1. PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product Name</th>
<th>XTRABROM® 111 Biocide; XTRABROM® T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Name</td>
<td>1,3-Dibromo-5,5-dimethylhydantoin</td>
</tr>
<tr>
<td>CAS-No</td>
<td>77-48-5</td>
</tr>
<tr>
<td>Formula</td>
<td>C5H6Br2N2O2</td>
</tr>
<tr>
<td>Recommended use</td>
<td>Water treatment chemical</td>
</tr>
<tr>
<td>Company</td>
<td>Albemarle Corporation</td>
</tr>
<tr>
<td></td>
<td>451 Florida Street</td>
</tr>
<tr>
<td></td>
<td>Baton Rouge, LA 70801</td>
</tr>
<tr>
<td>Emergency Telephone Numbers</td>
<td>225-344-7147</td>
</tr>
<tr>
<td>For Non-Emergency</td>
<td>800-535-3030</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NFPA</th>
<th>HMIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flammability</th>
<th>Physical Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

2. HAZARDS IDENTIFICATION

Emergency Overview
- Corrosive - causes irreversible eye damage
- Causes skin burns
- Harmful in contact with skin
- May be fatal if swallowed

Potential Health Effects
- Eyes: Possible risks of irreversible effects.
- Skin: Harmful in contact with skin. Causes burns.
- Inhalation: Harmful by inhalation.
- Ingestion: May be fatal if swallowed.

See Section 11 for additional Toxicological information.

Occupational Exposure Limit
See Section 8

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,3-Dibromo-5,5-dimethyl hydantoin</td>
<td>77-48-5</td>
<td>100</td>
</tr>
</tbody>
</table>
4. FIRST AID MEASURES

Ad Lib
Eye contact
If medical advice is needed: Have product container or label at hand
If in eyes, hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Skin Contact
If on skin or clothing, take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

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

Ingestion
If swallowed, Call a physician or Poison Control Centre immediately. Have person sip a glass of water if able to swallow. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.

5. FIRE-FIGHTING MEASURES

Combustion/explosion hazards
Not available.

Suitable Extinguishing Media
Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Hazardous Combustion Products
Oxides of carbon. Bromine.

Protective Equipment and Precautions for Firefighters
Toxic fumes may be present; use of respirator suggested.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Avoid contact with skin, eyes and clothing. Avoid dust formation. Ensure adequate ventilation.

Environmental Precautions
Prevent further leakage or spillage if safe to do so.

Methods for Clean-up
Sweep up and shovel into suitable containers for disposal.

7. HANDLING AND STORAGE

Handling
Avoid contact with skin, eyes and clothing. Wear personal protective equipment. Avoid dust formation.

Storage
Store in well-ventilated, cool (<120F), dry area, away from heat or flame. Store in containers made of HDPE, LDPE, or PP. Do not store in metal or fiberboard containers. Close container when not in use.
8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls
Use in a well-ventilated area.

Personal Protective Equipment

Eye/face Protection
Chemical goggles. Face-shield.

Skin Protection
Wear protective clothing.

Hand Protection
Rubber gloves resistant to chemical permeation.

Respiratory Protection
NIOSH approved dust/mist respirator under dusty or irritating conditions.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>Solid</td>
</tr>
<tr>
<td>Color</td>
<td>White/Off-white</td>
</tr>
<tr>
<td>pH</td>
<td>6.0-6.5(1% slurry in pH 7 water)</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>No data available</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>286</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammable limits (LEL, UEL)</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Density</td>
<td>No data available</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>~0.1%</td>
</tr>
<tr>
<td>Melting/freezing point</td>
<td>&gt;190 °C(Decomposes)</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
<tr>
<td>Partition Coefficient (log Kow)</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidizing Properties</td>
<td>Oxidizer</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Stability
Stable.

Conditions to Avoid
Avoid extremely high heat and flame.

Materials to avoid
This product is a strong oxidizing and brominating agent. Avoid contact with reducing agents, acids, ammonia-containing products, organic materials (such as aldehydes and alcohols) and other oxidizing agents (such as calcium hypochlorite). Avoid contact with common metals such as aluminum, iron, copper, brass and steel. Contact with incompatible materials can promote the exothermic decomposition of the product.

Hazardous decomposition products
Carbon oxides. Bromine.

Hazardous Polymerization
None under normal processing.
11. TOXICOLOGICAL INFORMATION

Acute Effects

- **Eye contact**: Possible risks of irreversible effects.
- **Skin contact**: Causes burns. Harmful if absorbed through skin.
- **Ingestion**: May be fatal if swallowed.
- **Inhalation**: Harmful by inhalation.

- **Rat Oral LD50**: 448mg/kg of body weight (rat) (Albino Sprague-Dawley)
- **Rat Dermal LD50**: >2,000mg/kg of body weight (rat) (Albino Sprague-Dawley)

**Other data**: SKIN IRRITATION, Rabbit (albino New Zealand): Product is considered corrosive to the skin.

12. ECOLOGICAL INFORMATION

Ecotoxicity

<table>
<thead>
<tr>
<th>EC50</th>
<th>EC50/48h/daphnia :0.7mg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC50</td>
<td>EC50/48h/Rainbow Trout = 0.4mg/L</td>
</tr>
</tbody>
</table>

**Ecotoxicity effects**: No information available.

13. DISPOSAL CONSIDERATIONS

**Waste Disposal Method**: Dispose in a safe manner in accordance with local/national regulations.
14. TRANSPORT INFORMATION

DOT

Proper Shipping Name  Oxidizing Solid, N.O.S. (1,3-Dibromo-5,5-dimethylhydantoin)
Hazard Class  5.1
UN No.  1479
Packing Group  II
Description  UN 1479, Oxidizing solid, N.O.S. (1,3-Dibromo-5,5-dimethyl hydantoin), 5.1, II

IMDG/IMO

IMO Class  5.1
Packing Group  II
UN-No  1479
IMO Labelling and Marking  5.1
Proper Shipping Name  Oxidizing solid, N.O.S. (1,3-Dibromo-5,5-dimethyl hydantoin)
EmS  F-A, S-Q
Marpol - Annex II  Not applicable
Marpol - Annex III  Unregulated
Transport Description  UN 1479 Oxidizing solid, N.O.S. (1,3-Dibromo-5,5-dimethyl hydantoin), 5.1, II

IATA/ICAO

IATA/ICAO Class  5.1
Packing Group  II
UN-No  1479
IATA/ICAO Labelling  5.1
Passenger Aircraft  Passenger Aircraft
Cargo aircraft only  Cargo aircraft only
Proper shipping name  Oxidizing solid, N.O.S. (1,3-Dibromo-5,5-dimethyl hydantoin)
Transport Description  UN 1479 Oxidizing solid, N.O.S. (1,3-Dibromo-5,5-dimethyl hydantoin), 5.1, II

15. REGULATORY INFORMATION

TSCA Statement
THIS MATERIAL IS EXEMPT FROM THE TOXIC SUBSTANCES CONTROL ACT (15 USC 2601-2629).

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazardous Categorization
- Chronic Health Hazard  No
- Acute Health Hazard  Yes
- Fire Hazard  No
- Sudden Release of Pressure Hazard  No
- Reactive Hazard  Yes

Reportable and Threshold Planning Quantities
No ingredients have RQs or TPQs under SARA or CERCLA

State Regulations
No components subject to "Right-To-Know" legislation in the following States; California, Massachusetts, New Jersey, and Pennsylvania.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazards
E  Corrosive material
D2B  Toxic materials

16. OTHER INFORMATION

Prepared By
Health & Environment Department
Albemarle Corporation

FOR ADDITIONAL NONEMERGENCY PRODUCT INFORMATION, CONTACT:

HEALTH AND ENVIRONMENT DEPARTMENT
ALBEMARLE CORPORATION
451 FLORIDA ST.
BATON ROUGE, LA.  70801
(800) 535-3030

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