



Ethylene Glycol Monobutyl Ether

Butyl CELLOSOLVE

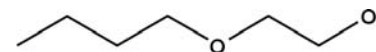
Chemical Formula: $\text{HOCH}_2\text{CH}_2\text{OC}_4\text{H}_9$

CAS Registry Number: 111-76-2

Molecular Weight: 118.18

Category: Glycol Ether / Esters

PRODUCT INFORMATION



Synonyms:

- 2-butoxietanol
- 2-BUTOXY ETHANOL
- 2-Butoxy-1-ethanol
- 2-Butoxyethanol
- 2-butoxyethanol m
- 2-n-Butoxyethanol
- 3-Oxa-1-heptanol
- AETHYLENGLYKOL-MONOBUTYLAETHER
- Bikanol B 1
- Buchiseru
- Butoxyethanol
- Butyl Cellosolve
- Butyl Cellu-Sol
- BUTYL GLYCOL
- Butyl Glysolv
- Butyl icinol
- Butyl monoether glycol
- Butyl Oxitol
- C4E1
- Chimec NR
- DB solvent
- Dowanol EB
- Eastman EB
- EGBE
- Ektasolve EB
- Ethanol, 2-butoxy-
- ETHYLENE GLYCOL BUTYL ETHER
- ETHYLENE GLYCOL MONOBUTYL ETHER
- Ethylene glycol mono-n-butyl ether
- Ethylene glycol n-butyl ether
- Gafcol EB
- Glycol butyl ether
- Glycol EB
- Glycol monobutyl ether
- Hydroxyethyl butyl ether
- K Foam Lo
- Mearcell 3532
- Minex BDH
- Monobutyl glycol ether
- n-Butoxyethanol
- n-Butyl cellosolve
- NSC 60759
- O-Butyl ethylene glycol
- Poly-Solv EB
- UN 1172

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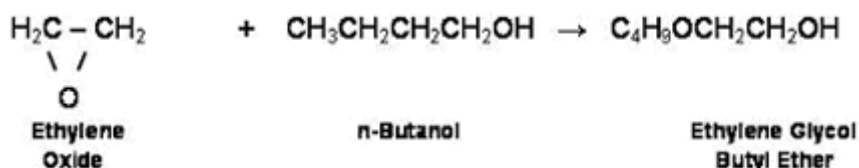
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Description

Ethylene glycol butyl ether (EGBE) is a clear, combustible liquid with a mild ether odor. It is completely soluble in water, and is miscible with mineral oils and soaps. It is a good solvent often used in cleaners, inks, paints, coatings and lacquers.

EGBE is produced by reacting ethylene oxide and normal butanol (n-butanol) using a catalyst. If the ratio of ethylene oxide to n-butanol is greater than one, di- and tri-ethylene glycol monoethers are produced along with the EGBE.



Physical and Chemical Properties

Appearance: Clear, colorless liquid.

Odor: Mild odor.

Solubility: Soluble in water.

Specific Gravity: 0.90 @ 20°C/4°C

pH: No information found.

% Volatiles by volume @ 21°C (70°F): 100

Boiling Point: 171°C (340°F)

Melting Point: -70°C (-94°F)

Vapor Density (Air=1): 4.07

Vapor Pressure (mm Hg): 0.8 @ 20°C (68°F)

Evaporation Rate (BuAc=1): 0.07

Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong oxidizers, strong bases. May attack metallic aluminum at high temperatures.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.



Hazards Identification

Emergency Overview

DANGER! HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES EYE IRRITATION. AFFECTS CENTRAL NERVOUS SYSTEM, BLOOD AND BLOOD-FORMING ORGANS, KIDNEYS, LIVER AND LYMPHOID SYSTEM. COMBUSTIBLE LIQUID AND VAPOR. MAY CAUSE IRRITATION TO SKIN AND RESPIRATORY TRACT.

SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Poison)

Flammability Rating: 2 - Moderate

Reactivity Rating: 1 - Slight

Contact Rating: 3 - Severe (Life)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER

Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation:

Causes irritation to the respiratory tract. Symptoms may include sore throat, coughing, headache, nausea and shortness of breath. High concentrations have a narcotic effect.

Ingestion:

Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea. Toxic! May cause systemic poisoning with symptoms paralleling those of inhalation.

Skin Contact:

May cause irritation with redness and pain. May be absorbed through the skin with possible systemic effects.

Eye Contact:

Vapors are irritating and may produce immediate pain, redness and tearing. Splashes can cause severe pain, stinging, swelling.

Chronic Exposure:

Prolonged or repeated exposures can cause damage to the liver, kidneys, lymphoid system, blood and blood-forming organs.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders, eye problems, impaired liver, kidney, blood, respiratory or lymphoid system function may be more susceptible to the effects of the substance.

First Aid Measures

Inhalation:

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

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician immediately.

Skin Contact:



Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician, immediately. Wash clothing before reuse.

Eye Contact:

Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately.

Fire Fighting Measures

Fire:

Flash point: 62°C (144°F)

Autoignition temperature: 238°C (460°F)

Flammable limits in air % by volume:

lcl: 1.1; ucl: 12.7

Combustible Liquid.

Explosion:

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Vapors can flow along surfaces to distant ignition source and flash back. Contact with strong oxidizers may cause fire. Sensitive to static discharge.

Fire Extinguishing Media:

Dry chemical, alcohol foam or carbon dioxide. Do not use a solid stream of water, since the stream will scatter and spread the fire. Water spray may be used to keep fire exposed containers cool, dilute spills to nonflammable mixtures, protect personnel attempting to stop leak and disperse vapors.

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.

Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. 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 (e. g., 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.

Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from oxidizing materials. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. 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 Limit (PEL):

50 ppm skin

-ACGIH Threshold Limit Value (TLV):

20 ppm (TWA), A3 - Confirmed animal carcinogen with unknown relevance to humans

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 exposure limit is exceeded and engineering controls are not feasible, a full facepiece respirator with organic vapor cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres. This compound possibly exists in both particulate and vapor phase. A particulate (NIOSH type N95 or better) prefilter should be used for the particulate.

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.

Other Information

NFPA Ratings: Health: 2 Flammability: 2 Reactivity: 0

Label Hazard Warning:

DANGER! HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES EYE IRRITATION. AFFECTS CENTRAL NERVOUS SYSTEM, BLOOD AND BLOOD-FORMING ORGANS, KIDNEYS, LIVER AND LYMPHOID SYSTEM. COMBUSTIBLE LIQUID AND VAPOR. MAY CAUSE IRRITATION TO SKIN AND RESPIRATORY TRACT.

Label Precautions:

Avoid breathing vapor or mist.

Avoid contact with eyes, skin and clothing.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Keep away from heat and flame.

Label First Aid:

In all cases call a physician immediately. If swallowed, induce vomiting immediately as directed by medical personnel. 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 case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.



Applications

Butyl CELLOSOLVE solvent is used in coatings and cleaner applications, including many in consumer markets. Butyl CELLOSOLVE solvent is used for:

- Active solvent for solvent-based coatings
 - Coalescent for industrial water-based coatings
 - Coupling agent for architectural water-borne coatings
 - Coupling agent and solvent in household and industrial cleaners, rust removers, hard surface cleaners and disinfectants
 - Primary solvent in solvent-based silk screen printing inks
 - Coupling agent for resins and dyes in water-based printing inks
 - Solvent for agricultural pesticides
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