

Material Safety Data Sheet

2-Butoxyethanol or ethylene glycol monobutyl ether

ACC# 03540

Section 1 - Chemical Product and Company Identification

MSDS Name: 2-Butoxyethanol or ethylene glycol monobutyl ether

Catalog Numbers: AC154330000, AC154330010, AC154330025, AC154330050, AC403380000, AC403380010, AC403390000, AC403395000, E179-4, NC9082439, NC9657669, XXE17920LI

Synonyms: Butyl Cellosolve; Ethylene glycol monobutyl ether; EGBE: 2-Butoxyethanol; Ethylene glycol n-butyl ether.

Company Identification:

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100

Emergency Number: 201-796-7100

For CHEMTREC assistance, call: 800-424-9300

For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
111-76-2	2-Butoxyethanol	>97	203-905-0

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: colorless liquid. Flash Point: 62 deg C.

Warning! Causes eye and skin irritation. **Combustible liquid and vapor.** May be harmful if swallowed, inhaled, or absorbed through the skin. May cause respiratory tract irritation. May cause central nervous system depression. This material has been reported to be susceptible to autoxidation and therefore should be classified as peroxidizable. May form explosive peroxides.

Target Organs: Central nervous system, eyes.

Potential Health Effects

Eye: Causes eye irritation. May cause transient corneal injury.

Skin: Causes skin irritation. Substance is rapidly absorbed through the skin. Not expected to cause an allergic skin reaction. A single prolonged skin exposure is not likely to result in the material being absorbed in harmful amounts. Skin sensitization testing with human volunteers produced negative results. A skin notation is not recommended by ACGIH, based on estimates from physiologically based pharmacokinetic models which indicate that, even in worst-case dermal-exposure scenarios, 2-butoxyethanol is not absorbed in amounts sufficient to cause red blood cell hemolysis in humans.

Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May be harmful if swallowed.

Inhalation: May cause respiratory tract irritation. May be harmful if inhaled. May cause central nervous system effects such as nausea and headache.

Chronic: Chronic exposure may cause blood effects. Chronic exposure may cause effects similar to those of acute exposure.

Sophisticated modeling has clearly proven that 2-butoxyethanol does not build up in the body under any kinds of normal use conditions.

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid immediately.

Skin: In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.

Ingestion: If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Combustible liquid and vapor. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas.

Extinguishing Media: Water may be ineffective. Do NOT use straight streams of water. For small fires, use dry chemical, carbon dioxide, or water spray. For large fires, use water spray, fog or regular foam.

Flash Point: 62 deg C (143.60 deg F)

Autoignition Temperature: 238 deg C (460.40 deg F)

Explosion Limits, Lower: 1.1% @ 93°C

Upper: 12.7% @ 135°C

NFPA Rating: (estimated) Health: 2; Flammability: 2; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Keep away from heat and flame. Avoid breathing vapor or mist.

Storage: Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Containers should be dated when opened and tested periodically for the presence of peroxides. Should crystals form in a peroxidizable liquid, peroxidation may have occurred and the product should be considered extremely dangerous. In this instance, the container should only be opened remotely by professionals. All peroxidizable substances should be stored away from heat and light and be protected from ignition sources.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
2-Butoxyethanol	20 ppm TWA	5 ppm TWA; 24 mg/m ³ TWA 700 ppm IDLH	50 ppm TWA; 240 mg/m ³ TWA

OSHA Vacated PELs: 2-Butoxyethanol: 25 ppm TWA; 120 mg/m³ TWA

Personal Protective Equipment

Eyes: Wear chemical splash goggles.

Skin: Wear neoprene gloves, apron, and/or clothing. Wear butyl rubber gloves, apron, and/or clothing.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Appearance: colorless

Odor: mild ether-like odor

pH: Not available.

Vapor Pressure: 0.88 mm Hg @ 25 deg C

Vapor Density: 4.1 (air=1)

Evaporation Rate: 0.1 (n-butyl acetate=1)

Viscosity: 2.83 cS @25 deg C

Boiling Point: 171 deg C

Freezing/Melting Point: -70 deg C

Decomposition Temperature: Not available.

Solubility: Soluble.

Specific Gravity/Density: 0.90

Molecular Formula: C₆H₁₄O₂

Molecular Weight: 118.18

Section 10 - Stability and Reactivity

Chemical Stability: Under normal storage conditions, peroxidizable compounds can form and accumulate peroxides which may explode when subjected to heat or shock. This material is most hazardous when peroxide levels are concentrated by distillation or evaporation.

Conditions to Avoid: Ignition sources, excess heat.

Incompatibilities with Other Materials: Strong oxidizing agents, strong bases.

Hazardous Decomposition Products: Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:

CAS# 111-76-2: KJ8575000

LD50/LC50:

CAS# 111-76-2:

Dermal, guinea pig: LD50 = 230 uL/kg;

Draize test, rabbit, eye: 100 mg Severe;

Draize test, rabbit, eye: 100 mg/24H Moderate;
Inhalation, mouse: LC50 = 700 ppm/7H;
Inhalation, mouse: LC50 = 3380 mg/m³/7H;
Inhalation, rat: LC50 = 450 ppm/4H;
Inhalation, rat: LC50 = 2900 mg/m³/7H;
Oral, mouse: LD50 = 1230 mg/kg;
Oral, mouse: LD50 = 1167 mg/kg;
Oral, rabbit: LD50 = 300 mg/kg;
Oral, rabbit: LD50 = 320 mg/kg;
Oral, rat: LD50 = 470 mg/kg;
Oral, rat: LD50 = 917 mg/kg;

Skin, rabbit: LD50 = 220 Humans are less susceptible than rodents to 2-butoxyethanol exposure. 2-Butoxyethanol gives toxic results when tested on rabbits and rats. It does not behave the same when humans are exposed to it. This is explained by the different makeup of the red blood cells of test animals vs. humans. Test animal red blood cells are hypersensitive to 2-butoxyethanol when compared to humans.

Carcinogenicity:

CAS# 111-76-2:

- **ACGIH:** A3 - Confirmed animal carcinogen with unknown relevance to humans
- **California:** Not listed.
- **NTP:** Not listed.
- **IARC:** Not listed.

Epidemiology: No information found

Teratogenicity: No information found

Reproductive Effects: No information found

Mutagenicity: No information found

Neurotoxicity: No information found

Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. 24-Hr. LC50; goldfish: 1650 mg/L 96-Hr. LC50; bluegill sunfish: 1490 mg/L96-Hr. LC50; tidewater silversides: 1250 mg/L

Environmental: TERRESTRIAL FATE: Based on a recommended classification scheme, an estimated Koc value of 67, determined from an experimental log Kow and a recommended regression-derived equation, indicates that ethylene glycol mono-n-butyl ether is expected to have high mobility in soil. An estimated BCF value of 2.5 was calculated for ethylene glycol mono-n-butyl ether, using an experimental log Kow of 0.83 and a recommended regression-derived equation. According to a recommended classification scheme, this BCF value suggests that bioconcentration in aquatic organisms is low.

Physical: No information found.

Other: An estimated BCF value of 2.5, from an experimental log Kow, suggests that ethylene glycol mono-n-butyl ether bioconcentration in aquatic organisms will be low, according to a recommended classification scheme.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	NOT REGULATED FOR DOMESTIC TRANSPORT	Not Regulated
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 111-76-2 is listed on the TSCA inventory.

Health & Safety Reporting List

CAS# 111-76-2: Effective 4/13/89, Sunset 6/30/98

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 111-76-2: immediate, delayed, fire.

Section 313

This material contains 2-Butoxyethanol (listed as Glycol ethers), >97%, (CAS# 111-76-2) which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

CAS# 111-76-2 (listed as Glycol ethers) is listed as a hazardous air pollutant (HAP).

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 111-76-2 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

XN

Risk Phrases:

R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.

R 36/38 Irritating to eyes and skin.

Safety Phrases:

S 36/37 Wear suitable protective clothing and gloves.

S 46 If swallowed, seek medical advice immediately and show this container or label.

WGK (Water Danger/Protection)

CAS# 111-76-2: 1

Canada - DSL/NDSL

CAS# 111-76-2 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B3, D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 111-76-2 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 6/08/1999

Revision #12 Date: 2/16/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.