SPECTRUM®

GARDENA, CA
NEW BRUNSWICK, NJ

Material Safety Data Sheet

NFPA	HMIS	Personal Protective Equipment
	Health Hazard 2 Fire Hazard 2 Reactivity 0	 See Section 15.

Section 1. Chemical Product and Company Identification

Common Name/ Trade Name	**2-Bromo-2-nitro-1,3-propanediol**
Manufacturer	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248
Commercial Name(s)	Bronopol;Bronidiol; Bronocot
Synonym	2-Bromo-2-nitropropan-1,3-diol; 2-Bromo-2-nitropropane-1,3-diol; beta-Bromo-beta-nitrotrimethyleneglycol
Chemical Name	1,3-Propanediol,2-bromo-2-nitro-
Chemical Family	Not available.
Chemical Formula	C3H6BrNO4
Supplier	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248

Catalog Number(s).	B2294
CAS#	52-51-7
RTECS	TY3385000
TSCA	TSCA 8(b) inventory: 2-Bromo-2-nitro-1,3-propanedio
CI#	Not available.

IN CASE OF EMERGENCY
CHEMTREC (24hr) 800-424-9300

CALL (310) 516-8000

Section 2.Composition and Information on Ingredients

		Exposure Limits			
Name	**CAS #**	**TWA (mg/m³)**	**STEL (mg/m³)**	**CEIL (mg/m³)**	**% by Weight**
1) {2-}Bromo{-2-}nitro{-1,3-}propanediol	52-51-7				100

Toxicological Data on Ingredients

2-Bromo-2-nitro-1,3-propanediol:
ORAL (LD50): Acute: 180 mg/kg [Rat]. 267 mg/kg [Rat]. 342 mg/kg [Rat].
DERMAL (LD50): Acute: 64 mg/kg [Rat]. 4750 mg/kg [Mouse]. >2000 mg/kg [Rabbit].
DUST (LC50): Acute: >5000 mg/m³ 6 hours [Rat]. 800 mg/m³ 4 hours [Rat].

Section 3. Hazards Identification

Potential Acute Health Effects

Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation (lung irritant). Slightly hazardous in case of skin contact (sensitizer, permeator), . Severe over-exposure can result in death.

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Potential Chronic Health Effects	Slightly hazardous in case of skin contact (sensitizer). **CARCINOGENIC EFFECTS**: Not available. **MUTAGENIC EFFECTS**: Not available. **TERATOGENIC EFFECTS**: Not available. **DEVELOPMENTAL TOXICITY**: Not available. The substance may be toxic to kidneys, skin, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.
Skin Contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Serious Skin Contact	Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Serious Inhalation	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.
Ingestion	If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
Serious Ingestion	Not available.

Section 5. Fire and Explosion Data

Flammability of the Product	Flammable.
Auto-Ignition Temperature	Not available.
Flash Points	CLOSED CUP: 130°C (266°F).
Flammable Limits	Not available.
Products of Combustion	These products are carbon oxides (CO, CO2), nitrogen oxides (NO, NO2...), halogenated compounds.
Fire Hazards in Presence of Various Substances	Flammable in presence of open flames and sparks, of heat.
Explosion Hazards in Presence of Various Substances	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
Fire Fighting Media and Instructions	Flammable solid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.
Special Remarks on Fire Hazards	When heated to decomposition it emits toxic fumes and highly corrosive fumes of hydrogen bromide and nitrogen oxides.
Special Remarks on Explosion Hazards	Not available.

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Section 6. Accidental Release Measures

Small Spill	Use appropriate tools to put the spilled solid in a convenient waste disposal container.
Large Spill	Flammable solid. Poisonous solid. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal.

Section 7. Handling and Storage

Precautions	Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, acids, alkalis.
Storage	Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Hygroscopic

Section 8. Exposure Controls/Personal Protection

Engineering Controls	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Personal Protection	Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
Personal Protection in Case of a Large Spill	Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Exposure Limits	Not available.

Section 9. Physical and Chemical Properties

Physical state and appearance	Solid. (Crystals solid.)	**Odor**	Odorless.
Molecular Weight	199.99 g/mole	**Taste**	Not available.
pH (1% soln/water)	Not available.	**Color**	White. White to yellowish.
Boiling Point	Decomposition temperature: 130°C (266°F)		
Melting Point	123°C (253.4°F) - 130 C.		
Critical Temperature	Not available.		
Specific Gravity	1.22 (Water = 1)		
Vapor Pressure	Not applicable.		
Vapor Density	Not available.		
Volatility	Not available.		
Odor Threshold	Not available.		
Water/Oil Dist. Coeff.	The product is more soluble in water; log(oil/water) = -0.6		
Ionicity (in Water)	Not available.		
Dispersion Properties	See solubility in water, diethyl ether, acetone.		

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Solubility	Soluble in cold water. Partially soluble in diethyl ether, acetone. Solublilty in Water: 25 - 25 g/100 ml @ 22 deg. C. Soluble in Ethyl acetate. Slightly soluble in Chloroform, Benzene. Insoluble in ligroin.

Section 10. Stability and Reactivity Data

Stability	The product is stable.
Instability Temperature	Not available.
Conditions of Instability	Heat, ignition sources, incompatible materials
Incompatibility with various substances	Reactive with oxidizing agents, reducing agents, acids, alkalis.
Corrosivity	Non-corrosive in presence of glass.
Special Remarks on Reactivity	Incompatible with acid chlorides, acid anhydrides, amines. Decomposes in alkaline medium.
Special Remarks on Corrosivity	Not available.
Polymerization	Will not occur.

Section 11. Toxicological Information

Routes of Entry	Absorbed through skin. Eye contact. Ingestion.
Toxicity to Animals	**WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE.** Acute oral toxicity (LD50): 180 mg/kg [Rat]. Acute dermal toxicity (LD50): 64 mg/kg [Rat]. Acute toxicity of the dust (LC50): 800 mg/m^3 4 hours [Rat].
Chronic Effects on Humans	May cause damage to the following organs: kidneys, skin, central nervous system (CNS).
Other Toxic Effects on Humans	Hazardous in case of skin contact (irritant), of ingestion, of inhalation (lung irritant). Slightly hazardous in case of skin contact (sensitizer, permeator), .
Special Remarks on Toxicity to Animals	Lethal Dose/Conc 50% Kill: LD50[Rat] - Route: Oral; Dose: 254 mg/kg LD50[Mouse] - Route: Oral; Dose: 194 mg/kg LD50[Mouse] - Route: Oral; Dose: 270 mg/kg LD50[Dog] - Route: Oral; Dose: 250 mg/kg
Special Remarks on Chronic Effects on Humans	Not available.
Special Remarks on other Toxic Effects on Humans	Acute Potential Health Effects: Skin: Causes skin irritation. May cause dermatitis, an allergic reaction. May be harmful if absorbed through skin and cause systemic effects similar that of ingestion or inhalation. Eyes: Causes eye irritation. May cause conjunctivitis and corneal damage. Corneal damage may result in permanent impairment of vision, even blindness. Inhalation: Causes respiratory tract and mucous membrane irritation. Can cause dizziness, ataxia, somnolence, difficulty breathing or suffocation. Aspiration may lead to pulomonary edema. May cause conjunctivitis of the eyes. Ingestion: Harmful if swallowed. Causes gastritis, nausea, vomiting, diarrhea, weight loss, ulceration or bleeding from the stomach. May affect respiration (difficulty breathing, respiratory depression), behavior/central nervous system (dizziness, ataxia, somnolence, coma), kidneys. Cronic Potential Health Effects: Skin: Prolonged or repeated skin contact may cause dermatitis. Inhalation and Ingestion: Prolonged or repeated inhalation or ingestion may cause nausea, and vomiting, and other symptoms similar to that of acute ingestion or inhalation. Prolonged or repeated ingestion may also cause weight loss, ulceration and bleeding from the stomach, and affect the salivary glands, kidneys, and thymus.

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Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Products of Biodegradation	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
Toxicity of the Products of Biodegradation	The products of degradation are as toxic as the product itself.
Special Remarks on the Products of Biodegradation	Not available.

Section 13. Disposal Considerations

Waste Disposal	Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14. Transport Information

DOT Classification	CLASS 4.1: Flammable solid.
Identification	: 2-Bromo-2-nitropropane-1,3-diol UNNA: 3241 PG: III
Special Provisions for Transport	Not available.
DOT (Pictograms)	

Section 15. Other Regulatory Information and Pictograms

Federal and State Regulations	New Jersey: 2-Bromo-2-nitro-1,3-propanediol TSCA 8(b) inventory: 2-Bromo-2-nitro-1,3-propanediol
California Proposition 65 Warnings	California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found. California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.
Other Regulations	OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances (EINECS No. 200-143-0). Canada: Listed on Canadian Domestic Substance List (DSL). China: Listed on National Inventory. Japan: Listed on National Inventory (ENCS). Korea: Listed on National Inventory (KECI). Philippines: Listed on National Inventory (PICCS). Australia: Listed on AICS.
Other Classifications	**WHMIS (Canada)**: CLASS B-4: Flammable solid. CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS D-2B: Material causing other toxic effects (TOXIC). **DSCL (EEC)**

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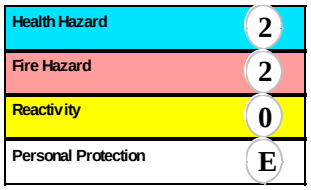
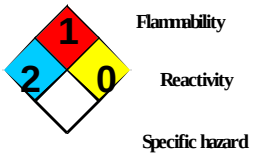
R21/22- Harmful in contact with skin and if swallowed.
R37/38- Irritating to respiratory system and skin.
R41- Risk of serious damage to eyes.
R50- Very toxic to aquatic organisms.

S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37/39- Wear suitable gloves and eye/face protection.
S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

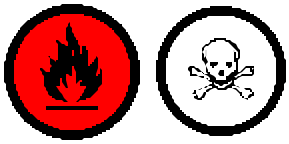
HMIS (U.S.A.)



National Fire Protection Association (U.S.A.)



WHMIS (Canada) (Pictograms)



DSCL (Europe) (Pictograms)

TDG (Canada) (Pictograms)

ADR (Europe) (Pictograms)

Protective Equipment

Gloves.

Lab coat.

Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Splash goggles.

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Section 16. Other Information

MSDS Code	B3954
References	Not available.
Other Special Considerations	Major Uses: Biocide in recirculating cooling towers; Microbiocide; May be used informulating disinfectants, and sanitizers; In seed treatment for controlof Xanthomonas campestris pv. malvacearum causing blackarm disease of cotton; Bacteriostat in soil.

Validated by Sonia Owen on 3/28/2008.

Verified by Sonia Owen.

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CALL (310) 516-8000

Notice to Reader

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.