



Section 1. Identification

Product Identity 1,4 Butanediol (BDO)
Other means of identification Butane-1,4-diol

Relevant identified uses of the substance or mixture

Manufacture of BDO and Other Substances (industrial)
Distribution of BDO and Mixtures Containing BDO (industrial)
Formulation & Packing of Preparations and Mixtures Containing BDO (industrial)
Use of BDO in Coatings (Industrial)
Use of BDO in binders and release agents (industrial)
Laboratory Use of BDO (Industrial)
Use of BDO in Polymer Production (Industrial)
Use of BDO in Coatings (Professional)
Use of BDO in binders and release agents (Professional)
Laboratory Use of BDO (Professional)

Uses advised against

Cosmetics; Toiletries; Personal care; Applications involving human or animal consumption; Coatings on children's toys.

Details of the supplier of the safety data sheet

Company Name Silver Fern Chemical, Inc.
121 W. De La Guerra Street, Suite B
Santa Barbara, CA 93101 USA
Customer Service: 1-866-282-3384 /
info@silverfernchemical.com
Website - www.silverfernchemical.com

24 hour Emergency Telephone No. Emergency telephone number
Infotrac: 1-800-535-5053
Outside USA & Canada +1-352-323-3500

Section 2. Hazard(s) identification



Classification of the substance or mixture under OSHA's Hazard Communication Standard (1910.1200) revised 2024 (GHS revision 7)

Acute toxicity(oral), category 4;H302

Harmful if swallowed.

Specific target organ toxicity, Single exposure category 3;H336

May cause drowsiness or dizziness.

Label elements



Warning

H302 Harmful if swallowed.

H336 May cause drowsiness or dizziness.

[Prevention]

P233 Keep container tightly closed.

P261 Avoid breathing dust, fume, gas, mist, vapors, spray.

P264 Wash thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

[Response]

P301+312 IF SWALLOWED: Call a POISON CENTER, doctor or physician if you feel unwell.

P304+340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P312 Call a POISON CENTER, doctor or physician if you feel unwell.

P330 Rinse mouth.

[Storage]



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P403+233 Store in a well ventilated place. Keep container tightly closed.

P405 Store locked up.

[Disposal]

P501 Dispose of contents or container in accordance with local and national regulations.

Other hazards

Accidental or intentional ingestion can cause depressed respiratory rates, vomiting, seizures, unconsciousness and death.

1,4 Butanediol is rapidly absorbed and metabolized to gamma hydroxybutyrate 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.

This product contains no PBT/vPvB/vPvM chemicals.

This product contains no endocrine disrupting chemicals.

Does NOT contain component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS) per the US EPA PFASMASTER combined list of PFAS chemicals.

Section 3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the OSHA's Hazard Communication Standard (1910.1200) revised 2024 (GHS revision 7).

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
BUTANEDIOL CAS Number: 110-63-4 Synonyms: 1,4-Butanediol	99.798%	Acute toxicity(oral), category 4;H302 Specific target organ toxicity, Single exposure category 3;H336	No data available

The actual concentration or concentration range is withheld as a trade secret.

*PBT/vPvB - PBT, vPvM or vPvB-substance.

The full texts of the phrases are shown in Section 16.

Section 4. First aid measures



Description of first aid measures

General Advice	Harmful by ingestion. Ingestion may cause CNS depression (drowsiness and 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 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.
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.
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 symptoms and the clinical condition of the patient.

Section 5. Fire-fighting measures

Extinguishing media

Recommended extinguishing media; alcohol resistant foam, CO₂, powder, water spray.
Unsuitable extinguishing media: Do not use; water jet, Halons.

Special hazards arising from the substance or mixture

Hazardous decomposition: Carbon monoxide, Carbon dioxide, hydrocarbons and other oxides.

Keep container tightly closed.

Avoid breathing dust, fume, gas, mist, vapors, spray.

Advice for fire-fighters

As with all fires, wear positive pressure, self-contained breathing apparatus, (SCBA) with a full face piece and protective clothing. Persons without respiratory protection should leave area. Wear SCBA during clean-up immediately after fire. No smoking.

ERG Guide No.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Put on appropriate personal protective equipment (see section 8).



Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse. Eliminate all sources of ignition. Wear appropriate protective clothing. Avoid breathing vapors. Persons not wearing protective equipment should be excluded from area of spill until clean up has been completed. Keep unnecessary people away; isolate hazard area and deny entry. Consider need for evacuation. Stay up wind and keep out of low areas where vapor may accumulate and ignite. Wear an appropriate NIOSH/MSHA approved respirator if vapor is generated.

Environmental precautions

Do not allow spills to enter drains or waterways.

Methods and material for containment and cleaning up

Ventilate the area and avoid breathing vapors. Take the personal protective measures listed in section 8. Contain and absorb spillage with non-combustible materials e.g. sand, earth, and vermiculite. Place in closed containers outside buildings and dispose of according to the Waste Regulations.

Section 7. Handling and storage

Precautions for safe handling

Handle containers carefully to prevent damage and spillage. Advice on safe handling: Store in tightly closed containers in cool, dry, isolated, well ventilated area. Do not breathe vapors or spray mist. protection see section 8. Provide sufficient air exchange and/or exhaust in work rooms. Avoid exceeding the given occupational exposure limits (see section 8). Smoking, eating and drinking should be prohibited in the application area. Advice on protection against fire and explosion: Normal measures for preventive fire protection. See section 2 for further details. - [Prevention]

Conditions for safe storage, including any incompatibilities

Incompatible materials: Strong oxidizing agents
Storage: Keep containers tightly closed when not in use. Store in cool, dry place, out of direct sunlight. Requirements for storage areas and containers: Store in original container. Keep containers tightly closed in a dry, cool and well ventilated place. See section 2 for further details. - [Storage]



Specific end use(s)
No available information

Section 8. Exposure controls / personal protection

Control parameters

Exposure Limits

CAS No.	Ingredient	Source	Value
110-63-4	BUTANEDIOL	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit

Exposure controls

Respiratory If workers are exposed to concentrations above the exposure limit they must use the appropriate, certified respirators.

Eyes Protective safety glasses recommended

Skin Avoid skin contact. Protective gloves recommended.

Engineering Controls Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits suitable respiratory protection must be worn.

Other Work Practices Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

See section 2 for further details.

Section 9. Physical and chemical properties

Information on basic physical and chemical properties

Physical State	Liquid at 20°C and 101.3 kPa
Color	Colorless, clear
Odor	Nearly odorless
Odor threshold	No available information



Melting point / freezing point	68.7 °F / 20.4 °C at 1013 hPa
Initial boiling point and boiling range	446 °F / 230 °C at 1013 hPa
Flammability (solid, gas)	Non flammable
Upper/lower flammability or explosive limits	Lower Explosive Limit: No available information Upper Explosive Limit: No available information
Flash Point	> 239 °F / > 115 °C at 1013 hPa
Auto-ignition temperature	725 °F / 385 °C at 1013 hPa
Decomposition temperature	No available information
pH	No available information
Viscosity static (mm²/s)	83.2 mm ² /s (static) at 68 °F / 20 °C
Solubility in Water	100 g/L at 20 °C completely miscible
Partition coefficient n-octanol/water (Log Kow)	log Kow (log Pow): -0.88 at 25 °C
Vapor pressure (Pa)	0.014 to 0.019 hPa at 25 °C
Relative Density	1.02 at 20 °C
Vapor Density	No available information
Evaporation rate (Ether = 1)	No available information
Oxidising properties	No available information
Explosive properties	Non explosive
Molecular Weight	113.158 g/mol
Dissociation (pKa) (1)	pKa at 20 °C: 15.62

Other information

No other relevant information.

Section 10. Stability and reactivity

Reactivity

Hazardous Polymerization will not occur.

Chemical stability

Stable under normal circumstances.

Possibility of hazardous reactions

No hazardous reactions when stored and handled according to instructions.

Conditions to avoid

Avoid high temperatures, heat, flames and sparks.

Extremes of temperature and direct sunlight.

Incompatible materials

Strong oxidizing agents Strong acids and strong bases



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Strong acids

Hazardous decomposition products

Carbon monoxide, Carbon dioxide, hydrocarbons and other oxides.

Section 11. Toxicological information

Acute toxicity

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
BUTANEDIOL - (110-63-4)	1,500.00, Rat - Category: 4	> 5,000.00, Rat - Category: NA	No data available.	No data available.	No data available.

Carcinogen Data

CAS No.	Ingredient	Source	Value
110-63-4	BUTANEDIOL	OSHA	Regulated Carcinogen: No;
		NTP	Known: No; Suspected: No;
		IARC	No
		ACGIH	No Established Limit

Classification	Category	Hazard Description
Acute toxicity (oral)	4	Harmful if swallowed.
Acute toxicity (dermal)	---	Not Applicable
Acute toxicity (inhalation)	---	Not Applicable
Skin corrosion/irritation	---	Not Applicable
Serious eye damage/irritation	---	Not Applicable
Respiratory sensitization	---	Not Applicable
Skin sensitization	---	Not Applicable
Germ cell mutagenicity	---	Not Applicable
Carcinogenicity	---	Not Applicable
Reproductive toxicity	---	Not Applicable
STOT-single exposure	---	Not Applicable
STOT-single exposure	3	May cause drowsiness or dizziness.
STOT-repeated exposure	---	Not Applicable



Aspiration hazard	---	Not Applicable
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Possible routes of entry:

Inhalation, ingestion, skin contact, and skin absorption.

Symptoms and effects, both acute and delayed:

No specific symptom data available.

No chronic toxicity or long term toxicity information available. Treat symptomatically.

Inhalation May cause respiratory irritation.

Ingestion Harmful if swallowed.

Section 12. Ecological information

Toxicity

No additional information provided for this product. See Section 3 for chemical specific data.

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/L	48 hr EC50 crustacea, mg/L	ErC50 algae, mg/L
BUTANEDIOL - (110-63-4)	No data available.	No data available.	No data available.

Persistence and degradability

There is no data available on the preparation itself.

Bioaccumulative potential

No available information

Mobility in soil

No available information

Results of PBT and vPvB assessment

This product contains no PBT/vPvB/vPvM chemicals.

Other adverse effects

No available information

Section 13. Disposal considerations



Waste treatment methods

Observe all federal, provincial and local regulations when disposing of this substance.

Section 14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
UN number	Not Regulated	Not Regulated	Not Regulated
UN proper shipping name	Not Regulated	Not Regulated	Not Regulated
Transport hazard class(es)	Class: Not Applicable Sub Class: Not Applicable	Class: Not Applicable Sub Class: Not Applicable	Class: Not Applicable Sub Class: Not Applicable
Packing group	Not Applicable	Not Applicable	Not Applicable

Environmental hazards

IMDG Marine Pollutant: No;

Special precautions for user

No available information

Section 15. Regulatory information

Regulatory Overview The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.

Classification of the substance or mixture under OSHA's Hazard Communication Standard (1910.1200) revised 2024 (GHS revision 7)

Toxic Substance Control Act (TSCA)

CAS Number	Ingredient	Toxic Substance Control Act (TSCA)	Comments	Status
0000110-63-4	BUTANEDIOL	Yes		ACTIVE



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The following flags are used:

- Active - indicates commercial status designation of active
- E - indicates a substance that is the subject of a Section 5(e) Consent Order under TSCA.
- F - indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
- N - indicates a polymeric substance containing no free-radical initiator in its Inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
- P - indicates a commenced Premanufacture Notice (PMN) substance.
- R - indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
- S - indicates a substance that is identified in a final Significant New Uses Rule.
- SP - indicates a substance that is identified in a proposed Significant New Uses Rule.
- T - indicates a substance that is the subject of a final Section 4 test rule under TSCA.
- UVCB Chemical Substances of Unknown or Variable Composition, Complex Reaction Products and Biological Materials
- XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711).
- Y1 - indicates a polymer that has a number-average molecular weight greater than 1,000 and that was exempt under the 1984 polymer exemption rule.
- Y2 - indicates a polymer that is a polyester and that was exempt under the 1984 polymer exemption rule.

EPCRA 302 Extremely Hazardous:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 313 Toxic Chemicals:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Carcinogens (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Developmental Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Female Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 Label Warning:

This product contains no chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.



Mass RTK Substances (>1%) :

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

New Jersey RTK Substances (>1%) :

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Pennsylvania RTK Substances (>1%) :

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

OSHA Process Safety Management Standard Highly Hazardous Chemicals, Toxics and Reactives:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

US EPA List of Regulated Substances under the Risk Management Plan (RMP) Program:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

US EPA Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) under the Minimum Risk Exemption:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

U.S. - DEA Special Surveillance List:

This material is listed on the DEA Special Surveillance List. This material is not intended for consumer sale or use. This material is not intended for human consumption under any circumstances. **Sale or marketing of this material for human consumption is prosecuted as a crime under the Federal Analog Act of 1986 (21 U.S.C. § 813).**

US DHS Chemical Facility Anti-Terrorism Standards (CFATS):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

CERCLA Chemicals and RQs:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.



Section 16. Other information

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DISCLAIMER OF RESPONSIBILITY

The information on this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume damage or expense arising out of or in any way responsibility and expressly disclaim liability for loss, connected with handling, storage, use, or disposal of this product. If the product is used as a component in another product, this SDS information may not be applicable.

The full text of the phrases appearing in section 3 is:

H302 Harmful if swallowed.

H336 May cause drowsiness and dizziness.

End of Document

TL – 4-02-26