1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Hydrobromic Acid 48% H HC
Chemical Name: Hydrobromic Acid, 48% solution
Chemical Family: Inorganic Bromine Compound
CAS-No: 10035-10-6
Formula: HBr + H₂O
General function: Chemical Intermediate

Emergency Telephone Numbers
For Non-Emergency: 800-535-3030
For Emergency: 225-344-7147

2. HAZARDS IDENTIFICATION

Warning

Emergency Overview
Causes burns to the eyes, skin, gastrointestinal and respiratory tract.

Potential Health Effects

<table>
<thead>
<tr>
<th>Eyes</th>
<th>Expected to cause burns. Risk of serious damage to eyes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin</td>
<td>Expected to cause burns.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Expected to cause burns to respiratory tract. May cause delayed pulmonary edema.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Expected to cause burns to the gastrointestinal tract.</td>
</tr>
</tbody>
</table>

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>Water</td>
<td>7732-18-5</td>
<td>52</td>
</tr>
<tr>
<td>Hydrogen bromide</td>
<td>10035-10-6</td>
<td>48</td>
</tr>
</tbody>
</table>
4. FIRST AID MEASURES

Eye contact
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Skin Contact
Take off all contaminated clothing immediately. After contact with skin, wash immediately with plenty of water. Seek medical advice.

Inhalation
Move to fresh air. If not breathing, give artificial respiration, preferably mouth to mouth. If breathing is difficult, give oxygen. Seek medical advice.

Ingestion
Do not induce vomiting. Give large quantities of water. Seek medical advice. Never give anything by mouth to an unconscious person.

5. FIRE-FIGHTING MEASURES

Combustion/explosion hazards
Not available.

Suitable Extinguishing Media
Carbon dioxide, dry chemicals, foam, water spray (mist). Use media appropriate for surrounding fire.

Hazardous Combustion Products
When heated, the solution evolves HBr fumes. Thermal decomposition of HBr will occur under extremely high temperature conditions. Toxic fumes are generated.

Protective Equipment and Precautions for Firefighters
Use self-contained breathing apparatus. Wear suitable protective clothing and eye/face protection.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Evacuate unnecessary personnel. Approach from upwind. Do not breathe fumes/vapors.

Environmental precautions
Contain any spill with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for Clean-up
Small spills may be neutralized with lime water slurry or soda ash and flushed with large amounts of cold water. Large spills may be taken up with pump or vacuum and finished off with dry chemical absorbent. May require excavation of contaminated soil. Residue may be washed down with water.

7. HANDLING AND STORAGE

Handling
Do not eat, drink or smoke when using this product. Avoid contact with skin, eyes and clothing. Keep away from sources of ignition - No smoking

Storage
Store in cool, dry, well-ventilated area away from sources of ignition. Keep containers closed when not in use.
8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
<th>ACGIH TLV (TWA)</th>
<th>ACGIH (STEL or Ceiling)</th>
<th>OSHA PEL (TWA)</th>
<th>OSHA (STEL or Ceiling)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen bromide</td>
<td>10035-10-6</td>
<td>48</td>
<td>2PPM (Ceiling)</td>
<td>3PPM</td>
<td>10mg/m³; 3PPM</td>
<td></td>
</tr>
</tbody>
</table>

Engineering Controls
Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

- **Eye/face Protection**
  Chemical goggles or face shield with safety glasses.

- **Skin Protection**
  Wear suitable protective equipment.

- **Hand protection**
  Gloves resistant to chemical permeation.

- **Respiratory protection**
  Full facepiece, NIOSH approved supplied-air respirator. Full facepiece acid gas canister or acid gas cartridge can be used for levels of up to 30 ppm.

9. PHYSICAL AND CHEMICAL PROPERTIES

- **Flash point**
  Non flammable.

- **Vapour pressure**
  4.5 mmHg (20°C)

- **Odor**
  Pungent

- **Water Solubility**
  Soluble

- **Melting/freezing point**
  -63 °C

- **Viscosity, dynamic**
  1.5cPs (25°C)

- **Percent volatile**
  100

- **Oxidizing Properties**
  Non oxidizing.

- **Flammable limits (LEL, UEL)**
  Not applicable

- **Density**
  1.487 g/ml

- **Vapor density**
  No data available

- **Boiling Point**
  126°C / 259°F

- **Molecular Weight**
  80.91

- **Viscosity, kinematic**
  1cSt (25°C)

- **Flammability (solid, gas)**
  Not applicable

- **Explosive Properties**
  Not applicable

10. STABILITY AND REACTIVITY

- **Stability**
  Stable.

- **Conditions to Avoid**
  Avoid high temperature. Hydrogen is formed in contact with metals.

- **Materials to avoid**
  Basic solutions. Metals and oxidizing agents, especially nitric acid and chlorates.

- **Hazardous decomposition products**
  Hydrogen bromide. Bromine.

- **Hazardous Polymerization**
  None under normal processing.

11. TOXICOLOGICAL INFORMATION

- **Acute Effects**
  - **Eye contact**
    Causes burns. Risk of serious damage to eyes
  - **Skin contact**
    Causes burns.
  - **Ingestion**
    Expected to cause burns to the gastrointestinal tract.
  - **Inhalation**
    Causes burns. May cause pulmonary edema and pneumonia.

12. ECOLOGICAL INFORMATION

- **Ecotoxicity**
  - **EC50**
    LC50/48h/daphnia 39mg/L
  - **EC50**
    EC50/72h/algae : 56mg/L
12. ECOLOGICAL INFORMATION

- **Ecotoxicity effects**: Harmful to aquatic organisms.
- **Bioaccumulation/Accumulation**: BCF = 5 (pH 4) / 2.5 (pH 8) (Algae)
  \[ \log \text{Pow} = 0.63 \]
  Does not bioaccumulate

13. DISPOSAL CONSIDERATIONS

- **Waste Disposal Method**: Under the CERCLA/RCRA regulations currently in effect this material is regulated as a hazardous waste or material. If spilled, the solution would become a hazardous waste because of corrosivity. Following neutralization to render the material nonhazardous, the material may be disposed of in a manner acceptable to good waste management practice and in compliance with local, state, and federal regulations. It should be handled in a manner acceptable to good waste management practice. (RQ = 100 pounds for corrosivity if released while stored as a hazardous waste. Otherwise, no RQ applies).

14. TRANSPORT INFORMATION

- **DOT**
  - **Proper Shipping Name**: HYDROBROMIC ACID, 48% SOLUTION
  - **Hazard Class**: 8
  - **UN No.**: 1788
  - **Packing Group**: II
  - **Description**: UN 1788, Hydrobromic Acid, 48% solution, 8, II

- **IMDG/IMO**
  - **IMO Class**: 8
  - **Packing Group**: II
  - **UN-No**: 1788
  - **IMO Labelling and Marking**: 8
  - **Proper Shipping Name**: Hydrobromic Acid, 48% solution
  - **EmS**: F-A, S-B
  - **Marpol - Annex II**: Not determined
  - **Marpol - Annex III**: Unregulated
  - **Transport Description**: UN 1788, Hydrobromic Acid, 48% solution, 8, II

- **IATA/ICAO**
  - **IATA/ICAO Class**: 8
  - **Packing Group**: II
  - **UN-No**: 1788
  - **IATA/ICAO Labelling/Marking**: 8
  - **Passenger Aircraft**: Maximum net quantity per package: 1 L
  - **Cargo aircraft only**: Maximum net quantity per package: 30 L
  - **Proper shipping name**: Hydrobromic Acid, 48% solution
  - **Transport Description**: UN 1788, Hydrobromic Acid, 48% solution, 8, II

15. REGULATORY INFORMATION

<table>
<thead>
<tr>
<th>International Inventories</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>AICS</th>
<th>ENECS</th>
<th>EINCS</th>
<th>ENCS</th>
<th>KECL</th>
<th>PICCS</th>
<th>CHINA</th>
<th>NZIoC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrobromic Acid 48% H HC</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

(X) Complies    (-) Does not Comply
15. REGULATORY INFORMATION

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: No

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

State Regulations
This product contains the following chemicals regulated in the states listed below.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>California Prop. 65</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
</tr>
</thead>
</table>

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

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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