



INDOFIL INDUSTRIES LIMITED
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MATERIAL SAFETY DATA SHEET

2-R&D-MSDS- AGRO-FP- 427

SECTION 1. PRODUCT IDENTIFICATION		
Chemical Name	Bacterinashak 2-Bromo-2-Nitro-1, 3-Propanediol	Company Identification INDOFIL INDUSTRIES LIMITED KOLSHET, OFF SWAMI VIVEKANAND ROAD, AZAD NAGAR, SANDOZ BAUG P.O., THANE – 400 607. MAHARASHTRA (INDIA) TEL. NO. : 00-91-22-6799 9100 FAX NO. : 00-91-22-2589 83 57 / 59
Trade Name	Bacterinashak	
Synonyms	2-Bromo-2-Nitro-1, 3-Propanediol, Bronopol	Chemical classification: A broad spectrum bactericide
IUPAC	2-Bromo-2-Nitro propane 1,3-diol	
CAS Number	52-51-7	
Formula	C ₃ H ₆ BrNO ₄	

SECTION 2. COMPOSITION / INFORMATION OF INGREDIENTS

COMPONENT NAME	CAS REGISTRY NO	CONCENTRATION
2-Bromo-2-Nitro propane 1,3-diol	52-51-7	25%
Inert Ingredient		75%

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, permeate), . Severe over-exposure can result in death.

Potential Chronic Health Effect :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.

EMERGENCY OVERVIEW

RISK

Risk of serious damage to eyes.

Harmful in contact with skin and if swallowed.

Irritating to respiratory system and skin.

Flammable.

Very toxic to aquatic organisms.

Cumulative effects may result following exposure*.

Possible skin sensitiser*.

Limited evidence of a carcinogenic effect*.

* (limited evidence).

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.

EYE

If applied to the eyes, this material causes severe eye damage.

SKIN

Skin contact with the material may be harmful; systemic effects may result following absorption. The material may cause moderate inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterized by redness, swelling and blistering. Open cuts, abraded or irritated skin should not be exposed to this material. Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects .Examine the skin prior to the use of the material and ensure that any external damage is suitably protected. Solution of material in moisture on the skin, or perspiration, may increase irritant effects.

INHALED

! The material can cause respiratory irritation in some persons.

The body's response to such irritation can cause further lung damage.

Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled. If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be Conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures. Not normally a hazard due to non-volatile nature of product.

CHRONIC HEALTH EFFECTS

Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems.

There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment.

Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

There is limited evidence that, skin contact with this product is more likely to cause a sensitization reaction in some persons compared to the general population.

When administered by inhalation, formaldehyde induced squamous cell carcinomas of the nasal cavity in rats of both sexes. Although excess occurrence of a number of cancers has been reported in humans, the evidence for a possible involvement of formaldehyde is strongest for nasal and nasopharyngeal cancer.

SECTION 4: FIRST AID MEASURES	
Eye contact	<p>If this product comes in contact with the eyes: Immediately hold eyelids apart and flush the eye continuously with running water. Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. Transport to hospital or doctor without delay.</p>
Skin Contact	<p>If skin contact occurs: Immediately remove all contaminated clothing, including footwear. Flush skin and hair with running water (and soap if available). Seek medical attention in event of irritation.</p>
Ingestion	<p>IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY. For advice, contact a Poisons Information Centre or a doctor. Urgent hospital treatment is likely to be needed. In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.</p>
Inhalation	<p>If fumes or combustion products are inhaled remove from contaminated area. Lay patient down. Keep warm and rested. Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary</p>

NOTES TO PHYSICIAN	<p>For poisons (where specific treatment regime is absent): -----</p> <p>BASIC TREATMENT -----</p> <p>Establish a patent airway with suction where necessary. Watch for signs of respiratory insufficiency and assist ventilation as necessary. Administer oxygen by non-rebreather mask at 10 to 15 L/min. Monitor and treat, where necessary, for pulmonary oedema</p>
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SECTION 5: FIRE FIGHTING MEASURES

Vapor Pressure (mm HG): Negligible
Upper Explosive Limit (%): Not available.
Specific Gravity (water=1): 1.10
Lower Explosive Limit (%): Not available.

EXTINGUISHING MEDIA

For SMALL FIRES:
Dry chemical, CO₂, water spray or foam.
For LARGE FIRES:
Water-spray, fog or foam.

FIRE FIGHTING

Alert Fire Brigade and tell them location and nature of hazard.
Wear breathing apparatus plus protective gloves.
Prevent, by any means available, spillage from entering drains or water course.
Fight fire from a safe distance, with adequate cover.
When any large container (including road and rail tankers) is involved in a fire, consider evacuation by 800 meters in all directions.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

Flammable solid which burns and propagates flame easily, even when partly wetted with water.
Any source of ignition, i.e. friction, heat, sparks or flame, may cause fire or explosion.
May burn fiercely
May form explosive mixtures with air.
Combustion products include: carbon monoxide (CO), carbon dioxide (CO₂), aldehydes, hydrogen bromide, nitrogen oxides (NO_x), other pyrolysis products typical of burning organic material.
When heated above 140 Deg the solid decomposes exothermally and swells to give a sticky tarry mass which burns readily.

FIRE INCOMPATIBILITY

Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result

SECTION 6 : ACCIDENTAL RELEASE MEASURES

MINOR SPILLS	Remove all ignition sources. DO NOT touch or walk through spilled material. Clean up all spills immediately.
MAJOR SPILLS	Avoid contact with skin and eyes. Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard. DO NOT touch or walk through spilled material. Control personal contact by using protective equipment..

SECTION 7 : HANDLING AND STORAGE

Handling	The persons handling should wear long sleeved shirts, chemical resistant gloves plus socks and protective eye wear. The user should wash hands before eating, drinking, chewing gum, using tobacco or using toilet.
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).

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls	Provide exhaust ventilation or other engineering controls. An emergency eye wash station and safety shower should be located near the work-station.
Personal Protective Equipment	<p>Eye Protection: Wear eye protection such as safety glasses, chemical goggles, or face shields if engineering controls or work practices are not adequate to prevent eye contact. Contact lenses should not be worn when working with this chemical</p> <p>Hand protection: Avoid skin contact .Use gloves. Wash hands with plenty of mild soap and water before eating, drinking, use of toilet facilities or leaving work.</p> <p>Body protection: Avoid skin contact. Wear long-sleeved fire-retardant garments. Additional chemical-resistant protective gear may be required. This may include an apron, boots and additional facial protection.</p> <p>Respiratory Protection: Dust / mist filtering respirator or a NIOSH approved respirator .</p> <p>Work practices: users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside . Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash outside of gloves before removing. As soon as possible wash thoroughly and change into clean clothing. Deluge safety shower and eye wash station should be located in work area</p>

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES			
Partition coefficient of Hexanol/Water:	0.1%	Stability	It is a stable free flowable powder in room temperature and at high temperature and in sunlight
Physical state	Solid	Color	Pale Yellow to Yellowish Orange free Flowing Powder
Odor	Faint characteristic odor / odorless	PH (1%)	4.0-6.0
Specific gravity (water=1)	-	Solubility in water	Solubility in Water: 25 - 25 g/100 ml @ 22 deg. C.
Vapor pressure @20°C (mm Hg)	2.2×10^{-5} mmHg@ 20°C	Vapor density (air=1)	Not available
Viscosity	NA	Boiling point	NA
Melting point	Above 130 °C	Consistency	It is consistent

SECTION 10: STABILITY AND REACTIVITY	
Chemical stability	The product is stable.
Conditions to Avoid	Heat, ignition sources, incompatible materials
Material Incompatibility	Reactive with oxidizing agents, reducing agents, acids, alkalis.
Special Remarks on Reactivity	Incompatible with acid chlorides, acid anhydrides, amines. Decomposes in alkaline medium.
Hazardous 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	<p>Acute Potential Health Effects:</p> <p>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.</p> <p>Eyes: Causes eye irritation. May cause conjunctivitis and corneal damage. Corneal damage may result in permanent impairment of vision, even blindness.</p> <p>Inhalation: Causes respiratory tract and mucous membrane irritation. Can cause dizziness, ataxia, somnolence, difficulty breathing or suffocation. Aspiration may lead to pulmonary edema. May cause conjunctivitis of the eyes.</p> <p>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.</p> <p>Chronic Potential Health Effects:</p> <p>Skin: Prolonged or repeated skin contact may cause dermatitis.</p> <p>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.</p>

SECTION 12: ECOLOGICAL INFORMATION

Very toxic to aquatic organisms.

This material and its container must be disposed of as hazardous waste.

Avoid release to the environment.

Refer to special instructions/ safety data sheets.

Ecotoxicity

Ingredient Persistence: Water/Soil Persistence: Air Bioaccumulation Mobility
formaldehyde LOW LOW LOW HIGH

SECTION 13: DISPOSAL CONSIDERATIONS**Disposal Instructions**

All waste must be handled in accordance with local, state and federal regulations.

Containers may still present a chemical hazard/ danger when empty.

Return to supplier for reuse/ recycling if possible.

Otherwise:

If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorized landfill. Where possible retain label warnings and MSDS and observe all notices pertaining to the product.

Legislation addressing waste disposal requirements may differ by country, state and/ or territory.

Each user must refer to laws operating in

their area. In some areas, certain wastes must be tracked.

A Hierarchy of Controls seems to be common - the user should investigate:

Reduction

Reuse

Recycling

Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate. In most instances the supplier of the material should be consulted.

DO NOT allow wash water from cleaning or process equipment to enter drains.

It may be necessary to collect all wash water for treatment before disposal.

In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.

Where in doubt contact the responsible authority.

Recycle wherever possible.

Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.

Dispose of by: burial in a land-fill specifically licensed to accept chemical and / or pharmaceutical wastes or Incineration in a licensed apparatus (after admixture with suitable combustible material)

Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

SECTION 14 : TRANSPORT INFORMATION	
IATA Shipping Name	2-Bromo-2-Nitro propane 1,3-diol
IATA Hazard class	4.1 Flammable Solid
IATA identification number	UN 3241
IATA Packing Group	III

SECTION 15: REGULATORY INFORMATION	
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) 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.

SECTION 16: OTHER INFORMATION

HMIS RATINGS	Health Hazard : 2	Fire Hazard:2	Reactivity :0
	0 = Least 1= slight 2= Moderate 3= High 4=Extreme		

ABBREVIATIONS

STEL	Short term exposure limit
ACGIH	American conference of Government Industrial Hygienists
NIOSH	National institute of safety and health
SARA	Super fund Amendments and Reauthorization Act
TWA	Time weighted average
OSHA	Occupational safety and health
NFPA	National Fire protection agency
HMIS	Hazardous Materials information system
RCRA	Resource conservation Recovery act
TSCA	Toxic substance Control Act
WHMIS	Work place Hazardous Materials information system
IRAC	International Agency for Research on Cancer

MANUFACTURE'S / SUPPLIER'S DATA

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Fax 2589 8357	Telegraphic Code		Fax 22767 5083	Fax 22712 9242
Local Bodies Involved	Collector of Thane			

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