SAFETY DATA SHEET

LANXESS
Energizing Chemistry

Section 1. Identification

Product identifier : Vericide Bronopol Solution

Material Number : 57070241

EPA Registration Number: : 39967-114

Identified uses : Not available.

Supplier/Manufacturer : LANXESS Corporation
Product Safety & Regulatory Affairs
111 RIDC Park West Drive
Pittsburgh, PA 15275-1112
USA

For information: US/Canada (800) LANXESS
International +1 412 809 1000

In case of emergency : Chemtrec (800) 424-9300
International (703) 527-3887
Lanxess Emergency Phone (800) 410-3063.

Section 2. Hazards identification

HAZCOM Standard Status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Physical state : Liquid.

Color : Colorless to light yellow.

Classification of the substance or mixture : ACUTE TOXICITY (dermal) - Category 4
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
SKIN SENSITIZATION. - Category 1
ASPIRATION HAZARD - Category 1

Hazard pictograms :

Signal word : Danger

Hazard statements : Harmful in contact with skin. Causes serious eye irritation. Causes skin irritation. May cause an allergic skin reaction. May be fatal if swallowed and enters airways.

Hazard Not Otherwise Classified (HNOC) : None known.

Precautionary statements

Prevention : Wear protective gloves/clothing and eye/face protection. Avoid breathing vapor. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.

Response : Get medical attention if you feel unwell. IF SWALLOWED: Do NOT induce vomiting. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 2. Hazards identification

Supplemental label elements : Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials and food and drink.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
1,3-Propanediol, 2-bromo-2-nitro-	5 - 10%	52-51-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. If not breathing, if breathing is irregulor or respiratory arrest occurs, provide artifical respiration, or oxygen by a trained professional, using a pocket type respirator.

Skin contact : Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse. In case of contact, flush skin with plenty of water for at least 20 minutes.

Ingestion : Get medical attention immediately. Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Potential acute health effects

Eye contact : Causes serious eye irritation. No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : Harmful in contact with skin. Causes skin irritation. May cause an allergic skin reaction.

Ingestion : May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : No specific data.

Section 4. First aid measures

Skin contact : Causes irritation with symptoms of reddening, itching, and swelling.
Once sensitized, an allergic skin reaction may occur with reddening, swelling, and rash when subsequently exposed to very low levels.

Ingestion : No specific data.

Potential chronic health effects

Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Notes to physician : Treat symptomatically. No specific treatment.

Protection of first-aiders : No special measures required.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire. In case of fire, use water spray (fog), foam or dry chemical.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal. Prevent entry into sewers, water courses, basements or confined areas.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Do not get in eyes or on skin or clothing. Do not swallow. Avoid breathing vapor or mist. Use only with adequate ventilation. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container. Remove contaminated clothing and protective equipment before entering eating areas. Workers should wash hands and face before eating, drinking and smoking. Put on appropriate personal protection equipment. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Persons with a history of skin sensitization to this product should not be employed in any process in which this product is used.

Conditions for safe storage : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. Empty containers retain product residue and can be hazardous. Do not reuse container.

Section 8. Exposure controls/personal protection

Occupational exposure limits

No exposure limit value known.

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protection

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Respiratory protection : A NIOSH approved positive pressure air-supplied respirator is required whenever airborne concentrations are not known overexceed the recommended exposure limit. For emergency and other conditions where the exposure limits may be greatly exceeded, use an approved, positive pressure self-contained breathing apparatus. This product has poor warning properties since the concentration at which the odor can be smelled is substantially higher than the airborne concentration standard/guideline. Observe OSHA regulations for respirator use (29 CFR 1910.134).

Skin protection : Permeation resistant gloves.

Eye/face protection : Tightly fitting safety goggles.

Medical Surveillance : Not available.

Section 9. Physical and chemical properties

Physical state : Liquid.

Color : Colorless to light yellow.

Odor : Not available.

Odor threshold : Not available.

pH : 2 to 6

Boiling point : 100 °C (1013 hPa)

Melting point : Not available.

Flash point : Not available.

Evaporation rate : Not available.

Section 9. Physical and chemical properties

Explosion limits : Not available.

Vapor pressure : Not available.

Density : 1.06 g/cm³

Specific gravity (Relative density) : Not available.

Solubility : Easily soluble in the following materials: cold water

Partition coefficient: n-octanol/water : Not available.

Vapor density : Not available.

Viscosity : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : 140°C

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid extreme heat.

Incompatible materials : alkalis , amines , Metal.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eye contact : Causes serious eye irritation. No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : Harmful in contact with skin. Causes skin irritation. May cause an allergic skin reaction.

Ingestion : May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : No specific data.

Skin contact : Causes irritation with symptoms of reddening, itching, and swelling.
Once sensitized, an allergic skin reaction may occur with reddening, swelling, and rash when subsequently exposed to very low levels.

Ingestion : No specific data.

Potential chronic health effects

Short term exposure

Potential immediate effects : Not available.

Long term exposure

Potential delayed effects : Not available.

General : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Section 11. Toxicological information

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure	Test
1,3-Propanediol, 2-bromo-2-nitro-	LD50 Oral	Rat - Male, Female	305 mg/kg	-	-
Vericide Bronopol Solution	LD50 Dermal	Rat	1600 mg/kg	-	-
1,3-Propanediol, 2-bromo-2-nitro-	LC50 Inhalation Dusts and mists	Rat - Male, Female	>=0.588 mg/l	4 hours	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation	Reversibility
1,3-Propanediol, 2-bromo-2-nitro-	Skin - Irritant	Rabbit	-	4 hours	14 days	-

Conclusion/Summary

Skin : irritant (Rabbit)

Eyes : irritant (Rabbit)

Sensitization

Product/ingredient name	Route of exposure	Species	Result
1,3-Propanediol, 2-bromo-2-nitro-	skin	Guinea pig	Not sensitizing

Skin : sensitizer

Chronic toxicity

Product/ingredient name	Result	Species	Dose	Exposure
1,3-Propanediol, 2-bromo-2-nitro-	Sub-chronic NOAEL Oral	Rat - Male, Female	25 mg/kg/d	90 days
	Chronic LOAEL Oral	Rat - Male, Female	32 mg/kg/d	104 weeks; 7 days per week
	Sub-chronic LOAEL Oral	Rat - Male, Female	20 mg/kg/d	13 weeks; 7 days per week

Mutagenicity

Product/ingredient name	Test	Experiment	Result
1,3-Propanediol, 2-bromo-2-nitro-	OECD 473 *In vitro* Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Human Cell: Somatic Metabolic activation: with/without S9mix	Positive
	OECD 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria Metabolic activation: with/without S9mix	Negative

Section 11. Toxicological information

	Mammalian cell gene mutation assay	Experiment: In vitro Subject: Mammalian-Animal Cell: Somatic Metabolic activation: with/without S9mix	Negative
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Experiment: In vivo Subject: Mammalian-Animal	Negative
	OECD 486 Unscheduled DNA Synthesis (UDS) Test with Mammalian Liver Cells *in vivo*	Experiment: In vivo Subject: Mammalian-Animal	Negative

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure
1,3-Propanediol, 2-bromo-2-nitro-	Negative - Unreported -	Rat	-	-
	Negative - Oral - NOAEL	Rat - Male, Female	7 mg/kg bw/day	104 weeks; daily
	Negative - Dermal -	Mouse - Male, Female	-	80 weeks; 3 days per week

Product/ingredient name	CAS #	IARC	NTP	OSHA
1,3-Propanediol, 2-bromo-2-nitro-	52-51-7	Not classified.	Not classified.	Not classified.

Reproductive toxicity

Product/ingredient name	Effects	Species	Dose	Exposure
1,3-Propanediol, 2-bromo-2-nitro-	NOAEL: P , F1	Rat - Male, Female	Oral: >40 mg/kg bw/day	19 weeks; daily
	NOAEL: Parental systemic toxicity	Rat - Male, Female	Oral: 25 mg/kg bw/day	6 weeks; Continuous
	NOAEL: P	Rat - Male, Female	Oral: 70 mg/kg bw/day	6 weeks; Continuous
	NOAEL: F1, F2	Rat - Male, Female	Oral: 200 mg/kg bw/day	6 weeks; Continuous
	NOAEL: Teratogenicity, EmbryoToxicity	Rat - Female	Oral: 100 mg/kg bw/day	15 days; daily
	LOAEL: Maternal toxicity	Rat - Female	Oral: 30 mg/kg bw/day	15 days; daily
	NOAEL: Maternal toxicity	Rat - Female	Oral: 10 mg/kg bw/day	15 days; daily
	NOAEL / LOAEL: Maternal toxicity, Teratogenicity	Rat - Female	Oral: 80 mg/kg bw/day	15 days; daily

Specific target organ toxicity (single exposure)

Section 11. Toxicological information

Name	Category	Route of exposure	Target organs
1,3-Propanediol, 2-bromo-2-nitro-	Category 3	Not applicable.	Respiratory tract irritation

Acute toxicity estimates

Route	ATE value (Acute Toxicity Estimates)
Oral	3058 mg/kg
Inhalation (dusts and mists)	5.013 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Test	Result	Species	Exposure
1,3-Propanediol, 2-bromo-2-nitro-	OECD 201 Alga, Growth Inhibition Test	Acute EC50 0.37 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	OECD 202 *Daphnia* sp. Acute Immobilization Test	Acute EC50 1.4 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	EPA EPA OPP 72-1 (Fish Acute Toxicity Test)	Acute LC50 35.7 mg/l Fresh water	Fish - Lepomis macrochirus	96 hours
	OECD 211 *Daphnia Magna* Reproduction Test	Chronic EC50 0.27 mg/l Fresh water	Daphnia - Daphnia magna	21 days
	OECD 201 Alga, Growth Inhibition Test	Chronic NOEC 0.1 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	OECD 210 Fish, Early-Life Stage Toxicity Test	Chronic NOEC 21.5 mg/l Fresh water	Fish - Oncorhynchus mykiss	49 days

Conclusion/Summary : Not available.

Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
1,3-Propanediol, 2-bromo-2-nitro-	OECD 301B Ready Biodegradability - CO_2 Evolution Test	70 to 80 % - Readily - 28 days	-	-

Conclusion/Summary : Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
1,3-Propanediol, 2-bromo-2-nitro-	-	50%; <2 day(s)	-

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
1,3-Propanediol, 2-bromo-2-nitro-	0.22	-	low

Mobility in soil

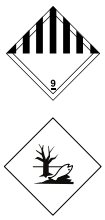
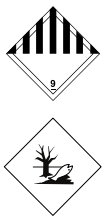
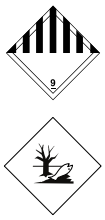
Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Waste disposal should be in accordance with existing federal state, provincial and or local environmental controls laws.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BRONOPOL)	9	III		8, 146, 335, IB3, T4, TP1, TP29The U.S. Department of Transportation regulations in 49CFR 172.102 permit this material to ship as an Environmentally Hazardous Substance, Class 9, using Special Provision 146.
IMDG Class	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BRONOPOL)	9	III		**Emergency schedules (EmS)** F-A, S-F
IATA-DGR Class	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BRONOPOL)	9	III		**Passenger aircraft** 964: 450 L **Cargo aircraft** 964: 450 L

PG* : Packing group

RQ : 0 lbs

Section 15. Regulatory information

SARA 311/312 : Immediate (acute) health hazard

SARA Title III Section 302 Extremely Hazardous Substances : None

SARA Title III Section 313 Toxic Chemicals : None

US EPA CERCLA Hazardous Subtances (40 CFR 302) : None

State regulations

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections on the SDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropraite agency in your state.

Section 15. Regulatory information

Ingredient name	CAS number	State Code	Concentration (%)
Propylene glycol	57-55-6	NJ - HS, PA - RTK HS	5 - 10%
Water	7732-18-5		82 - 88%
1,3-Propanediol, 2-bromo-2-nitro-	52-51-7		17 - 23%

Massachusetts Substances: MA - S
Massachusetts Extraordinary Hazardous Substances: MA - Extra HS
New Jersey Hazardous Substances: NJ - HS
Pennsylvania RTK Hazardous Substances: PA - RTK HS
Pennsylvania Special Hazardous Substances: PA - Special HS

California Prop. 65

To the best of our knowledge, this product does not contain any of the listed chemicals, which the state of California has found to cause cancer, birth defects or other reproductive harm.

U.S. Toxic Substances Control Act : This product is excluded from TSCA Regulation under FIFRA Section 3 (2)(B)(ii) when used as a pesticide.

FIFRA

EPA Registration Number : 39967-114

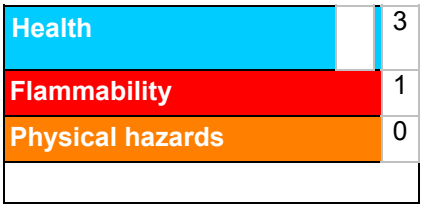
This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

Signal word : DANGER

Hazard statements : Corrosive . CAUSES EYE AND SKIN DAMAGE. Harmful or fatal if swallowed.May cause allergic skin reactions in certain individuals.

Section 16. Other information

Hazardous Material Information System :



0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme
***=Chronic**

The customer is responsible for determining the PPE code for this material. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

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

0= Minimal 1=Slight 2=Moderate 3=Serious 4=Severe

LANXESS' method of hazard communication is comprised of Product Labels and Safety Data Sheets. HMIS and NFPA ratings are provided by LANXESS as a customer service.

Section 16. Other information

Date of issue : 05-01-2015

Date of previous issue : No previous validation

Version : 1

Product Safety and Regulatory Affairs

Indicates information that has changed from previously issued version.

Notice to reader

This information is furnished without warranty, express or implied. This information is believed to be accurate to the best knowledge of LANXESS Corporation. The information in this SDS relates only to the specific material designated herein. LANXESS Corporation assumes no legal responsibility for use of or reliance upon the information in this SDS.