SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1  Product identifiers
   Product name : 2-Bromo-2-Nitropropane-1,3-Propanediol (Bronopol)
   CAS-No. : 52-51-7

1.2  Relevant identified uses of the substance or mixture and uses advised against
   Identified uses : Laboratory chemicals, Industrial & for professional use only.

1.3  Details of the supplier of the safety data sheet
   Company : Central Drug House (P) Ltd
             7/28 Vardaan House
             New Delhi-10002
             INDIA
   Telephone : +91 11 49404040
   Email : care@cdhfinechemical.com

1.4  Emergency telephone number
   Emergency Phone # : +91 11 49404040 (9:00am - 6:00 pm) [Office hours]

SECTION 2: Hazards identification

2.1  Classification of the substance or mixture
   Classification according to Regulation (EC) No 1272/2008
   Acute toxicity, Oral (Category 4), H302
   Acute toxicity, Dermal (Category 4), H312
   Skin irritation (Category 2), H315
   Serious eye damage (Category 1), H318
   Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
   Acute aquatic toxicity (Category 1), H400
   Chronic aquatic toxicity (Category 1), H410

   For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2  Label elements
   Labelling according Regulation (EC) No 1272/2008
   Pictogram

   Signal word : Danger
Hazard statement(s)

H302 + H312   Harmful if swallowed or in contact with skin
H315   Causes skin irritation.
H318   Causes serious eye damage.
H335   May cause respiratory irritation.
H410   Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P273   Avoid release to the environment.
P280   Wear protective gloves/ protective clothing.
P302 + P352 + P312   IF ON SKIN: Wash with plenty of water. Call a POISON CENTER/doctor if you feel unwell.
P305 + P351 + P338 + P310   IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P501   Dispose of contents/ container to an approved waste disposal plant.

Supplemental Hazard Statements

2.3 Other hazards
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms: Bronopol

Formula: C₃H₆NO₄Br

Molecular weight: 199.99 g/mol

CAS-No.: 52-51-7

EC-No.: 200-143-0

Index-No.: 603-085-00-8

Hazardous ingredients according to Regulation (EC) No 1272/2008

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Bromo-2-nitropropane-1,3-diol</td>
<td>Acute Tox. 4; Skin Irrit. 2; Eye Dam. 1; STOT SE 3; Aquatic Acute 1; Aquatic Chronic 1; H302, H312, H315, H318, H335, H400, H410</td>
<td>&lt;= 100 %</td>
</tr>
</tbody>
</table>

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides, Nitrogen oxides (NOx), Hydrogen bromide gas

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Storage class (TRGS 510): Flammable solid hazardous materials

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

8.2 Exposure controls
Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection
Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use (EN 143) respirator cartridges as a backup to engineering controls. If the full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance
   Form: crystalline
   Colour: beige

b) Odour
   No data available

c) Odour Threshold
   No data available

d) pH
   5 - 7

e) Melting point/freezing point
   Melting point/range: 130 - 133 °C - lit.

f) Initial boiling point and boiling range
   No data available

g) Flash point
   167 °C

h) Evaporation rate
   No data available

i) Flammability (solid, gas)
   No data available

j) Upper/lower flammability or explosive limits
   No data available

k) Vapour pressure
   0.00005 hPa at 20 °C

l) Vapour density
   No data available

m) Relative density
   No data available

n) Water solubility
   280 g/l at 23 °C

o) Partition coefficient: n-octanol/water
   log Pow: 0.18

p) Auto-ignition temperature
   No data available

q) Decomposition temperature
   >= 90 °C -

r) Viscosity
   No data available
s) Explosive properties No data available
t) Oxidizing properties No data available

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Strong oxidizing agents, Strong bases, Strong reducing agents

10.6 Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides, Nitrogen oxides (NOx), Hydrogen bromide gas
Other decomposition products - No data available
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 305 mg/kg(2-Bromo-2-nitropropane-1,3-diol)
LC50 Inhalation - Rat - 4 h - 0.588 mg/l(2-Bromo-2-nitropropane-1,3-diol)
LD50 Dermal - Rat - 1,600 mg/kg(2-Bromo-2-nitropropane-1,3-diol)

Skin corrosion/irritation
Skin - Rabbit(2-Bromo-2-nitropropane-1,3-diol)
Result: Skin irritation
(OECD Test Guideline 404)

Serious eye damage/eye irritation
Eyes - Rabbit(2-Bromo-2-nitropropane-1,3-diol)
Result: Severe eye irritation
(Draize Test)

Respiratory or skin sensitisation
Maximisation Test - Guinea pig(2-Bromo-2-nitropropane-1,3-diol)
Result: Does not cause skin sensitisation.

Germ cell mutagenicity
No data available(2-Bromo-2-nitropropane-1,3-diol)

Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
No data available(2-Bromo-2-nitropropane-1,3-diol)

Specific target organ toxicity - single exposure
May cause respiratory irritation.(2-Bromo-2-nitropropane-1,3-diol)
Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available (2-Bromo-2-nitropropane-1,3-diol)

Additional Information
RTECS: TY3385000

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated (2-Bromo-2-nitropropane-1,3-diol)

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish
- LC50 - Oncorhynchus mykiss (rainbow trout) - 41.2 mg/l - 96 h (2-Bromo-2-nitropropane-1,3-diol)
- LC50 - Lepomis macrochirus (Bluegill) - 35.7 mg/l - 96 h (2-Bromo-2-nitropropane-1,3-diol)

Toxicity to daphnia and other aquatic invertebrates
- EC50 - Daphnia magna (Water flea) - 1.6 mg/l - 48 h (2-Bromo-2-nitropropane-1,3-diol)
  static test EC50 - Daphnia magna (Water flea) - 1.4 mg/l - 48 h (2-Bromo-2-nitropropane-1,3-diol)
  (OECD Test Guideline 202)

Toxicity to algae
- EC50 - Selenastrum capricornutum (green algae) - 0.37 mg/l - 72 h (2-Bromo-2-nitropropane-1,3-diol)
  (OECD Test Guideline 201)

12.2 Persistence and degradability

Biodegradability
- Result: 50% - Partially biodegradable.
  (OECD Test Guideline 302B)

12.3 Bioaccumulative potential
Due to the distribution coefficient n-octanol/water, accumulation in organisms is not expected.

12.4 Mobility in soil
No data available (2-Bromo-2-nitropropane-1,3-diol)

12.5 Results of PBT and vPvB assessment
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects
Very toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Dissolve or mix the material with a combustible solvent and burn in a chem scrubber.

Contaminated packaging
Dispose of as unused product.
SECTION 14: Transport information

14.1 UN number
ADR/RID: 3241  
IMDG: 3241  
IATA: 3241

14.2 UN proper shipping name
ADR/RID: 2-BROMO-2-NITROPROPANE-1,3-DIOL  
IMDG: 2-BROMO-2-NITROPROPANE-1,3-DIOL  
IATA: 2-Bromo-2-nitropropane-1,3-diol

14.3 Transport hazard class(es)
ADR/RID: 4.1  
IMDG: 4.1  
IATA: 4.1 (HEAT)

14.4 Packaging group
ADR/RID: III  
IMDG: III  
IATA: III

14.5 Environmental hazards
ADR/RID: no  
IMDG Marine pollutant: no  
IATA: no

14.6 Special precautions for user
No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.2 Chemical safety assessment
For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

H302  Harmful if swallowed.
H302 + H312  Harmful if swallowed or in contact with skin
H312  Harmful in contact with skin.
H315  Causes skin irritation.
H318  Causes serious eye damage.
H335  May cause respiratory irritation.
H400  Very toxic to aquatic life.
H410  Very toxic to aquatic life with long lasting effects.

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Central Drug House (P) Ltd and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.cdhfinechemical.com for additional terms and conditions of sale.