IDENTIFICATION

MSDS Record Number: 4630920
Product Name(s): Hydrogen Bromide Solution
Hydrobromic Acid
Product Identification: CAS NO.: 10035-10-6
Date of MSDS: 1998-09-24
Currency Note: This MSDS was provided to CCOHS on 2005-06-10

MANUFACTURER/SUPPLIER INFORMATION

Company: ALBEMARLE CORP

MATERIAL SAFETY DATA

62.6.2-A ETH 3365 Hydrogen Bromide Solution 09/24/98CY
ALBEMARLE CORPORATION
MATERIAL SAFETY DATA SHEET
451 FLORIDA STREET, BATON ROUGE, LA 70801
FOR EMERGENCIES ONLY - PHONE (225) 344-7147
For Non-emergency Health & Safety Phone 1-800-535-3030
Representing Albemarle Foreign Sales Corporation for Export Sales

HMIS CLASSIFICATIONS: ISSUE DATE: 09/24/98
HEALTH: 3 SUPERSEDES: 08/26/94
FLAMMABILITY: 0
REACTIVITY: 0

62.6.2-A

PRODUCT IDENTIFICATION
PRODUCT NAME: Hydrogen Bromide Solution
CHEMICAL NAME: Hydrobromic Acid
CAS NO.: 10035-10-6
SYNONYMS: Hydrogen Bromide CCF Grade, Hydrogen Bromide
Technical, Hydrogen Bromide CD# 209161
CHEMICAL FORMULA: HBr + H2O
CHEMICAL FAMILY: Hydrogen Halide

SUMMARY OF HAZARDS
Causes burns to the eyes, skin, gastrointestinal and
respiratory tract.
NOTE: Hydrogen bromide solutions at greater than 49% are
considered to be fuming.

OSHA HAZARDOUS COMPONENTS
<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CAS NO.</th>
<th>NOTE</th>
<th>EXPOSURE LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen bromide</td>
<td>10035-10-6</td>
<td>ND</td>
<td>3 ppm ceiling (ACGIH); 3 ppm TWA8 (OSHA).</td>
</tr>
</tbody>
</table>

**EMERGENCY PHONE NUMBER**  
(225) 344-7147

**PRODUCT NAME:** Hydrogen Bromide Solution  

**OSHA HAZARDOUS COMPONENTS (Con't)**

NOTE: Carcinogenicity listing of components at concentrations greater than or equal to 0.1% indicated by: §=NTP; #=IARC; &=OSHA; +=ACGIH; *=OTHER; ND=Not Designated.

**CHEMICAL AND PHYSICAL PROPERTIES**

APPEARANCE/ODOR: Fuming, light yellow solution/pungent, sharp, irritating odor.

BOILING POINT: Not available.

VAPOR PRESSURE: Not available.

SOLUBILITY IN WATER: Infinite.

SPECIFIC GRAVITY: 1.72 @ 25°C/77°F (Maximum).

PERCENT VOLATILE: 100%

**FIRE AND EXPLOSION HAZARDS**

FLASH POINT(METHOD): Non-combustible, aqueous solution.

FLAMMABLE LIMITS: Not applicable.

EXTinguISHING MEDIA: Not required; non-flammable material.

SPECIAL FIRE FIGHTING PROCEDURES: Use water spray or fog to cool exposed equipment and containers. Do not breathe smoke or vapors.

HAZARDOUS THERMAL DECOMPOSITION PRODUCTS: When heated, the solution evolves HBr fumes. Thermal decomposition of HBr will only occur under extremely high temperature conditions. Toxic fumes are generated.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Unvented drums may rupture at high temperatures releasing large amounts of hydrogen bromide.

**REACTIVITY DATA**

STABILITY: Stable.

CONDITIONS TO AVOID: High heat.

MATERIALS TO AVOID: Metals and oxidizing agents, especially nitric acid and chlorates.

HAZARDOUS POLYMERIZATION: Will not occur.

**HEALTH HAZARDS**

INHALATION: Expected to cause burns to respiratory tract. May cause delayed pulmonary edema.

EYE CONTACT: Expected to cause burns.

SKIN CONTACT: Expected to cause burns.

INGESTION: Expected to cause burns to the gastrointestinal tract.

**EMERGENCY FIRST AID PROCEDURES**

INHALATION: Remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Get medical attention immediately.

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attention.

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

SKIN CONTACT: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse.

INGESTION: Do not induce vomiting. Give large quantities of water. Get medical attention immediately. Never give anything by mouth to an unconscious person.

EMERGENCY PHONE NUMBER  PRODUCT NAME: Hydrogen Bromide Solution  62.6.2-A

EXPOSURE CONTROL INFORMATION

EXPOSURE LIMITS: See "Hazardous Components" section.

EYE PROTECTION: Chemical goggles and a face shield.

PROTECTIVE GLOVES: Resistant to chemical penetration.

EXPOSURE CONTROL: Full facepiece gas mask with acid gas cartridge, or full facepiece, NIOSH approved supplied-air respirator.

LOCAL EXHAUST VENTILATION: At source of vapor.

MECHANICAL VENTILATION: Recommended.

OTHER: If skin contact or contamination of clothing is likely, protective clothing should be worn.

ENVIRONMENTAL PROTECTION

SPILLS OR LEAKS: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Dilute with water to reduce fuming. Clean up small spills with neutralization agent such as lime, caustic, or soda ash. Large spills may be taken up with pump or vacuum and finished off with neutralization agent. May require excavation of contaminated soil.

DISPOSAL METHODS: Under the CERCLA/KCRA 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 acidity and corrosivity. Following neutralization to render the material non-hazardous, the material may be disposed of in a manner acceptable to good waste management practice and in compliance with applicable 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).

STORAGE REQUIREMENTS: Store in cool, dry, well-ventilated area away from sources of ignition. Keep containers closed when not in use.

ENVIRONMENTAL PROTECTION (Cont')

REGULATORY INFORMATION

TSCA: THIS MATERIAL IS IN COMPLIANCE WITH THE TOXIC SUBSTANCES CONTROL ACT (15 USC 2601 - 2629).
DOT DESCRIPTION/PROPER SHIPPING NAME:
Hydrobromic acid, solution
See NOTE 5.
DOT HAZARD CLASS: 8 (corrosive)
DOT ID NUMBER: UNL788
DOT PACKING GROUP: III

HAZARD CATEGORIES FOR SARA 311/312 REPORTING ARE INDICATED BELOW:

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>EFFECT</th>
<th>CLASSIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEALTH Immediate</td>
<td>Acute</td>
<td>Yes</td>
</tr>
<tr>
<td>HEALTH Delayed</td>
<td>Chronic</td>
<td>No</td>
</tr>
<tr>
<td>PHYSICAL Fire</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>PHYSICAL Sudden</td>
<td>Release of Pressure</td>
<td>No</td>
</tr>
<tr>
<td>PHYSICAL Reactive</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>PHYSICAL Nuisance</td>
<td>Mist/Dust Only</td>
<td>No</td>
</tr>
</tbody>
</table>

FOLLOWING ARE WHMIS CLASSIFICATIONS FOR THIS PRODUCT:
CLASS E

NOTE 5: Shipments of hydrogen bromide solution equal to or greater than 49% are forbidden by air.

<table>
<thead>
<tr>
<th>COMPONENT NAME</th>
<th>CAS NO.</th>
<th>PERCENTAGE</th>
<th>REGULATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen bromide</td>
<td>10035-10-6</td>
<td>63.0</td>
<td>NJ RTK-SH</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PA RTK</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>WHMIS-CN1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>WHMIS-HCl</td>
</tr>
</tbody>
</table>

The actual percentage of hydrogen bromide may be less.

EMERGENCY PHONE NUMBER
(225) 344-7147

PRODUCT NAME: Hydrogen Bromide Solution

MSDS 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

THIS MATERIAL SAFETY DATA SHEET CONTAINS AT LEAST THE INFORMATION REQUIRED BY THE FEDERAL OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200(g) (2).

THE RESPONSIBILITY TO PROVIDE A SAFE WORKPLACE REMAINS WITH USER. THE USER SHOULD CONSIDER THE HEALTH HAZARDS AND SAFETY INFORMATION CONTAINED HEREIN AS A GUIDE AND SHOULD TAKE THOSE PRECAUTIONS REQUIRED IN AN INDIVIDUAL OPERATION TO INSTRUCT EMPLOYEES AND TO DEVELOP WORK PRACTICE PROCEDURES FOR A SAFE WORK ENVIRONMENT.

THE INFORMATION CONTAINED HEREIN IS, TO THE BEST OF OUR KNOWLEDGE AND BELIEF, ACCURATE. HOWEVER, BECAUSE THE CONDITIONS OF HANDLING AND USE ARE BEYOND OUR CONTROL, WE MAKE NO GUARANTEE OF RESULTS, AND ASSUME NO LIABILITY FOR DAMAGES INCURRED BY THE USE OF THIS MATERIAL. IT IS THE RESPONSIBILITY OF THE USER TO COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.
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