

# METHYL TERT-BUTYL ETHER

MBE

CAUTIONARY RESPONSE INFORMATION		
Common Synonyms tert-Butyl methyl ether 2-Methoxy-2-methyl propane 2-Methyl-2-methoxy propane	Liquid	Colorless Floats and mixes slowly with water.
<p>Keep people away. Avoid contact with liquid and vapor. Wear goggles and self-contained breathing apparatus. Shut off ignition sources and call fire department. Stay upwind and use water spray to "knock down" vapors. Notify local health and pollution control agencies.</p>		
Fire	<b>FLAMMABLE</b> Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Wear goggles, self-contained breathing apparatus, and rubber over-clothing, including gloves and boots. Extinguish with water spray, dry chemical, foam or carbon dioxide. Cool exposed containers with water.	
<b>Exposure</b> <b>CALL FOR MEDICAL AID.</b>  <b>VAPOR</b> A mild irritant to eyes and skin. If inhaled, may cause dizziness and/or suffocation. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.  <b>LIQUID</b> May irritate or burn skin and eyes. May be harmful if swallowed. IF IN EYES OR ON SKIN, flush with running water for at least 15 minutes; hold eyelids open if necessary. Wash skin with soap and water. Remove and isolate contaminated clothing and shoes at the site. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.		
<b>Water Pollution</b>	Effect of low concentrations on aquatic life is unknown. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.	

1. CORRECTIVE RESPONSE ACTIONS	2. CHEMICAL DESIGNATIONS
Stop discharge Contain Collection Systems: Skim Chemical and Physical Treatment: Burn	2.1 CG Compatibility Group: 41; Ether 2.2 Formula: $(\text{CH}_3)_2\text{COCH}(\text{CH}_3)\text{COCH}_3$ 2.3 IMO/UN Designation: 3/2398 2.4 DOT ID No.: 2398 2.5 CAS Registry No.: Currently not available 2.6 NAERG Guide No.: 127 2.7 Standard Industrial Trade Classification: 51616
<b>3. HEALTH HAZARDS</b>	
3.1 <b>Personal Protective Equipment:</b> Wear goggles, self-contained breathing apparatus, rubber gloves, boots and overclothing. 3.2 <b>Symptoms Following Exposure:</b> INHALATION: May cause dizziness or suffocation. Contact may irritate or burn eyes or skin. May be harmful if swallowed. 3.3 <b>Treatment of Exposure:</b> INHALATION: Move victim to fresh air; call emergency medical care. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. EYES OR SKIN: Flush with running water for at least 15 minutes; hold eyelids open if necessary. Remove and isolate contaminated clothing and shoes at the site. Keep victim quiet and maintain normal body temperature. INGESTION: If victim is unconscious or having convulsions, do nothing except keep victim warm. 3.4 <b>TLV-TWA:</b> 40 ppm 3.5 <b>TLV-STEL:</b> Not listed. 3.6 <b>TLV-Ceiling:</b> Not listed. 3.7 <b>Toxicity by Ingestion:</b> Grade 2; LD <sub>50</sub> = 2.96 g/kg (rat) 3.8 <b>Toxicity by Inhalation:</b> Currently not available. 3.9 <b>Chronic Toxicity:</b> Currently not available 3.10 <b>Vapor (Gas) Irritant Characteristics:</b> Vapors cause a slight smarting of the eyes skin and respiratory system if present in high concentrations. The effect is temporary. 3.11 <b>Liquid or Solid Characteristics:</b> Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of skin. 3.12 <b>Odor Threshold:</b> Currently not available 3.13 <b>IDLH Value:</b> Not listed. 3.14 <b>OSHA PEL-TWA:</b> Not listed. 3.15 <b>OSHA PEL-STEL:</b> Not listed. 3.16 <b>OSHA PEL-Ceiling:</b> Not listed. 3.17 <b>EPA AEGL:</b> Not listed	

4. FIRE HAZARDS	7. SHIPPING INFORMATION
4.1 <b>Flash Point:</b> -14°F C.C. 4.2 <b>Flammable Limits in Air:</b> Currently not available 4.3 <b>Fire Extinguishing Agents:</b> Water spray, dry chemical, alcohol foam or carbon dioxide 4.4 <b>Fire Extinguishing Agents Not to Be Used:</b> Not pertinent 4.5 <b>Special Hazards of Combustion Products:</b> May contain irritating and toxic gases. 4.6 <b>Behavior in Fire:</b> May be ignited by heat, sparks or flames. Containers may explode in heat of fire. Vapor explosion hazard indoors, outdoors, or in sewers. 4.7 <b>Auto Ignition Temperature:</b> Currently not available 4.8 <b>Electrical Hazards:</b> Currently not available 4.9 <b>Burning Rate:</b> Currently not available 4.10 <b>Adiabatic Flame Temperature:</b> Currently not available 4.11 <b>Stoichiometric Air to Fuel Ratio:</b> 71.4 (calc.) 4.12 <b>Flame Temperature:</b> Currently not available 4.13 <b>Combustion Molar Ratio (Reactant to Product):</b> 22.0 (calc.) 4.14 <b>Minimum Oxygen Concentration for Combustion (MOCC):</b> Not listed	7.1 <b>Grades of Purity:</b> 97% 7.2 <b>Storage Temperature:</b> Currently not available 7.3 <b>Inert Atmosphere:</b> Currently not available 7.4 <b>Venting:</b> Currently not available 7.5 <b>IMO Pollution Category:</b> D 7.6 <b>Ship Type:</b> Data not available 7.7 <b>Barge Hull Type:</b> Currently not available
8. HAZARD CLASSIFICATIONS	
8.1 <b>49 CFR Category:</b> Flammable liquid 8.2 <b>49 CFR Class:</b> 3 8.3 <b>49 CFR Package Group:</b> II 8.4 <b>Marine Pollutant:</b> No 8.5 <b>NFPA Hazard Classification:</b> Not listed 8.6 <b>EPA Reportable Quantity:</b> 1000 pounds 8.7 <b>EPA Pollution Category:</b> C 8.8 <b>RCRA Waste Number:</b> Not listed 8.9 <b>EPA FWPCA List:</b> Not listed	
9. PHYSICAL & CHEMICAL PROPERTIES	
9.1 <b>Physical State at 15°C and 1 atm:</b> Liquid 9.2 <b>Molecular Weight:</b> 88.15 9.3 <b>Boiling Point at 1 atm:</b> 131.4°F = 55.2°C = 328.2°K 9.4 <b>Freezing Point:</b> -164.2°F = -109°C = 164°K 9.5 <b>Critical Temperature:</b> 435.4°F = 224.1°C = 497.3°K 9.6 <b>Critical Pressure:</b> 520 psia = 35.4 atm = 3.59 MN/m <sup>2</sup> 9.7 <b>Specific Gravity:</b> 0.7405 at 20°C 9.8 <b>Liquid Surface Tension:</b> Currently not available 9.9 <b>Liquid Water Interfacial Tension:</b> Currently not available 9.10 <b>Vapor (Gas) Specific Gravity:</b> 3.0 (calc.) 9.11 <b>Ratio of Specific Heats of Vapor (Gas):</b> Currently not available 9.12 <b>Latent Heat of Vaporization:</b> Currently not available 9.13 <b>Heat of Combustion:</b> 16,365 Btu/lb = 9,092.4 cal/g = 380.7 X 10 <sup>6</sup> J/kg 9.14 <b>Heat of Decomposition:</b> Currently not available 9.15 <b>Heat of Solution:</b> Currently not available 9.16 <b>Heat of Polymerization:</b> Not pertinent 9.17 <b>Heat of Fusion:</b> Data not available 9.18 <b>Limiting Value:</b> Currently not available 9.19 <b>Reid Vapor Pressure:</b> Currently not available	

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
68	46.220		C U R R E N T L Y  N O T  A V A I L A B L E		C U R R E N T L Y  N O T  A V A I L A B L E		C U R R E N T L Y  N O T  A V A I L A B L E

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
77	4.800	-50 -25 0 25 50 75 100 125	0.113 0.101 0.071 0.059 0.051 0.045 0.040 0.036		C U R R E N T L Y  N O T  A V A I L A B L E		C U R R E N T L Y  N O T  A V A I L A B L E