

Butylene Glycol

INCI: Butylene Glycol

1. Chemical Product and Company Identification

Product Name: Butylene Glycol
Chemical Name: 1,3 BUTANE DIOL
CASRN: 107-88-0
Emergency Numbers: Chemtrec 800-424-9300

2. Composition/Information on Ingredients

| Component & CAS Number | Weight | OSHA Hazard Category |
|------------------------------|--------|----------------------|
| 1,3-Butylene Glycol 107-88-0 | 99.5 | Hazardous |

3. Hazards Identification

EMERGENCY OVERVIEW:

Caution! May cause respiratory tract, skin and eye irritation.

Product Description

Appearance: Clear, colorless, mobile, syrupy liquid
Odor: Essentially odorless

Potential health effects

Routes of exposure: Skin, eyes, inhalation, ingestion

Immediate effects:

Skin: Only slightly irritating to the skin. Symptoms of exposure may include: Drying, cracking or inflammation of skin.
Eye: Exposure to liquid may cause eye irritation. Symptoms of exposure may include: Eye irritation or burning sensation.
Inhalation: May cause respiratory tract irritation. Symptoms of exposure may include: Nasal discharge, hoarseness, coughing, chest pain and breathing difficulty.
Ingestion: Essentially non-toxic. Symptoms of exposure may include: Nausea, vomiting, loss of appetite, gastrointestinal irritation and/or diarrhea.
Reproductive: No evidence of reproductive effects.
Carcinogenic: No evidence of carcinogenicity.
Mutagenic: No evidence of mutagenicity
Teratogenic: No evidence of birth defects.
Target Organ Effects: Overexposure (prolonged or repeated exposure) may cause: Local irritation at the site of exposure.

Medical Conditions which may be Aggravated by Exposure:

Significant exposure to this chemical may adversely affect people with acute or chronic disease of the:
Respiratory Tract
Skin

For further information see:

Section 4 – First Aid Measures Section 5 – Fire Fighting Measures
Section 6 – Accidental Release Measures Section 8 – Exposure Controls/Personal Protection
Section 9 – Physical and Chemical Properties Section 10 – Stability and Reactivity

4. First Aid Measures

Skin: Immediately flush skin with plenty of water. Remove contaminated clothing and shoes.

Call a physician if irritation develops and persists. Wash clothing before reuse.

Thoroughly clean shoes before reuse.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses, if worn. Get medical attention.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: If large quantities of this material are swallowed, call a physician immediately. Do NOT induce vomiting unless directed to do so by a physician. Never give anything by mouth to an unconscious person. Get medical attention.

5. Fire Fighting Measures

NFPA: Health: 1 Flammability: 1 Reactivity: 0

Flammable properties Flash point (test method): 109 C (228 F) (Closed Cup)

Flammable limits in air, % by volume: Upper: No Information Lower: No Information

Autoignition temperature: 394 C (741 F)

Products of combustion: Carbon monoxide and butadiene.

Extinguishing Media: Use alcohol type aqueous film forming foam for large fires. Use CO₂ or dry chemical for small fires.

Fire Fighting Environmental Concerns: Thoroughly decontaminate bunker gear and other fire-fighting equipment before re-use.

Fire Fighting Instructions: Water spray should be used to cool fire-exposed structures and vessels. Water or foam may cause frothing. Water spray can be used to reduce the intensity of flames and to dilute spills to a non-flammable mixture. Keep personnel removed from and upwind of fire. If potential for exposure to vapors or products of combustion exists, wear full fire fighting turnout gear and NIOSH approved self-contained breathing apparatus. Oxidizing chemicals may accelerate the burning rate in a fire situation.

6. Accidental Release Measures

Spill or Leak Instructions:

See Section 8 for appropriate personal protective equipment. Contain spill with dikes of soil or nonflammable absorbent to minimize contaminated area. Avoid run-off into storm sewers and ditches leading to waterways. If required, notify state and local authorities. Place leaking containers in well-ventilated area. Clean up small spills by using a nonflammable absorbent or flushing sparingly with water. Contain larger spills with nonflammable diking or absorbent. Clean up by vacuuming or sweeping.

Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas. Assess the spill situation, as the spill may not involve large amounts of hazardous airborne contaminants in many outdoor spill situations. It may be advisable in some cases to simply monitor the situation until spilled product is removed.

7. Handling and Storage

Handling: Use with adequate ventilation. Keep containers closed when not in use. Always open containers slowly any excess pressure to vent. Avoid breathing vapor. Avoid open containers slowly to allow any excess pressure to vent. Avoid breathing vapor. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Decontaminate soiled clothing thoroughly before re-use. Destroy contaminated leather clothing.

This product may generate a static charge. Ground/bond equipment when transferring material to prevent static accumulation. Electrical equipment and circuits in all storage and handling must conform to requirements of National Electric code (Article 500 and 501) for hazardous location.

Storage: Do not store with incompatible materials. See Section 10. Stability and Reactivity.

8. Exposure Controls/Personal Protection

Engineering Controls: General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred.

Protective Equipment: A safety shower and eyebath should be readily available.

Skin Protection: Wear impervious clothing and gloves to prevent contact. Nitrile rubber is recommended. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

Eye/face Protection: Wear chemical goggles when there is a reasonable chance of eye contact.

Respiratory Protection: Based on workplace contaminant level and working limits of the respirator, use a respirator approved by NIOSH. The following is the minimum recommended equipment for an occupational exposure level. To estimate an occupational exposure level see Section 3, Section 8 and Section 11.

For concentrations > 1 and < 10 times the occupational exposure level: Use air-purifying respirator with full face piece and organic vapor cartridge(s) or air-purifying full face piece respirator with an organic vapor canister or a full face piece powered air-purifying respirator fitted with organic vapor cartridge(s).

The air purifying element must have an end of service life indicator, or a documented change out schedule must be established. Otherwise, use supplied air. For concentrations more than 10 times the occupational exposure level and less than the lower of either 100 times the occupational exposure level or the IDLH: Use Type C full face piece supplied-air respirator operated in positive-pressure or continuous-flow mode.

For concentrations > 100 times the occupational exposure level or greater than the IDLH level or unknown concentrations (such as in emergencies): Use self-contained breathing apparatus with full face piece in positive-pressure mode or Type C positive-pressure full face piece supplied-air respirator with an auxiliary positive-pressure self-contained breathing apparatus escape system.

For escape: Use self-contained breathing apparatus with full face piece or any respirator specifically approved for escape.

EXPOSURE GUIDELINES

Component & CAS Number: 1,3-Butylene Glycol 107-88-0 Weight %: 99.5

ACGIH TWA - ACGIH STEL - ACGIH CEILING - OSHA TWA - OSHA STEL - OSHA CEILING -

Component & CAS Number: 1,3 – Butylene Glycol 107-88-0 Weight %: 99.5

1990 NIOSH IDLH (Recognized by OSHA) - 1994 NIOSH IDLH -

Comments: No exposure guidelines have been established by ACGIH or OSHA.

9. Physical and Chemical Properties

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|--------------------------------|--|
| Appearance: | Clear, colorless, mobile, syrupy liquid |
| Odor: | Essentially odorless |
| Solubility in Water: | Insoluble in water; soluble (45%) in alcohol |
| Specific Gravity: | 1.0059 at 20 deg. C |
| Boiling Point: | 207.5 Deg C (405.5 F) |
| Freezing Point: | -50 C (-58 F) |
| Vapor Density: | 3.2 |
| Vapor Pressure (mm Hg): | Not determined |
| Molecular Weight | 90.12 |

10. Stability and Reactivity

| | |
|--|---|
| Stability: | Normally stable |
| Hazardous Decomposition Products: | Thermal decomposition products may include oxides of carbon and butadiene |
| Hazardous Polymerization: | Will not occur. |
| Incompatible Materials: | Keep away from sulfuric acid, phosphoric acid and other dehydrating agents, acetic anhydride, strong oxidizing agents such as peroxides, oxygen, nitric acid, perchloric acid or chromium trioxide. |

11. Toxicological Information

| | |
|---|--|
| Component & CAS Number: | 1,3 Butylene Glycol 107-88-0 |
| Weight %: | 99.5 |
| Component toxicological Information: | Acute Exposure: |
| Oral LD50: | 18.6 – 30 g/kg (rats); practically nontoxic to animals |
| Inhalation LC50: | No mortality following 8 hour exposure to saturated vapor (concentration not specified). |
| Skin: | Minimally irritating to skin; no evidence of skin sensitization. Practically nontoxic to animals (estimated LD50, guinea pigs > 20 g/kg based on repeated exposure study). |
| Eyes: | No irritation to slight irritation in rabbit eyes, depending on the concentration administered. |
| Mutagenicity: | Not mutagenic in vivo (rat dominant lethal and cytogenetic assays). No in vitro information available. |
| Carcinogenicity: | No toxic effects in rats after administration of 1, 3, or 10% (approximately 1-12 g/kg/day) in the diet for up to two years. |
| Reproductive/Developmental Effects: | 1,3-butylene glycol was administered at 5, 10, or 24% (approximately 2.5, 5 or 12 g/kg/day) in the diet to male and female rats over five generations. Reproduction and lactation parameters were comparative to controls for four or five generations of parents and offspring. The pregnancy rate of F1A rats decreased during five successive mating cycles. Excluding this group, the viability of F2 generation pups revealed no significant differences between litters or between control and test groups. In a teratology study conducted as part of the reproduction study, no definitive dose-related teratological findings in either soft or skeletal tissue were noted. Fetotoxicity (e.g., delayed ossification of sternbrae) was noted at the 10% and 24% doses. A dietary level of 20% (approx. 10 g/kg/day) produced no developmental effects in the three generation study despite reduced parental weight gain. In a teratology study, rats administered 0.7, 4.2 or 7.1 g/kg/day orally by gavage on days 6-15 of gestation showed sedation at the two higher doses; a dose-related reduction in the average bodyweight of offspring was found. No teratogenic effects were noted. |

11. Toxicological Information - continued

Repeated Exposure:

Rats exposed to doses of 1-10% in the diet (approximately 1-12 g/kg/day) for two years of 5-40% in the diet (3.4-22.5 g/kg/day) for eight weeks showed no evidence of toxic effects. Dogs exposed orally to doses up to 1 g/kg/day showed no evidence of toxic effects. No adverse effects were observed when undiluted 1,3-butylene glycol was applied for 2 hr/day to the intact or abraded skin of guinea pigs for 4 or 14 days respectively, at a dose of 20 g/kg/day. Numerous studies have been conducted to investigate the effect of substituting 1,3-butylene glycol in place of carbohydrate in the diet of various species of animals, including rats, dogs, pigs and cows. Up to a dietary level of about 1-15%, this chemical appears to be well utilized as a source of energy, but at higher levels growth is impaired.

12. Ecological Information

Component & CAS Number: 1,3-Butylene Glycol 107-88-0

Weight %: 99.5

Component Ecological Information:

Ecotoxicity: 1,3-Butylene Glycol is estimated to have low acute toxicity to aquatic species.

Fish, OSAR-Estimated 96-hr. LC50 using Computer Program (EPA ECOWIN v 0.99E.ECOSAR software): 9514 mg/l.

Crustacean (Daphnia), OSAR-Estimated 48-hr. LC50 using Computer Program (EPA ECOWIN v 0.99E.ECOSAR software): 8703 mg/l

Algae, Green (*Selenastrum capricornutum*: OECD 201) 72-hr. EC50: > 1070 mg/l (measured concentration).

Neither the area under the growth nor the growth rate were reduced by 1,3-butylene glycol at a mean measured level of 1070 mg/l. Therefore, the "no-observed effect concentration" for algal growth inhibition was greater than or equal to 1070 mg/l.

Bacteria (Activated Sludge-Respiration Inhibition test; OECD 209) 3-hr. EC50: > 100mg/l (nominal conc.).

No inhibitory effect on the respiration of activated sludge at 100 mg/l or the other lower concentrations tested.

Environmental Fate:

Degradation: Ready biodegradability was assessed in the Carbon Dioxide Evolution Test (Modified Sturm Test; OECD 301b). 1,3-Butylene glycol met the criteria for "ready biodegradability". Degradation progressed throughout the test period as follows: 10% degradation after 3 days; 60% after 12 days; 81% degradation by the end of the test on Day 29. Atmospheric photodegradation half-life was calculated to be 9.0 hours.

Bioaccumulation: The calculated log n-octanol/water partition coefficient is -0.2909. This indicates low potential for bioaccumulation.

13. Disposal Considerations

Dispose of spilled material in accordance with state and local regulations for waste that is non-hazardous by Federal definition. Note that this information applies to the material as manufactured; processing, use, or contamination may make this information inappropriate, inaccurate, or incomplete.

Note that this handling and disposal information may also apply to empty containers, liners and rinsate. State or local regulations or restrictions are complex and may differ from federal regulations. This information is intended as an aid to proper handling and disposal; the final responsibility for handling and disposal is with the owner of the waste. See Section 9 – Physical and Chemical Properties.

14. Transport Information

US DEPARTMENT OF TRANSPORTATION

Shipping Name: 1,3-Butylene Glycol

Hazard Class: Not regulated

14. Transport Information continued

ICAO/IATA:

Proper Shipping Name: 1,3-Butylene Glycol
Hazard Classification: Not Regulated

IMDG:

Proper Shipping Name: 1,3-Butylene Glycol
Hazard Class: Not Regulated
Flash Point (test method): 109 C (228F) (Closed Cup)

Transport Canada PRODUCT IS NOT REGULATED IAW TDG REGULATIONS

Proper Shipping Name:

Trade Information

Schedule B Code (export): 2905.39.1000

15. Regulatory Information

U.S. FEDERAL REGULATIONS

Chemicals associated with the product which are subject to the state right-to-know regulations are listed along with the applicable state(s).

U.S. REGULATORY RULES

TSCA Inventory: We certify that all components are either on the TSCA inventory or qualify for an exemption.

ENVIRONMENTAL REGULATIONS

SARA 311:

Acute Health: Yes

Chronic Health: No

Fire: No

Sudden release of pressure: No

Reactive: No

INTERNATIONAL REGULATIONS

AUSTRALIA – CANADA – EUROPE – KOREA – PHILIPPINES

CANADIAN REGULATIONS:

WHMIS Classifications: Not a WHMIS controlled product.

16. Other Information

Hazard Ratings: This information is intended solely for the use of individuals trained in the NFPA and/or HMIS systems.

NFPA: HEALTH – 1

FLAMMABILITY – 1

REACTIVITY – 0

HMIS: HEALTH – 1

FLAMMABILITY – 1

REACTIVITY – 0

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