

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	<p>Toxic compound, do not ingest or inhale. Avoid all contact with this material.</p> <p>Combustible material; avoid heat and sources of ignition. Irritating to skin, eyes, and the respiratory system.</p> <p>May form explosive peroxides.</p> <p>CARCINOGEN. MINIMIZE EXPOSURE.</p> <p>Reproductive Effects.</p> <p>Readily absorbed through skin.</p>	

Section I. Chemical Product and Company Identification

Chemical Name	Ethylene Glycol Mono-n-butyl Ether		
Catalog Number	B0698	Supplier	TCI America 9211 N. Harborgate St. Portland OR 1-800-423-8616
Synonym	Ethanol, 2-butoxy- (CA INDEX NAME) Butyl Cellosolve; Butyl Glycol		
Chemical Formula	C ₆ H ₁₄ O ₂		
CAS Number	111-76-2	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
Ethylene Glycol Mono-n-butyl Ether	111-76-2	Min. 99.0 (GC)	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.	Rat LD ₅₀ (oral) 250 mg/kg Rabbit LD ₅₀ (dermal) 220 mg/kg Rat LD ₅₀ (inhalation) 450 ppm/4H

Section III. Hazards Identification

Acute Health Effects	<p>Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness 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.</p> <p>Readily absorbed through skin.</p>
Chronic Health Effects	<p>CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria</p> <p>MUTAGENIC EFFECTS : Not available.</p> <p>TERATOGENIC EFFECTS : Tumorigenic Effects.</p> <p>Mouse TCLO Inhalation 250 ppm/6 hours/2 years intermittent</p> <p>TOXIC Effects:</p> <p>Tumorigenic - Carcinogenic by RTECS criteria</p> <p>Liver - Tumors</p> <p>Mouse TCLO Inhalation 15600 mg/kg/104 weeks intermittent</p> <p>TOXIC Effects:</p> <p>Tumorigenic - Carcinogenic by RTECS criteria</p> <p>Liver - Tumors</p> <p>Rat TCLO Inhalation 3250 mg/kg/104 weeks intermittent</p> <p>TOXIC Effects:</p> <p>Tumorigenic - Equivocal tumorigenic agent by RTECS criteria</p> <p>Endocrine - Adrenal cortex tumors</p> <p>DEVELOPMENTAL TOXICITY: Reproductive Effects.</p> <p>Rat TCLO Inhalation 200 ppm/6 hours, female 6-15 days of pregnancy</p> <p>TOXIC Effects:</p> <p>Maternal Effects - Uterus, cervix, vagina</p> <p>Effects on Fertility - Post implantation mortality</p> <p>Effects on Fertility - Litter size</p> <p>Rat TCLO Inhalation 483 mg/m³, female 6 hours and 6-15 days of pregnancy</p> <p>TOXIC Effects:</p> <p>Effects on Fertility - Pre-implantation mortality</p> <p>Effects on Fertility - Post-implantation mortality</p> <p>Specific Developmental Abnormalities - Musculoskeletal system</p> <p>Mouse TDLo Oral 0.72 gm/kg, female multigenerations</p> <p>TOXIC Effects:</p> <p>Specific Developmental Abnormalities - Hopatobiliary system</p> <p>Specific Developmental Abnormalities - Urogenital system</p> <p>Effects on Newborn - Growth statistics</p> <p>Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.</p>

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 for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
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	Combustible.	Auto-Ignition	245 °C (473 °F)
Flash Points	68 °C (154.4 °F).	Flammable Limits	LOWER: 1.1% UPPER: 10.6%
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.		
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet. Consult with local fire authorities before attempting large scale fire-fighting operations.		

Section VI. Accidental Release Measures

Spill Cleanup Instructions	Toxic material. Combustible material. Irritating material. Carcinogenic material. Reproductive effecting material. Material may form explosive peroxides. Material is readily absorbed through skin. Keep away from heat. Mechanical exhaust required. Stop leak if without risk. DO NOT get water inside container. DO NOT touch spilled material. Use water spray to reduce vapors. 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 Storage

Handling and Storage Information	TOXIC. COMBUSTIBLE. IRRITANT. CARCINOGEN. REPRODUCTIVE EFFECTOR. MAY FORM EXPLOSIVE PEROXIDES. READILY ABSORBED THROUGH SKIN. Keep locked up. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. DO NOT ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively.
----------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

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. A MSHA/NIOSH approved respirator must be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Exposure Limits	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.

**Section IX. Physical and Chemical Properties**

Physical state @ 20°C	Liquid. (Clear, colorless.)	Solubility	Miscible with water, alcohol, ether, acetone, benzene, heptane and other organic solvents.
Specific Gravity	0.9 (water=1)	Partition Coefficient	Log P _{ow} : 0.83
Molecular Weight	118.17	Vapor Pressure	1 mmHg (@ 20 °C)
Boiling Point	171 °C (339.8 °F) @ 743 mmHg	Vapor Density	4.1 (Air = 1)
Melting Point	-75 °C (-103 °F)	Volatility	Not available.
Refractive Index	Not available.	Odor	Ether-like
Critical Temperature	Not available.	Taste	Not available.
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.

Section XI. Toxicological Information

RTECS Number	KJ8575000
Routes of Exposure	Eye Contact. Ingestion. Inhalation.
Toxicity Data	Rat LD ₅₀ (oral) 250 mg/kg Rabbit LD ₅₀ (dermal) 220 mg/kg Rat LD ₅₀ (inhalation) 450 ppm/4H
Chronic Toxic Effects	CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic Effects. Mouse TCLo Inhalation 250 ppm/6 hours/2 years intermittent TOXIC Effects: Tumorigenic - Carcinogenic by RTECS criteria Liver - Tumors Mouse TCLo Inhalation 15600 mg/kg/104 weeks intermittent TOXIC Effects: Tumorigenic - Carcinogenic by RTECS criteria Liver - Tumors Rat TCLo Inhalation 3250 mg/kg/104 weeks intermittent TOXIC Effects: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria Endocrine - Adrenal cortex tumors DEVELOPMENTAL TOXICITY : Reproductive Effects. Rat TCLo Inhalation 200 ppm/6 hours, female 6-15 days of pregnancy TOXIC Effects: Maternal Effects - Uterus, cervix, vagina Effects on Fertility - Post implantation mortality Effects on Fertility - Litter size Rat TCLo Inhalation 483 mg/m ³ , female 6 hours and 6-15 days of pregnancy TOXIC Effects: Effects on Fertility - Pre-implantation mortality Effects on Fertility - Post-implantation mortality Specific Developmental Abnormalities - Musculoskeletal system Mouse TDLo Oral 0.72 gm/kg, female multigenerations TOXIC Effects: Specific Developmental Abnormalities - Hopatobiliary system Specific Developmental Abnormalities - Urogenital system Effects on Newborn - Growth statistics Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
Acute Toxic Effects	Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness 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. Readily absorbed through skin.

Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	Ethylene glycol mono-n-butyl ether's production and use in hydraulic fluids, industrial solvents, vinyl and acrylic paints, and as a solvent in cosmetics may result in its release to the environment through various waste streams. If released to air, a vapor pressure of 0.88 mm Hg at 25 deg C indicates ethylene glycol mono-n-butyl ether will exist solely as a vapor in the ambient atmosphere. Vapor-phase ethylene glycol mono-n-butyl ether will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 16 hours. If released to soil, ethylene glycol mono-n-butyl ether is expected to have high mobility based upon an estimated Koc of 67. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 1.60X10 ⁻⁶ atm-cu m/mole. If released into water, ethylene glycol mono-n-butyl ether is not expected to adsorb to suspended solids and sediment based upon the estimated Koc. Ethylene glycol mono-n-butyl ether reached 91% of its theoretical BOD in 14 days using an activated sludge inoculum. Therefore this compound has the potential to biodegrade rapidly in water. Based upon this compound's estimated Henry's Law constant it is concluded that the volatilization of ethylene glycol mono-n-butyl ether from water surfaces may be an important fate process. The estimated volatilization half-lives for a model river and model lake are 25 and 185 days, respectively. An estimated BCF of 3 suggests the potential for bioconcentration in aquatic organisms is low. Hydrolysis is not expected to be an important environmental fate process since this compound lacks functional groups that hydrolyze under environmental conditions. Occupational exposure to ethylene glycol mono-n-butyl ether may occur through inhalation and dermal contact with this compound at workplaces where ethylene glycol mono-n-butyl ether is produced or used. Monitoring data indicate that the general population may be exposed to ethylene glycol mono-n-butyl ether via ingestion of food and the use of some household cleaning and repair products that might contain and release ethylene glycol mono-n-butyl ether.

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 6.1: Toxic material
PIN Number	UN2810
Proper Shipping Name	Toxic liquid, organic, n.o.s.
Packing Group (PG)	III
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-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F). CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS D-2B: Material causing other toxic effects (TOXIC). On DSL
EINECS Number (EEC)	203-905-0
EEC Risk Statements	R23/24/25- Toxic by inhalation, in contact with skin and if swallowed. R36/37/38- Irritating to eyes, respiratory system and skin. R45- May cause cancer. R46- May cause heritable genetic damage. R47- May cause birth defects.
Japanese Regulatory Data	ENCS No. 2-407; 7-97

Section XVI. Other Information

Version 1.0
Validated on 7/20/2009.
Printed 8/6/2009.

Notice to Reader

TCl laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, 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.