



# TULSTAR PRODUCTS, INC.

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## MATERIAL SAFETY DATA SHEET

### General Information

Company's Information: **TULSTAR PRODUCTS, INC.**  
5510 S. Lewis Ave.  
Tulsa, OK 74105

Phone Number: (918) 749-9060  
Fax Number: (918) 747-1444  
Email Address: [tulstar@tulstar.com](mailto:tulstar@tulstar.com)  
Emergency Phone Number: CHEMTREC 800-424-9300 (24 hours)

### Product Identification

Product Name: Ethyl Ether  
Synonyms: Ether; ether, anhydrous; Diethyl Ether; 1,1'Oxybisethane; ethyl oxide; diethyl oxide; Ethyl ether anhydrous  
CAS Number: 60-29-7  
Percent: 99-100%  
Hazardous: Yes

### Hazards Identification

Emergency Overview: Danger! Extremely flammable liquid and vapor. Harmful if swallowed, inhaled or absorbed through skin. Causes irritation to skin, eyes and respiratory tract. Affects central nervous system.

Health Rating: 2-Moderate  
Flammability Rating: 4-Extreme  
Reactivity Rating: 2-Moderate  
Contact Rating: 2-Moderate  
Lab Protective Equipment: Goggles, lab coat, vent hood, proper gloves, Class B extinguisher  
Storage Color Code: Red (Flammable)  
Potential Health Effects:

Inhalation-	Irritant. General anesthesia by inhalation can occur. Continued exposure may lead to respiratory failure or death. Early symptoms include irritation of nose and throat, vomiting, and irregular respiration, followed by dizziness, drowsiness, and unconsciousness.
Ingestion-	Irritating to the mucous membranes. Ingestion of 1 or 2 ounces may be fatal. Because of volatility, the stomach becomes distended, which may cause belching. Other symptoms can include vomiting, unconsciousness, and coma.
Skin Contact-	Irritating to the skin and mucous membranes by drying effect. Can cause dermatitis or prolonged exposure. May be absorbed through skin.
Eye Contact-	May cause irritation, redness and pain. Prolonged exposures to high concentrations of vapor can cause eye damage.
Chronic Exposure-	Repeated exposures may be habit forming. Prolonged exposures may result in headache, drowsiness, excitation, and psychic disturbances. Teratogenic effects are possible.
Aggravation of Pre-Existing Conditions-	Persons with pre-existing skin disorders or eye problems or impaired liver, kidney or respiratory function may be more susceptible to the effects of this substance. Alcoholic beverage consumption can enhance the toxic effects of this substance.

## **First Aid Measures**

- Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- Ingestion: Do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician immediately.
- Skin Contact: Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. Call a physician.
- Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

## **Fire Fighting Measures**

- Fire: Flash point- -45°C (49°F) CC  
Autoignition Temperature- 160°C (320°F)  
Flammable limits in air % by volume- lél-1.9; uel-36.0  
Dangerous highly flammable liquid.
- Explosion: Containers may explode when involved in a fire. Above flash point, vapor-air mixtures are explosive within flammable limits noted above. May form explosive peroxides on long standing or after exposure to air or light. May explode when brought in contact with nitric acid. Sensitivity to mechanical impact: Yes, if peroxides are formed. Sensitive to static discharge.
- Extinguishing: Dry chemical, foam or carbon dioxide. Treat as a flammable gas in a fire situation. Water spray may be used to keep fire exposed containers cool. Water is ineffective as an extinguishing agent.
- Special Info: 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. This highly flammable liquid must be kept from sparks, open flame, hot surfaces, and all sources of heat and ignition. Vapors can flow along surfaces to distant ignition source and flash back.

## **Accidental Release Measures**

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (eg. Vermiculite, dry sand, earth) and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors to protect personnel attempting to stop leak and to flush spills away from exposures. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

## **Handling & Storage**

Protect against physical damage. Outside or detached storage is preferred. Inside storage should be in a standard flammable liquids storage room or cabinet. Separate from oxidizing materials. Storage and use areas should be NO SMOKING areas. Bond and ground containers when transferring liquid. Isolate from other combustible materials. Protect from direct sunlight. Protect against static electricity and lightning for large quantity storage rooms, protect with automatic sprinkler systems and total peroxide formation. Ether is subject to peroxide formation in opened containers and should be protected from exposure to air. When low peroxide ether is required, use only materials from an unopened can. Do not allow to evaporate to near dryness. Addition of water or appropriate reducing agents will lessen peroxide formation. Any ether remaining in opened containers that has not been consumed/used after 2-3 days, should be discarded. Store at a temperature not exceeding 30°C (86°F). Do not open unless contents are at room temperature (72°F) or below for at least 24 hours. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

## **Exposure Controls/Personal Protection**

Airborne Exposure Limits:

-OSHA Permissible Exposure Limits (PEL): 400 ppm (TWA)

-ACGIH Threshold Limit Value (TLV): 400 ppm (TWA)

Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work

area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators:	If the exposure limit is exceeded, a half-face organic vapor respirator may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, which ever is lowest. A full-face piece organic vapor respirator may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, which ever is the lowest. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. <b>WARNING:</b> Air-purifying respirators do not protect workers in oxygen-deficient atmosphere. An organic vapor respirator is predicted to have a short service life (less than 30 minutes at concentrations of ten times the TLV/PEL) when used with this material.
Skin Protection:	Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
Eye Protection:	Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.
Others:	Shoes should be conductive and non-sparking.

### **Physical & Chemical Properties**

Appearance:	Clear, colorless liquid
Odor:	Sweet, ethereal odor
Solubility:	8.43% by weight in H <sub>2</sub> O @ 15°C; 6.05% by weight in H <sub>2</sub> O @ 25°C.
Specific Gravity:	0.71 at 20°C/4°C
pH:	No information founded
% Volatiles by Volume @ 21°C (70°F):	No information founded
Boiling Point:	35°C (95°F)
Melting Point:	-123°C (-189°F)
Vapor Density (Air = 1):	2.6
Vapor Pressure (mm Hg):	440 @ 20°C (68°F) (ether)
Evaporation Rate (BuAc = 1):	37.5

### **Stability & Reactivity**

Stability:	Stable under ordinary conditions of use and storage. Heat, light, and long standing contribute to instability. Reacts with air to form explosive peroxides.
Hazardous Decomposition Products:	Carbon dioxide and carbon monoxide may form when heated to decomposition.
Hazardous Polymerization:	Will not occur.
Incompatibilities:	Can react dangerously with acetyl peroxide, liquid oxygen, bromoazide, chlorine, and strong oxidizers such as nitrates. Avoid heat, flame, other source of ignition, and exposure to light and air.
Conditions to Avoid:	Heat, flame, ignition sources, incompatibles, light and air.

### **Toxicological Information**

Data:	Oral rat LD50- 1215 mg/kg; investigated as a tumorigen and mutagen; irritation eye rabbit- 100 mg moderate; skin rabbit- 360 mg open mild.
Reproductive:	See Chronic Health Hazards.

### **Ecological Information**

Environmental Fate:	When released into the soil, this material is expected to quickly evaporate. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is not expected to biodegrade. When released into water, this material is not expected to biodegrade. When released into the water, this material is expected to have a half-life of less than 1 day. When released into water, the material is expected to quickly evaporate. This material is not expected to significantly bioaccumulate. This material has a log octanol-water partition coefficient of less than 3.0. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is not expected to be degraded by photolysis. When released into the air, this material is expected to have a half-life between 1 and 10 days.
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Environmental Toxicity: The LC50/96-hour values for fish are over 100 mg/l. This material is not expected to be toxic to aquatic life.

### **Disposal Considerations**

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

### **Transportation Information**

Domestic (Land, D.O.T.):

Proper Shipping Name: Di-Ethyl Ether  
Hazard Class: 3  
UN/NA: UN1155  
Packing Group: I  
Product Size: 215L

International (Water, I.M.O.):

Proper Shipping Name: Di-Ethyl Ether  
Hazard Class: 3  
UN/NA: UN1155  
Packing Group: I  
Product Size: 215L