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MATERIAL SAFETY DATA SHEET

Effective Date: 04/06/89

Emergency Telephone Number

Supercedes : 02/15/89

CHEMTREC 1-800-424-9300

Product Identification: ETHYL ETHER

Synonyms: Anesthesia ether; ethyl oxide; diethyl ether

Chemical Formula: $C_2H_5OC_2H_5$

Formula CAS No.: 60-29-7

Molecular Weight: 74.12

Hazardous Ingredients: Ethyl ether
CAS# 64-17-5 Ethyl Alcohol**PRECAUTIONARY MEASURES**DANGER EXTREMELY FLAMMABLE. HARMFUL IF SWALLOWED OR INHALED.
CAUSES ANESTHETIC EFFECTS.May form explosive peroxides.
Keep away from heat, sparks and flame.
Keep container closed.
Use with adequate ventilation.
Avoid breathing vapor.
Wash thoroughly after handling. DO NOT OPEN Unless Contents Are At Room
Temperature (72°F) or Below.**EMERGENCY/FIRST AID**If swallowed, induce vomiting immediately by giving two glasses of water and sticking
finger down throat. Never give anything by mouth to an unconscious person. If inhaled,
remove to fresh air. If not breathing, give artificial respiration. If breathing is
difficult, give oxygen. In all cases call a physician.

SEE SECTION 5.

DOT Hazard Class: Flammable Liquid

Physical Data SECTION 1Appearance: Colorless liquid.
Odor: Sweet, ethereal odor.
Solubility: 7.5 gm/100 gm water @ 20°C.
Boiling Point: 35°C (95°F)
Melting Point: -123°C (-190°F)
Specific Gravity (water) 0.71
Vapor Density (Air=1): 2.6
Vapor Pressure (mm Hg): 422 @ 20°C (68°F)
Evaporation Rate: (BuAc=1): 37.5

ETHYL ETHER

Fire and Explosion Information

SECTION 2

FIRE: Dangerous highly flammable liquid. Flash point: -45°C (-49°F) (closed cup). Auto ignition temperature: 160°C (320°F). Flammable limits in air, % by volume: lcl - 1.9; ucl - 36.0.

Explosion: 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.

Fire Extinguishing Media: 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.

Special Information: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece 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.

Reactivity Data

SECTION 3

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: Toxic gases and vapors such as carbon monoxide may be released in a fire.

Hazardous Polymerization: Will not occur.

Incompatibilities: Can react dangerously with acetyl peroxide, liquid air, bromoazide, chlorine, and strong oxidizers such as nitrates.

Leak/Spill Disposal Information

SECTION 4

Remove all sources of ignition; ventilate area of leak or spill; wear full protective equipment and clothing and NIOSH approved self-contained breathing apparatus, full facepiece operated in the pressure demand or other positive pressure mode. Contain and recover liquid when possible. Absorb with vermiculite, dry sand, earth, or similar material. Scoop up with non-sparking tools and place in a closed container, and dispose in a RCRA approved facility. Alternatively, spills may be collected as RCRA hazardous waste and dissolved in an alcohol of greater molecular weight than butyl alcohol, then atomized in a suitable combustion chamber. This substance should not be flushed to sewer because of the possibility of an explosion.

Ensure compliance with local, state and federal regulations.

Health Hazard Information

SECTION 5

A. Exposure/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 on prolonged exposure.

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.

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.

B. FIRST AID

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. Call physician immediately.

Skin contact: Remove any contaminated clothing. Wash skin with plenty of water for at least 15 minutes. If irritation develops, get medical attention.

Eye contact: Wash eyes with plenty of water for at least 15 minutes. Call a physician.

C. TOXICITY DATA (RTECS, 1982)

Oral rat LD50: 1215 mg/Kg.
 Inhalation rat LC50: 73000 ppm/150M
 Mutation references cited.
 Irritation eye rabbit: 100 mg moderate
 skin rabbit 360 mg open mild

Occupational Control Measures

SECTION 6

Airborne Exposure Limits:

-OSHA Permissible Exposure Limit (PEL):
400 ppm (TWA) 500 (STEL)

-ACGIH Threshold Limit Value (TLV):
400 ppm (TWA) 500 ppm (STEL)

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:
(NIOSH Approved)**

If the TLV is exceeded a full facepiece chemical cartridge respirator may be worn up to the maximum use concentration specified by the respirator supplier. Alternatively, a supplied air full facepiece respirator or airlined hood may be worn.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

Use chemical safety goggles. Contact lenses should not be worn when working with this material. Maintain eye wash fountain and quick-drench facilities in work area.

Storage and Special Information

SECTION 7

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. Isolate from other combustible material. Protect from direct sunlight. Protect against static electricity and lightning for large quantity storage rooms, protect with automatic sprinkler systems and total flooding carbon dioxide systems. The reactivity hazard may be increased on longstanding due to peroxide formation. DANGER DO NOT OPEN Unless Contents Are At Room Temperature (72°F) or Below. Allow at least 24 hours for material to cool to room temperature before opening container.

Addendum to Material Safety Data Sheet

REGULATORY STATUS

Hazard Categories for SARA
Section 311/312 Reporting

Acute	Chronic	Fire	Pressure	Reactive
X	X	X		X

Products or Components
of Product:

CERCLA Sec. 103 RQ lbs	RCRA Sec. 261.33	SARA EHS Sec. 302 RQ	TFQ	SARA 313 Chemicals Name Chemical List Category
ETHYL ETHER				
Ethyl ether (60-29-7) > 99%	100	U117	No	No
Ethyl alcohol (64-17-5) 0.05%	No	No	No	No

SARA Section 302 EHS RQ:
Reportable Quantity of Extremely Hazardous Substance, listed at 40 CFR 355.

SARA Section 302 EHS TPQ:
Threshold Planning Quantity of Extremely Hazardous Substance. An asterick (*) following a Threshold Planning Quantity signifies that if the material is a solid and has a particle size equal to or larger than 100 micrometers, the Threshold Planning Quantity - 10,000 LBS.

SARA Section 313 Chemicals:
Toxic Substances subject to annual release reporting requirements listed at 40 CFR 372.65.

CERCLA Sec. 103:
Comprehensive Environmental Response, Compensation and Liability Act (Superfund). Releases to air, land or water of these hazardous substances which exceed the Reportable Quantity (RQ) must be reported to the National Response Center, (800-424-8802); Listed at 40 CFR 302.4

RCRA:
Resource Conservation and Reclamation Act. Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33

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