# MATERIAL SAFETY DATA SHEET

## 1. Identification of the substance & the company

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product name</strong></td>
<td>Biobrom C - 100G</td>
</tr>
<tr>
<td><strong>Product id</strong></td>
<td>8341G-US</td>
</tr>
<tr>
<td><strong>Revision date</strong></td>
<td>14/02/2012</td>
</tr>
<tr>
<td><strong>Supersedes</strong></td>
<td>28/10/2010</td>
</tr>
</tbody>
</table>

**Chemical name**: 2,2-Dibromo-3-nitrilopropionamide  
**Synonym(s)**: Dibromocyano acetic acid amide DBNPA  
**Chemical formula**: C$_3$H$_2$ON$_2$Br$_2$  
**Chemical family**: Halogenated cyanoacetamide  
**Molecular weight**: 241.84  
**Type of product and use**: A microbiocidal bactericide, fungicide, algicide and slimicide, in treating industrial cooling water systems and pulp & paper mills.  
**Supplier**: Clearon Corp.  
95 MacCorkle Ave. SW,  
South Charleston, WV 25303,  
USA  
Tel: (304) 746-3000  
**Emergency Telephone**: Chemtrec (800)424-9300

## 2. Hazards identification

**Emergency overview**: White to off-white granules  
Corrosive  
Causes irreversible eye damage  
May be fatal if swallowed  
Prolonged or frequently repeated skin contact may cause allergic reaction in some individuals  

**Potential Health Effects:**  
- **Eye Contact**: Corrosive  
- **Skin contact**: Irritant  
  May cause skin sensitization  
- **Inhalation**: Irritant to upper respiratory tract. In severe cases pulmonary oedema may be developed
3. Composition / information on ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,2-Dibromo-3-nitrilopropion amide</td>
<td>10222-01-2</td>
<td>98</td>
</tr>
</tbody>
</table>

4. First-aid measures

**Eye contact**
Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lens, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

**Skin contact**
Remove contaminated clothing. Wash skin thoroughly with mild soap and plenty of water for at least 15 minutes. Wash clothing before re-use. Get medical attention immediately.

**Inhalation**
Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

**Ingestion**
Call poison control center, or doctor immediately for treatment advise. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.
Note to physician
Probable mucosal damage may contraindicate the use of gastric lavage. Treat symptomatically and supportively. In case of ingestion DO NOT induce vomiting. No specific antidote.

5. Fire - fighting measures

Suitable extinguishing media
Material is not combustible. Use extinguishing media appropriate to surrounding fire conditions.

Fire fighting procedure
Cool containers with water spray. Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA) in positive pressure mode.

Unusual fire and explosion hazards
When heated to decomposition, may release poisonous and corrosive fumes.

6. Accidental release measures

Personal precautions
Wear self-contained breathing apparatus, full PVC clothing, PVC gloves and boots.

Methods for cleaning up
Sweep up, place in a bag and hold for waste disposal or possible re-use. Ventilate area and wash spill site after material pickup is complete.

7. Handling and storage

Handling
Keep containers tightly closed. Avoid producing or diffusing dust into the air.

Storage
Store in a dry, cool, well-ventilated and shaded area, away from heat sources away from incompatible materials (see "materials to avoid").

8. Exposure controls / personal protection

Exposure Limits:

<table>
<thead>
<tr>
<th>Components</th>
<th>ACGIH-TLV Data</th>
<th>OSHA (PEL) Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,2-Dibromo-3-nitrilopropionamide 10222-01-2</td>
<td>Not determined</td>
<td>Not determined</td>
</tr>
</tbody>
</table>
MATERIAL SAFETY DATA SHEET

Product name: Biobrom C - 100G
Product id: 8341G-US

Revision date: 14/02/2012
Supersedes: 28/10/2010
Revision: 7

Note: The product was tested for "Particle size distribution". Results showed that it is non-inhalable.

Manufacturer's TLV-TWA Recommendation: 0.25 mg/m³

Ventilation requirements: Ventilation must be sufficient to maintain atmospheric concentration below recommended exposure limit.

Personal protective equipment:
- Respiratory protection: Approved respirator
- Hand protection: Protective gloves
- Eye protection: Chemical safety goggles
- Skin and body protection: Body covering clothes and boots

Hygiene measures: Do not eat, smoke or drink where material is handled, processed or stored. Wash hands carefully before eating or smoking. Safety shower and eye bath should be provided.

9. Physical and chemical properties

Appearance: White to off-white granules
Boiling point/range: Not applicable (decomposes)
Melting point/range: 123 - 125°C
Flash point: None
Auto-ignition temperature: Not applicable
Vapour pressure: 8.25x10(-4) mmHg (25°C)
Evaporation rate (ether=1): Not applicable under standard conditions
Vapor density: Not applicable under standard conditions
Viscosity: Not applicable
Solubility:
- Solubility in water: 17±0.05 g/l at 25.7°C
- Solubility in other solvents: acetone - 35 g/100g
- ethanol - 25 g/100g
- dimethyl formamide - 120 g/100g
- polyethylene glycol (MW 200) - 120 g/100g
Specific gravity: 2.375 (21°C)
pH: Not determined
 Decomposition temperature: 190°C
Partition coefficient (n-octanol/water): Log Kow - 6.3
Explosive properties: Not explosive
Oxidising properties: Not oxidising
Particle size: Proportion of test material having an inhalable particle size less than 100µm is 1.65%
MATERIAL SAFETY DATA SHEET

Product name: Biobrom C - 100G
Product id: 8341G-US
Revision date: 14/02/2012
Supersedes: 28/10/2010

10. Stability and reactivity

<table>
<thead>
<tr>
<th>Stability</th>
<th>Stable under normal conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials to avoid</td>
<td>Oxidizing agents, reducing agents</td>
</tr>
<tr>
<td>Conditions to avoid</td>
<td>Keep away from light and heat</td>
</tr>
<tr>
<td></td>
<td>Heating above decomposition temperature</td>
</tr>
<tr>
<td>Hazardous decomposition products</td>
<td>Br2, HBr, CNBr, NOx, C2H5Br, CH3Br</td>
</tr>
<tr>
<td>Hazardous polymerization</td>
<td>Will not occur</td>
</tr>
</tbody>
</table>

11. Toxicological information

Acute toxicity:
- Rat oral LD50: 308 mg/kg
- Rat dermal LD50: >2000 mg/kg
- Rat inhalation LC50: 0.32 mg/l/4 hour (powder)
- Eye irritation (rabbit): Corrosive
- Dermal irritation (rabbit): Moderate irritant

Skin corrosion/irritation: Moderate irritant

Dermal sensitization: Sensitizer.

Sub-chronic toxicity:
- NOEL: 5 mg/kg/day (13 weeks oral, rat)

Chronic toxicity: Not available

Mutagenicity: Not mutagenic by the Ames Test

Genotoxicity: Not clastogenic in chromosome aberration test with Chinese hamster cells.
Not clastogenic in chromosome aberration test with Human lymphocytes.
Did not induce DNA repair synthesis in the hepatocytes of male rats in vitro.

Carcinogenicity: Not classified by IARC
Not included in NTP 12th Report on Carcinogens

Reproductive toxicity: In a 2-generation study in rats, the NOEL for reproduction parameters was >=30 mg/kg/day.
**12. Ecological information**

**Aquatic toxicity:**
- 96 Hour-LC50, Fish  
  2.3 mg/l (Rainbow trout)  
  3.4 mg/l (Sheepshead minnow)  
  2.3 mg/l (Bluegill sunfish)

- 48 Hour-EC50, Daphnia magna  
  0.86 mg/l

- 72 Hour-EC50, Freshwater algae  
  0.28 mg/l

- Marine Invertebrate  
  0.72 mg/l (Mysid shrimp, 96h)  
  0.37 mg/l (Eastern oyster, 96h)

**Avian toxicity:**
- Oral LD50, Bobwhite quail  
  354 mg/kg

- Dietary LC50, Mallard duck  
  > 5620 ppm

- Dietary LC50, Bobwhite quail  
  > 5620 ppm

**Bioaccumulative potential**  
Not expected to bioaccumulate

**Germany, water endangering classes (WGK)**  
3

**13. Disposal considerations**

**Waste disposal**  
Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.  
Observe all federal, state and local environmental regulations when disposing of this material.

**14. Transportation information**

**UN No.**  
3077
MATERIAL SAFETY DATA SHEET

Product name: Biobrom C - 100G
Product id: 8341G-US
Revision date: 14/02/2012
Supersedes: 28/10/2010

DOT
Proper shipping name: Environmentally hazardous substance, solid, n.o.s (2,2-dibromo-3-nitrilopropionamide)
Class: 9 - Miscellaneous Hazardous Material
Label: 9
Packing Group: III
Marking: Marine Pollutant

IMO
Proper shipping name: Environmentally hazardous substance, solid, n.o.s (2,2-dibromo-3-nitrilopropionamide)
Class: 9 - Miscellaneous Dangerous Substances and Articles
Label: 9
Packing Group: III
Marking: Marine Pollutant

ICAO/IATA
Proper shipping name: Environmentally hazardous substance, solid, n.o.s (2,2-dibromo-3-nitrilopropionamide)
Class: 9
Hazard label(s): Miscellaneous
Packing group: III
Marking: Environmentally hazardous substance

15. Regulatory information

USA
This product is registered under FIFRA.
Reported in the EPA TSCA Inventory (Acetamide, 2,2-dibromo-2-cyano-)
- SARA 313
On October 27, 1995, EPA published an administrative stay of the EPCRA section 313 reporting requirements for this chemical. Therefore, no Toxics Release Inventory reports are required for 2,2-dibromo-3-nitrilopropionamide until the stay is removed.
- SARA (311, 312)
This product is categorized as an immediate and delayed health hazard.
- Workplace Classification
This product is considered hazardous under the OSHA Hazard Communication Standard (29CFR 1910.1200).

Canada
Listed in NDSL
- Cepa
Listed
EU
Reported in EINECS
EC No.
233-539-7
MATERIAL SAFETY DATA SHEET

Product name: Biobrom C - 100G
Product id: 8341G-US
Revision date: 14/02/2012
Supersedes: 28/10/2010

Japan
ENCS No. 2-2795
ISHL No. 2-2795

Australia
Listed in AICS

New Zealand Inventory
Listed in NZIoC

China inventory
Listed in IECSC

Korea
Listed in the Korea Existing Chemicals Inventory (KECI), number KE-09944

Philippines
Listed in PICCS

16. Other information

GHS
Labelling in accordance with the CLP Regulation EC (No) 1272/2008

Signal word: Danger

Hazard statements
H302 - Harmful if swallowed
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H318 - Causes serious eye damage
H400 - Very toxic to aquatic life

Precautionary statements
P261 - Avoid breathing dust/fume/gas/mist/vapours/spray.
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor/physician

This data sheet contains changes from the previous version in section(s)
1, 2 (REACH format), 12, 14, 16 (ANSI)
The information in this Material Safety Data Sheet should be provided to all who will use, handle, store, transport, or otherwise be exposed to this product. This information has been prepared for the guidance of plant engineering, operations and management and for persons working with or handling this product. Additionally, if this Material Safety Data Sheet is more than three years old, you should contact Clearon at the phone number listed below to make certain that this sheet is current.

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, Clearon Corp. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its safety and suitability for their purposes prior to use. In no event will Clearon Corp. be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information.

NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, OF MERCHANT ABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE, ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH THE INFORMATION REFERS.

In an event of discrepancy between the contents of this MSDS and the English version of it, the English version shall prevail.

End of safety data sheet