

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
 	Flammable material; avoid heat and sources of ignition. Harmful compound, minimize exposure. Irritating to skin, eyes, and the respiratory system. Air, heat, and light sensitive material. May form explosive peroxides. Refrigerate and vent pressure slowly before opening.	   

Section I. Chemical Product and Company Identification

Chemical Name	Diethyl Ether Anhydrous (stabilized with BHT)		
Catalog Number	D3479	Supplier	TCl America 9211 N. Harborgate St. Portland OR 1-800-423-8616
Synonym	Ether Anhydrous; Ethyl Ether Anhydrous		
Chemical Formula	C ₄ H ₁₀ O		
CAS Number	60-29-7	In case of Emergency Call	Chemtrec® (800) 424-9300 (U.S.) (703) 527-3887 (International)

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Diethyl Ether Anhydrous (stabilized with BHT)	60-29-7	Min. 98.0 (GC)	Not available.	Rat LD ₅₀ (oral) 1215 mg/kg Mouse LD ₅₀ (inhalation) 31000 ppm/30M Rabbit LD ₅₀ (dermal) >20 mL/kg

Section III. Hazards Identification

Acute Health Effects	Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Vapors may cause drowsiness and dizziness. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.
Chronic Health Effects	CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Not available. DEVELOPMENTAL TOXICITY : Not available. Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.

Section IV. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Skin Contact	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Inhalation	If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.
Ingestion	INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive.

Section V. Fire and Explosion Data

Flammability	Flammable.	Auto-Ignition	160 °C (320 °F)
Flash Points	-45°C (-49°F).	Flammable Limits	LOWER: 1.7% UPPER: 48%
Combustion Products	These products are toxic carbon oxides (CO, CO ₂).		
Fire Hazards	Not available.		
Explosion Hazards	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.		

Continued on Next Page

Emergency phone number (800) 424-9300

Fire Fighting Media
and Instructions

Flammable liquid.
SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion. Consult with local fire authorities before attempting large scale fire-fighting operations.

Section VI. Accidental Release MeasuresSpill Cleanup
Instructions

Flammable material. Harmful material. Irritating material. Material may form explosive peroxides. Refrigerate and vent pressure before opening. Air, heat, and light sensitive material.
Keep away from heat. Mechanical exhaust required. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal.

Section VII. Handling and StorageHandling and Storage
Information

FLAMMABLE. HARMFUL. IRRITANT. MAY FORM EXPLOSIVE PEROXIDES UNDER THE INFLUENCE OF AIR AND LIGHT. AIR, HEAT, AND LIGHT SENSITIVE. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. Do not breathe gas/fumes/ vapor/spray.
Always store away from incompatible compounds such as oxidizing agents, acids.

Section VIII. Exposure Controls/Personal Protection

Engineering Controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower is proximal to the work-station location.

Personal Protection

Splash goggles. Lab coat. Vapor respirator. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent.



Exposure Limits

Not available.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Liquid. (Clear, colorless.)	Solubility	Soluble in water. Soluble in concentrated hydrochloric acid. Miscible with lower aliphatic alcohols, benzene, chloroform, petroleum ether, other fat solvents, many oils.
Specific Gravity	0.72 (water=1)	Partition Coefficient	Log P _{ow} : 0.89
Molecular Weight	74.12	Vapor Pressure	58.6 kPa (@ 20°C)
Boiling Point	35°C (95°F)	Vapor Density	2.6 (Air = 1)
Melting Point	-116°C (-176.8°F)	Volatility	Not available.
Refractive Index	1.3510 - 1.3550	Odor	Sweet Pungent.
Critical Temperature	Not available.	Taste	Burning.
Viscosity	Not available.		

Section X. Stability and Reactivity Data

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	Avoid excessive heat and light.
Incompatibilities	Reactive with strong oxidizing agents, strong acids.

Section XI. Toxicological Information

RTECS Number	KI5775000
Routes of Exposure	Eye Contact. Ingestion. Inhalation.
Toxicity Data	Rat LD ₅₀ (oral) 1215 mg/kg Mouse LD ₅₀ (inhalation) 31000 ppm/30M Rabbit LD ₅₀ (dermal) >20 mL/kg
Chronic Toxic Effects	CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Not available. DEVELOPMENTAL TOXICITY : Not available. Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.
Acute Toxic Effects	Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Vapors may cause drowsiness and dizziness. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Continued on Next Page

Emergency phone number (800) 424-9300

Section XII. Ecological Information

Ecotoxicity Not available.

Environmental Fate Diethyl ether's production and use as a solvent, in the manufacture of gun powder, and as a primer for gasoline engines may result in its release to the environment through various waste streams. If released to air, a vapor pressure of 538 mm Hg at 25 deg C indicates diethyl ether will exist solely as a vapor in the ambient atmosphere. Vapor-phase diethyl ether will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals and nitrate radicals; half-lives for these reactions in air are estimated to be 1.2 and 5.8 days, respectively. Direct photolysis is not expected to be an important removal process since aliphatic ethers do not absorb light in the environmental spectrum. If released to soil, diethyl ether is expected to have high mobility based upon an estimated Koc of 73. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 1.23X10⁻³ atm-cu m/mole. Diethyl ether is expected to volatilize from dry soil surfaces based upon its vapor pressure. Aqueous screening studies indicate biodegradation is expected to be a slow fate process in both soil and water; 0 to 1.1% BODT was observed over a period of 5 days. If released into water, diethyl ether is not expected to adsorb to suspended solids and sediment in water based upon the estimated Koc. Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant. Estimated volatilization half-lives from a model river and model lake are 3.1 hours and 3.6 days, respectively. BCFs ranging from 0.9 to 9.1 in carp suggest bioconcentration in aquatic organisms is low. Hydrolysis is not expected to occur due to the lack of hydrolyzable functional groups. Occupational exposure to diethyl ether may occur through inhalation and dermal contact with this compound at workplaces where diethyl ether is produced or used. The general population may be exposed to diethyl ether from consumer products, inhalation of ambient air, and ingestion of contaminated drinking water.

Section XIII. Disposal Considerations

Waste Disposal Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance.

Section XIV. Transport Information

DOT Classification DOT Class 3: Flammable liquid.

PIN Number UN1155

Proper Shipping Name Diethyl Ether

Packing Group (PG) I RQ: 100 (45.4)

DOT Pictograms

**Section XV. Other Regulatory Information and Pictograms**

TSCA Chemical Inventory (EPA) This compound is **ON** the EPA Toxic Substances Control Act (TSCA) inventory list.

WHMIS Classification (Canada) CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).
On DSL

EINECS Number (EEC) 200-467-2

EEC Risk Statements R10- Flammable.
R18- In use, may form flammable/explosive vapor-air mixture.
R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.
R36/37/38- Irritating to eyes, respiratory system and skin.

Japanese Regulatory Data ENCS No. 2-361 ; 2-365

Section XVI. Other Information

Version 1.0
Validated on 10/9/2007.
Printed 10/9/2007.

Notice to Reader

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, household, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.