

# SAFETY DATA SHEET



## 1,4 BUTANEDIOL

Version 1.0

### SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : 1,4 BUTANEDIOL  
CAS Number: 110-63-4  
Chemical characterization : Glycols  
Chemical Name : 1,4-Butanediol  
Synonyms : Tetra Methylene Glycol, BDO

Use of the Substance/Mixture : Manufacture of substances, Formulation & (re)packing of substance and mixtures, Uses in Coatings, Use as binders and release agents, Use in laboratories, Polymer production

Recommended restrictions on use : Cosmetics, Soluble coatings on children's toys

Company : Everchem Specialty Chemicals  
1400 N. Providence Rd.  
Suite 302  
Media, PA 19063

Telephone : Customer Service 484-234-5030

Emergency telephone : CHEMTREC USA 800-424-9300

### SECTION 2. HAZARDS IDENTIFICATION

#### GHS Classification

Acute toxicity; Oral : Category 4  
Specific target organ systemic toxicity - single exposure; Inhalation : Category 3  
Central nervous system

GHS Classification Scale (1= severe hazard; 4= slight hazard)

#### Label elements

Hazard symbols :



Signal Word : Warning

Hazard Statements : H302 Harmful if swallowed.  
H336 May cause drowsiness or dizziness.

# SAFETY DATA SHEET

## 1,4 BUTANEDIOL

Version 1.0

### Precautionary Statements

### : Prevention

- P264 Wash skin thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
- P271 Use only outdoors or in a well-ventilated area.

### Response

- P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.
- P330 Rinse mouth.
- P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P312 Call a POISON CENTER or doctor/ physician if you feel unwell.

### Storage

- P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
- P405 Store locked up.

### Other hazards

Hazards Not Otherwise Classified (HNOC)

1,4 Butanediol can competitively inhibit the enzyme that metabolizes alcohol, hence combined exposures may increase the toxic effects of alcohol, and delay or prolong the toxicity of 1,4-butanol.

## 3. Composition/information on ingredients

### Substances

Chemical nature : Substance

### Ingredients

Chemical Name	CAS-No. EC-No.	Weight %	Component Type
1,4-Butanediol	110-63-4	>= 99.5 %	A

Key:

(A) Substance

## SECTION 4. FIRST AID MEASURES

### First aid procedures

General advice : Harmful by ingestion.  
Ingestion may cause CNS depression (drowsiness and

# SAFETY DATA SHEET

## 1,4 BUTANEDIOL

Version 1.0

dizziness) and respiratory failure.

Vapors may cause drowsiness and dizziness.  
Always observe self-protection methods  
Move out of dangerous area.  
If you feel unwell, seek medical advice (show the label where possible).  
Show this material safety data sheet to the doctor in attendance.

- If inhaled : If symptoms are experienced, move victim to fresh air.  
Give oxygen or artificial respiration as needed.  
Obtain emergency medical attention.  
Prompt action is essential.
- In case of skin contact : Wash off immediately with soap and plenty of water.  
Remove contaminated clothing and wash skin with plenty of soap and water.  
Flush with lukewarm water for 15 minutes.  
Seek medical attention if ill effect or irritation develops.
- In case of eye contact : Flush with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids.  
If eye irritation persists: Get medical advice/ attention.
- If swallowed : If victim is drowsy or unconscious, place on the left side with head down.  
If victim is conscious and able to swallow, have victim drink water to dilute. Never give anything by mouth if victim is unconscious or having convulsions. Induce vomiting only if advised by a physician or Poison Control Center. **CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY!**  
If vomiting does occur, have victim lean forward to reduce risk of aspiration.  
Prompt action is essential.

### Notes to physician

- Symptoms : Accidental or intentional ingestion can cause depressed respiratory rates, vomiting, seizures, unconsciousness and death.
- Hazards : 1,4-Butanediol (BDO) is rapidly absorbed and metabolized to gamma-hydroxybutyrate (GHB) which is thought to produce the neurotoxic effects of BDO. BDO can competitively inhibit the enzyme that metabolizes alcohol, hence combined exposures may increase the toxic effects of alcohol and delay and prolong the toxicity of BDO.
- Treatment : Treat symptomatically.  
Treatment of overexposure should be directed at the control of

# SAFETY DATA SHEET

## 1,4 BUTANEDIOL

Version 1.0

symptoms and the clinical condition of the patient.

### SECTION 5. FIRE-FIGHTING MEASURES

#### Flammable properties

Flash point : > 239 °F (115 °C)  
at 1,013 hPa (760 mm Hg)  
Method: closed cup

Autoignition temperature : 725 °F (385 °C)  
at 1,013 hPa (760 mm Hg)

Lower explosion limit : 1.9 vol%

Upper explosion limit : 13.2 vol%

#### Fire fighting

Suitable extinguishing media : SMALL FIRE: Use dry chemicals, CO<sub>2</sub>, water spray or alcohol-resistant foam  
LARGE FIRE: Use water spray, water fog or alcohol-resistant foam

Unsuitable extinguishing media : Do not use solid water stream/may spread fire.

#### Protective equipment and precautions for firefighters

Specific hazards during fire fighting : Heat from fire can generate flammable vapor.  
When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined.  
Vapors may be heavier than air.  
May travel long distances along the ground before igniting and flashing back to vapor source.  
Fine sprays/mists may be combustible at temperatures below normal flash point.  
Fight fire from a safe distance/protected location.  
Heat may build enough pressure to rupture closed containers/spreading fire/increasing risk of burns/injuries.  
Use water spray/fog for cooling.  
Avoid frothing/steam explosion.  
Burning liquid may float on water.  
Although water soluble, may not be practical to extinguish fire by water dilution.  
Notify authorities immediately if liquid enters sewer/public waters.  
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for fire-fighters : Wear an approved positive pressure self-contained breathing apparatus and firefighter turnout gear.  
Structural firefighter's protective clothing will only provide limited protection.

# SAFETY DATA SHEET

## 1,4 BUTANEDIOL

Version 1.0

### SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : Use personal protective equipment.  
Ensure adequate ventilation.  
Evacuate personnel to safe areas.
- Environmental precautions : An authoritative evaluation of environmental exposure and risk indicates that no special risk management practices are needed to control environmental release.
- Methods for containment /  
Methods for cleaning up : May contaminate water supplies/pollute public waters.  
Soak up small spills with inert solids.  
Do not touch or walk through spilled material.  
Slippery walking/spread granular cover or soak up.  
Evacuate/limit access.  
Equip responders with proper protection.  
Prevent flow to sewer/public waters.  
Stop release.  
Notify fire and environmental authorities.  
Restrict water use for cleanup.  
Impound and recover large land spill.  
Soak up small spill with inert solids; use suitable disposal containers.  
May biodegrade.  
Contain/collect rapidly to minimize dispersion.  
Disperse residue to reduce aquatic harm.  
Report per regulatory requirements.

### SECTION 7. HANDLING AND STORAGE

#### Handling

- Advice on safe handling : Wear recommended personal protective equipment.  
Use in a well-ventilated area.  
Keep container tightly closed when not in use.  
Store in a warm location (25° -30°C)/(77-86°F) to assist in emptying containers.  
If direct heat is applied to improve material flow, use care to avoid localized overheating and possible product degradation and container overpressure.  
Keep floor around container free of spilled product to prevent highly viscous material from sticking to and contaminating shoes.

#### Storage

- Requirements for storage areas and containers : Store in a warm location (25° -30°C)/(77-86°F) to assist in emptying containers.  
Store in stainless steel or lined carbon steel containers.

# SAFETY DATA SHEET

## 1,4 BUTANEDIOL

Version 1.0

### 8. Exposure controls/personal protection

#### Control parameters

##### Ingredients with workplace control parameters

Consult local authorities for acceptable exposure limits.

#### Exposure controls

##### Engineering measures

General room or local exhaust ventilation is usually required to meet exposure limit(s).

##### Personal protective equipment

- Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.  
No occupational exposure limits have been developed for this material.  
Where exposure through inhalation may occur from use, approved respiratory protection equipment is recommended.
- Hand protection : Wear chemical resistant gloves such as:  
Butyl rubber.  
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
- Eye and face protection : Eye protection such as chemical splash goggles and/or face shield must be worn when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapor.  
Safety glasses are the minimum requirements.
- Skin and body protection : Depending on the conditions of use, protective gloves, apron, boots, head and face protection should be worn.  
The equipment must be cleaned thoroughly after each use.
- Hygiene measures : Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the hazards and/or potential hazards that may be encountered during use.  
Wash hands before eating, drinking, smoking, or using toilet facilities.  
Take off contaminated clothing and wash before reuse.  
Shower after work using plenty of soap and water.  
Use good personal hygiene practices.  
Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

# SAFETY DATA SHEET

## 1,4 BUTANEDIOL

Version 1.0

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

#### Appearance

Physical state : liquid at > 68 °F (> 20 °C)

Color : Clear, colorless.

Odor : Little or no odor.

#### Safety data

Flash point : > 239 °F (115 °C)  
at 1,013 hPa (760 mm Hg)

Method: closed cup

Lower explosion limit : 1.9 vol%

Upper explosion limit : 13.2 vol%

Flammability (solid, gas) : Non-flammable.

Oxidizing properties : Not considered an oxidizing agent.

Autoignition temperature : 725 °F (385 °C)  
at 1,013 hPa (760 mm Hg)

Decomposition temperature : not determined

pH : no data available

Melting point/range : 68.7 °F (20.4 °C)  
at 1,013 hPa (760 mm Hg)

Boiling point/boiling range : 446 °F (230 °C)  
at 1,013 hPa (760 mm Hg)

Vapor pressure : 0.014 hPa (0.011 mm Hg)  
at 77 °F (25 °C)

Density : 1.02 g/cm<sup>3</sup>  
at 68 °F (20 °C)  
Relative

Water solubility : > 100 g/l  
Miscible in water.

Partition coefficient: n-  
octanol/water : log Pow: -0.88  
at 77 °F (25 °C)

Viscosity, kinematic : 83.2 mm<sup>2</sup>/s

# SAFETY DATA SHEET

## 1,4 BUTANEDIOL

Version 1.0

		at 68 °F (20 °C)
Relative vapor density	:	~3.2 at 59 - 68 °F (15 - 20 °C) (Air = 1.0)
Explosive properties	:	Not explosive
Remarks - Other information	:	No additional information available.

### SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Stable under recommended storage conditions.
Chemical stability	:	Stable under recommended storage conditions.
Conditions to avoid	:	Heat, sparks, open flame, other ignition sources, and oxidizing conditions.
Materials to avoid	:	Strong oxidizers such as hydrogen peroxide, nitric acid, sulphuric acid, etc.
Hazardous decomposition products	:	Carbon oxides (CO, CO <sub>2</sub> )
Thermal decomposition	:	Thermal decomposition may produce carbon monoxide and other toxic vapors.
Hazardous reactions	:	Not expected to occur.

### SECTION 11. TOXICOLOGICAL INFORMATION

<b>Product Summary</b>	:	The below given information is based on the assessment of the product including impurities.
<b>Acute toxicity</b>		
<b>Acute oral toxicity</b>	:	Classified Harmful if swallowed.
	:	LD50 (Oral): 1,500 mg/kg Species: Rat
<b>Acute inhalation toxicity</b>	:	Based on acute toxicity values, not classified.
	:	LC50 (Inhl): > 5.1 mg/l Exposure time: 4 HOURS Species: Rat



# SAFETY DATA SHEET

## 1,4 BUTANEDIOL

Version 1.0

<b>Acute dermal toxicity</b>	: Based on acute toxicity values, not classified. : LD50 (Skin): > 2,000 mg/kg Species: Rat
<b>Skin corrosion/irritation</b>	: Based on skin irritation values, not classified.
<b>Serious eye damage/eye irritation</b>	: Based on eye irritation values, not classified.
<b>Respiratory or skin sensitization</b>	: Based on skin sensitization values, not classified.
<b>Chronic toxicity</b>	
Carcinogenicity	: Not classified No adverse effect observed.
Germ cell mutagenicity	: Not classified No adverse effect observed.
<b>Reproductive toxicity</b>	
Effects on fertility / Effects on or via lactation	: Not classified No adverse effect observed.
Effects on Development	: Not classified No adverse effect observed.
<b>Target Organ Systemic Toxicant - Single exposure</b>	: Routes of exposure: Inhalation Target Organs: Central nervous system Classified, May cause drowsiness or dizziness.
<b>Target Organ Systemic Toxicant - Repeated exposure</b>	: Based on repeated exposure toxicity values, not classified.
<b>Aspiration hazard</b>	: Based on physico-chemical values or lack of human evidence, not classified.
<b>Further information</b>	: 1,4-Butanediol is rapidly absorbed and metabolized to gamma-hydroxybutyrate (GHB) which is thought to produce the neurotoxic effects of 1,4-Butanediol.

# SAFETY DATA SHEET

## 1,4 BUTANEDIOL

Version 1.0

### 12. ECOLOGICAL INFORMATION

#### Ecotoxicology Assessment

- Acute aquatic toxicity : Based on acute aquatic toxicity values, not classified.
- Chronic aquatic toxicity : Not classified, based on readily biodegradability and low acute toxicity.

**Toxicity to fish** :  
Low acute toxicity to fish

**Toxicity to daphnia and other aquatic invertebrates** : Low acute toxicity to aquatic invertebrates.

**Toxicity to algae** : Low toxicity to algae.

**Toxicity to bacteria** : Low toxicity to sewage microbes.

**Toxicity to fish (Chronic toxicity)** : Low chronic toxicity to fish.

**Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)** : Low chronic toxicity to aquatic invertebrates.

#### Persistence and degradability

**Biodegradability** : Rapidly degradable.  
: > 60 %  
Testing period: 7 d

#### Bioaccumulative potential

**Bioaccumulation** : This material is not expected to bioaccumulate.  
: Bioconcentration factor (BCF): 3.16  
(QSAR calculated value)

#### Mobility in soil

**Distribution among environmental compartments** : Stability in soil  
no data available  
Low absorption to soil particulates predicted  
(QSAR calculated value)

# SAFETY DATA SHEET

## 1,4 BUTANEDIOL

Version 1.0

: Stability in water  
Hydrolytically stable.  
Stable at pH 4, 7 and 9 @ 25C

**Additional advice**  
**Environmental fate and pathways** : No additional information available.

### Results of PBT and vPvB assessment

Not applicable.

### Other adverse effects

**Additional ecological information** : No additional information available.

## SECTION 13. DISPOSAL CONSIDERATIONS

Further information : Contaminated product, soil, water, container residues and spill cleanup materials may be hazardous wastes.  
Comply with federal, state, or local regulations for disposal.

## SECTION 14. TRANSPORT INFORMATION

Not regulated for transport

## SECTION 15. REGULATORY INFORMATION

If identified components of this product are listed under the TSCA 12(b) Export Notification rule, they will be listed below.

### SARA 302/304

This product contains no known chemicals regulated under SARA 302/304.

### SARA 311/312

Based upon available information, this material is classified as the following health and/or physical hazards according to Section 311 & 312:

Immediate (Acute) Health Hazard.

### SARA 313

This product contains no known chemicals regulated under SARA 313.

### State Reporting

# SAFETY DATA SHEET

## 1,4 BUTANEDIOL

Version 1.0

This material is not known to contain a chemical substance known to the State of California to cause cancer, reproductive, or developmental toxicity under California Proposition 65. However, Everchem has not tested for the presence of listed chemical substances.

This product contains no known chemicals regulated by New Jersey's Worker and Community Right to Know Act.

No components are subject to the Massachusetts Right to Know Act.

This product contains no known chemicals regulated by Pennsylvania's Right to Know Act.

### Other international regulations

#### Global Inventory Status

The ingredients of this product are compliant with the following chemical inventory requirements or exemptions.

\*Additional Explanatory Status Statements follow the table, as necessary.

Country/Region	Inventory	Status Description
Australia	AICS	Compliant
Canada	DSL	Compliant
China	IECSC	Compliant
Europe	REACH	See REACH Compliance Statement
Japan	ENCS	Compliant
Korea	KECI	Compliant
New Zealand	NZIoC	Compliant
Philippines	PICCS	Compliant
United States of America	TSCA	Compliant

### SECTION 16. OTHER INFORMATION

#### Further information

**HMIS Classification** : Health Hazard: 1  
Flammability: 1 **1 0**

12 / 14

Physical hazards: 0

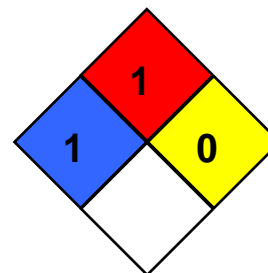


# SAFETY DATA SHEET

## 1,4 BUTANEDIOL

Version 1.0

**NFPA Classification** : Health Hazard: 1  
Fire Hazard: 1  
Instability: 0



### Other Information

NFPA rating scale (0 = minimal hazard; 4 = severe hazard)

HMIS rating scale (0 = minimal hazard; 4 = severe hazard)

### Material safety datasheet sections which have been updated:

Updated format ; Revised Section(s): 1 - 16 August 21 2014

### Disclaimer

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Information is correct to the best of our knowledge at the date of the SDS publication.

It is not a specification sheet nor should any displayed data be construed as a specification.

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### Language Translations

# SAFETY DATA SHEET

## 1,4 BUTANEDIOL

Version 1.0

The information presented in this document has been translated from English by a vendor Everchem believes to be reliable. Everchem and its vendor have made a good-faith effort to verify the accuracy of the translation, but assume no liability or other responsibility for any errors that may have occurred.