

SAFETY DATA SHEET



1000 Tedia Way
Fairfield, Ohio 45014
USA
Email: tedia@tedia.com
Web: www.tedia.com

24-Hour Emergency Number (CHEMTREC)

USA: 800-424-9300
International: 703-527-3887

All non-emergency numbers should be directed
to Customer Service at 800-PURITY1

1, 4-BUTANEDIOL

SDS No. M0020

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: 1, 4-Butanediol

Synonyms: 1,4-Butylene Glycol

Recommended Use: This product is recommended for laboratory and manufacturing use only. It is not recommended for drug, food or household use.

2. HAZARDS IDENTIFICATION



Classification:

Acute Toxicity, Oral: GHS Category 4

Specific Target Organ Toxicity, single exposure: GHS Category 3

Label Elements

Signal Word: WARNING!

Hazard Statements:

H320 – Causes eye irritation.

H336 – May cause drowsiness or dizziness.

Precautionary Statements:

P261 – Avoid breathing dust/fumes/gas/mist/vapors/spray.

P264 – Wash skin thoroughly after handling.

P301+P312 – IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P304 – IF INHALED: Remove victim to fresh air.

Emergency Overview

May be harmful if swallowed. May cause irritation to eyes, skin, digestive tract, or respiratory tract. May affect kidneys.
Target Organs: Kidneys.

HMIS Rating:

Health – 1* Flammability – 0 Physical Hazard – 0 PPE – User supplied

NOTE: HMIS ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. These ratings are based on the inherent properties of this chemical

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under expected conditions of normal use and are not intended to be used in emergency situations. PPE is determined by the user based on their needs and conditions.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No</u>	<u>Percent</u>	<u>Hazardous</u>
1, 4-Butanediol	110-63-4	>99%	Yes

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. Get medical attention for any breathing difficulty.

Ingestion: Rinse mouth with water. Get medical aid. Never give anything by mouth to an unconscious person.

Skin Contact: Wash with plenty of soap and water. Get medical attention if irritation develops.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention if irritation persists.

Notes to Physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Flammability: Slight fire hazard when exposed to heat or flame

Auto-ignition Temperature: 402° C (756° F)

Flash Point: 121° C (250° F)

Flammable Limits: Lower Limit – No information available; Upper Limit – No information available

Products of Combustion: Will decompose into highly toxic and irritating gases (carbon monoxide, carbon dioxide, tetrahydrofuran) under fire conditions.

Specific Fire Hazards: As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear. Water spray may be used to keep fire exposed containers cool. Do not allow water runoff to enter sewers or waterways.

Specific Explosion Hazards: None.

Fire Fighting Media: Use alcohol foam, dry chemical or carbon dioxide. (Water may be ineffective.) Water or foam may cause frothing.

National Fire Protective Association: Health - 1, Flammability - 0, Reactivity - 0

NOTE: NFPA ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. They are for use by emergency personnel to address the hazards that are presented by short term, acute exposure to this product under fire, spill, or similar emergencies. Ratings involve data and interpretations that may vary from company to company.

6. ACCIDENTAL RELEASE MEASURES

Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Provide ventilation to the affected area and remove all ignition sources. Avoid run-off into storm sewers and ditches that lead to waterways. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. Use only non-sparking tools and equipment. A vapor suppressing foam may be used. Always use proper personal protective equipment as described in section 8.

7. HANDLING AND STORAGE

Precautions: Always use proper personal protective equipment as described in section 8. Wash thoroughly after handling. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Empty containers contain product residue (liquid and vapor) and can be dangerous. Keep container tightly closed and away from heat, spark, and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks, or open flames. Use with adequate ventilation. Avoid breathing vapor or mist.

Storage: Keep in a flammables area away from all sources of ignition and oxidizing materials. Keep in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal Protection: Wear protective chemical goggles or appropriate eye protection. Use appropriate protective gloves and protective clothing to prevent skin exposure. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Exposure Limits: None established

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Colorless, viscous liquid.

Odor: Odorless

Molecular Formula: HO(CH₂)₄OH

Molecular Weight: 90.12

Auto-ignition Temperature: 402° C (756° F)

Flash Point: 121° C (250° F)

Flammable Limits: Lower Limit – No information available; Upper Limit –1.9 vol %

pH: Not available.

Boiling Point: 230° C (446° F) @ 760 mm Hg

Freezing/Melting Point: 20.1° C (68° F)

Decomposition Temperature: Not available

Specific Gravity: 1.0171 g/cm³ @ 20° C

Vapor Density (Air=1): 3.1

Vapor Pressure: 0.01 mm Hg @ 20° C.

Evaporation Rate (Butyl acetate = 1): Not available

Viscosity: Not available

Solubility: Completely soluble

10. STABILITY AND REACTIVITY

Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Ignition sources, excess heat, and confined spaces.

Incompatibility With Various Substances: Strong oxidizing agents, acid chlorides, acid anhydrides, reducing agents.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Acute Exposure Hazards:

INHALATION HAZARD: A nonvolatile liquid - vapor inhalation is unlikely. Inhalation of high vapor concentrations may cause respiratory tract irritation and have a narcotic effect with symptoms of drunkenness.

INGESTION HAZARD: Large oral dose may produce symptoms of narcosis, incoordination, and kidney damage.

SKIN CONTACT HAZARD: No adverse health effects expected. Prolonged contact may cause slight irritation.

EYE CONTACT HAZARD: May cause mild irritation, possible reddening.

Chronic Exposure Hazards: No information found.

Animal Toxicity:

Oral, rat: LD50 = 1525 mg/kg;
 Oral, mouse: LD50 = 2063 mg/kg;
 Oral, rabbit: LD50 = 2531 mg/kg;

Carcinogenicity: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

Epidemiology: No information available.

Teratogenicity: No information available.

Reproductive Effects: No information available.

Mutagenicity: Investigated.

Neurotoxicity: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity: No information available

Environmental Fate: When released into the soil or water, this material may biodegrade to a moderate extent. When released into water, this material is not expected to evaporate significantly. 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.

13. DISPOSAL CONSIDERATIONS

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing, use or contamination of this product may change the waste management options. Waste generators must decide if discarded material is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION

Not regulated for transportation

15. REGULATORY INFORMATION

US Federal Regulations:

TSCA: CAS# 110-63-4 is listed on the TSCA Inventory.

Health and Safety Reporting List: CAS# 110-63-4 is not listed.

Chemical Test Rules: CAS# 110-63-4 is not listed.

Section 12b: CAS# 110-63-4 is not listed.

TSCA Significant New Use Rule: Does not have an SNUR under TSCA.

CERCLA Hazardous Substances: Does not have an RQ

SARA Section 302: Does not have a TPQ

SARA Codes: CAS# 110-63-4 –acute

Section 313: 1, 4-Butanediol (CAS# 110-63-4) is not subject to SARA Title III Section 313 and 40 CFR 373 reporting requirements.

Clean Air Act: CAS# 110-63-4 is not listed as a hazardous air pollutant (HAP). It is not a Class 1 Ozone Depleter. It is not a Class 2 Ozone Depleter.

Clean Water Act: CAS# 110-63-4 is not listed as a Hazardous Substance. It is not a Priority Pollutant. It is not a Toxic Pollutant.

OSHA: Not considered highly hazardous by OSHA.

US State Regulations:

CAS# 110-63-4 is on the following state right-to-know lists: New Jersey, Pennsylvania, and Massachusetts

California Prop 65: California No Significant Risk Level: Not listed

Canada:

DSL/NDSL: CAS# 110-63-4 is not listed on Canada's DSL list.

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

Ingredient Disclosure List: CAS# 110-63-4 is not listed on Canada's Ingredient Disclosure List.

DSCL (EEC):

Hazard Symbols: None

Risk Phrases: R22 – Harmful if swallowed.

Safety Phrases: S36 – Wear suitable protective clothing.

WGK (Water Danger/protection): CAS# 110-63-4: No information available

16. OTHER INFORMATION

Originally Prepared: 10/24/2006

Last Revised: 4/15/2014 – Hazard classification information, hazard statements, and precautionary statements were updated.

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