

MSDS Number: **B6100** * * * * * *Effective Date: 06/17/04* * * * * * *Supercedes: 05/07/03*

2-BUTOXYETHANOL

1. Product Identification

Synonyms: Butyl cellosolve®; Ethylene glycol monobutyl ether

CAS No.: 111-76-2

Molecular Weight: 118.18

Chemical Formula: HOCH₂CH₂OC₄H₉

Product Codes:

J.T. Baker: D648

Mallinckrodt: 2138

2. Composition/Information on Ingredients

| Ingredient | CAS No | Percent |
|-----------------|----------|---------|
| Hazardous | | |
| ----- | ----- | ----- |
| 2-Butoxyethanol | 111-76-2 | 99 - |
| 100% Yes | | |

3. 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.

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

Health Rating: 2 - Moderate
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.

4. 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.

5. Fire Fighting Measures

Fire:

Flash point: 62C (144F)

Autoignition temperature: 238C (460F)

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.

6. 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.

J. T. Baker SOLUSORB® solvent adsorbent is recommended for spills of this product.

7. 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.

8. 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.

9. Physical and Chemical Properties

Appearance:

Clear, colorless liquid.

Odor:

Mild odor.

Solubility:

Soluble in water.

Specific Gravity:

0.90 @ 20C/4C

pH:

No information found.

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

100

Boiling Point:

171C (340F)

Melting Point:

-70C (-94F)

Vapor Density (Air=1):

4.07

Vapor Pressure (mm Hg):

0.8 @ 20C (68F)

Evaporation Rate (BuAc=1):

0.07

10. 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.

11. Toxicological Information

Toxicological Data:

Oral rat LD50: 470 mg/kg; Inhalation rat LC50: 450ppm/4H; Skin rabbit LD50: 220 mg/kg; investigated as a tumorigen, mutagen, reproductive effector

Reproductive Toxicity:

Has shown teratogenic effects in laboratory animals.

-----\Cancer Lists\-----

| Ingredient Category | ---NTP Carcinogen--- | | IARC |
|----------------------------|----------------------|-------------|------|
| | Known | Anticipated | |
| 2-Butoxyethanol (111-76-2) | No | No | |
| None | | | |

12. Ecological Information

Environmental Fate:

When released into the soil, this material is not expected to evaporate significantly. When released into the soil, this material may leach into groundwater. When released into the soil, this material may biodegrade to a moderate extent. When released into water, this material is not expected to evaporate significantly. When released into water, this material may biodegrade to a moderate extent. This material has an estimated bioconcentration factor (BCF) of less than 100. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life of less than 1 day.

Environmental Toxicity:

The LC50/96-hour values for fish are over 100 mg/l. This material is not expected to be toxic to aquatic life.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: TOXIC LIQUIDS, ORGANIC, N.O.S. (2-BUTOXYETHANOL)

Hazard Class: 6.1

UN/NA: UN2810

Packing Group: III

Information reported for product/size: 3KG

International (Water, I.M.O.)

Proper Shipping Name: TOXIC LIQUIDS, ORGANIC, N.O.S. (2-BUTOXYETHANOL)

Hazard Class: 6.1

UN/NA: UN2810

Packing Group: III

Information reported for product/size: 3KG

International (Air, I.C.A.O.)

Proper Shipping Name: TOXIC LIQUIDS, ORGANIC, N.O.S. (2-BUTOXYETHANOL)

Hazard Class: 6.1
UN/NA: UN2810
Packing Group: III
Information reported for product/size: 3KG

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

| Ingredient | TSCA | EC | Japan |
|----------------------------|------|-----|-------|
| Australia | | | |
| 2-Butoxyethanol (111-76-2) | Yes | Yes | Yes |

-----\Chemical Inventory Status - Part 2\-----

| Ingredient | Korea | DSL | --Canada-- NDSL |
|----------------------------|-------|-----|--------------------|
| Phil. | | | |
| 2-Butoxyethanol (111-76-2) | Yes | Yes | No |

-----\Federal, State & International Regulations - Part 1\-----

| Ingredient | -SARA 302- | -SARA 311/312- | -SARA 313- |
|----------------------------|------------|----------------|------------|
| Chemical Catg. | RQ | TPQ | List |
| 2-Butoxyethanol (111-76-2) | No | No | No |

-----\Federal, State & International Regulations - Part 2\-----

| Ingredient | CERCLA | -RCRA- | 261.33 |
|----------------------------|--------|--------|--------|
| 8(d) | | | |
| 2-Butoxyethanol (111-76-2) | No | No | |

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
 SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
 Reactivity: No (Pure / Liquid)

Australian Hazchem Code: 2R
Poison Schedule: None allocated.
WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. 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.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 14.

Disclaimer:

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