a groundwater plume. Therefore, groundwater remediation efforts may be difficult and extensive. As a VOC, MTBE can contribute to the formation of photochemical smog in the presence of other VOC's.

13. DISPOSAL CONSIDERATIONS

Disposal of product:	Contaminated products/soil/water may be Resource Conservation and Recovery Act (RCRA) hazardous waste/Occupational Safety and Health Administration (OSHA) hazardous material due to low flash point (see 40 Code of Federal Regulations (CFR) 261 and 29 CFR 1910). Assure effluent complies with applicable regulations. Landfill solids at permitted sites. Use registered transporters. Burn concentrated liquids in systems designed for low flash point material. Avoid flame-outs. Assure emissions comply with applicable regulations. Avoid overloading/poisoning plant biomass. Dilute aqueous waste may biodegrade.
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Disposal of packaging:

Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION



Land transport:	Class 3 UN-No. 2398 orange warning plate 33 / 2398 Description of the goods (Technical name) METHYL tert-BUTYL ETHER
ADR/RID:	ADR/RID-Labels 3
Maritime transport:	Class 3 UN-No. 2398 Packaging group II EmS 3-07 Propper technical name (Proper shipping name) METHYL tert-BUTYL ETHER
Air transport:	Air transport ICAO-TI/IATA-DGR Class 3 UN-No. 2398 Packaging group II Propper technical name (Proper shipping name) METHYL tert-BUTYL ETHER

15. REGULATORY INFORMATION

Hazardous label(s):	XI F
Safety phrases:	S9 Keep container in a well ventilated space S16 Keep away from sources of ignition – No smoking S24 Avoid contact with skin
Risk phrases:	R11 Highly flammable R38 Irritating to skin

16. OTHER INFORMATION



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The contents and format of this MSDS are in accordance with EEC Commission Directive 2001/58/EC

Disclaimer of liability:

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