**Section 1 - IDENTIFICATION**

**Manufacturer Information**
MATHESON TRI-GAS, INC.
150 Allen Road, Suite 302
Basking Ridge, NJ 07920

General Information: 1-800-416-2505
Emergency #: 1-800-424-9300 (CHEMTREC)
Outside the US: 703-527-3887 (Call collect)

**Product Identifier:** HYDROGEN BROMIDE

**Trade Names/Synonyms**
MTG MSDS 50; HYDROBROMIC ACID; ANHYDROUS HYDROBROMIC ACID; HYDROGEN MONOBROMIDE; HYDROGEN BROMIDE (HBR); HYDROGEN BROMIDE (H2BR2); UN 1048; HBR; RTECS: MW3850000

**Chemical Family**
acids, inorganic

**Product Use**
industrial

**Restrictions on Use**
None known.

**Section 2 - HAZARDS IDENTIFICATION**

**GHS Classification**
Gas under pressure, Liquefied gas
Acute toxicity, Category 3
Skin corrosion/irritation, Category 1
Eye damage/irritation, Category 1
Specific target organ systemic toxicity following single exposure, Category 1
Specific target organ systemic toxicity following repeated exposure, Category 1

**GHS LABEL ELEMENTS**

**Signal Word**
DANGER

**Hazard Statement(s)**
Contains gas under pressure; may explode if heated
Toxic if inhaled
Causes severe skin burns and eye damage
Causes serious eye damage
Causes damage to organs
Causes damage to organs through prolonged or repeated exposure
Precautionary Statement(s)

Do not breathe gas. Use only outdoors or in a well-ventilated area. Wear respiratory protection. Wear protective gloves/clothing and eye/face protection. Wash thoroughly after handling. Do not eat, drink, or smoke when using this product.

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. IF ON SKIN: Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician. Specific treatment may be needed, see first aid section of Safety Data Sheet.

Protect from sunlight and store in well-ventilated place. Store locked up. Store container tightly closed in well-ventilated place. Dispose in accordance with all applicable regulations.

**Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS**

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Component</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>10035-10-6</td>
<td>HYDROGEN BROMIDE</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Section 4 - FIRST AID MEASURES**

**Inhalation**
If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

**Skin**
Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing before reuse. Destroy contaminated shoes.

**Eyes**
Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

**Ingestion**
If swallowed, drink plenty of water, do NOT induce vomiting. Get immediate medical attention.

**Note to Physicians**
For inhalation, consider oxygen.
Avoid gastric lavage or emesis.

**Symptoms: Immediate**
respiratory tract burns, skin burns, eye burns, mucous membrane burns

**Symptoms: Delayed**
respiratory tract burns, skin burns, eye burns, mucous membrane burns, tooth erosion

**Section 5 - FIRE FIGHTING MEASURES**

See Section 9 for Flammability Properties

**Specific Hazards Arising from the Chemical**
Negligible fire hazard. Containers may rupture or explode if exposed to heat.

**Extinguishing Media**
carbon dioxide, regular dry chemical
Large fires: Use regular foam or flood with fine water spray.

**Unsuitable Extinguishing Media**
None known.

**Protective Equipment and Precautions for Firefighters**
Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.
Fire Fighting Measures
Do not get water inside container. Move container from fire area if it can be done without risk. Cool containers
with water spray until well after the fire is out. Stay away from the ends of tanks. Keep unnecessary people away,
isolate hazard area and deny entry.

** **Section 6 - ACCIDENTAL RELEASE MEASURES** **

Personal Precautions
Wear personal protective clothing and equipment, see Section 8.

Environmental Precautions
Avoid release to the environment.

Methods for Containment
Stop leak if possible without personal risk. Keep unnecessary people away, isolate hazard area and deny entry.
Stay upwind and keep out of low areas. Evacuation radius: 150 feet.

Cleanup Methods
Reduce vapors with water spray. Ventilate closed spaces before entering. Damaged cylinders should be handled
only by specialists.

** **Section 7 - HANDLING AND STORAGE** **

Handling Procedures

Storage Procedures
Store and handle in accordance with all current regulations and standards. Protect from physical damage. Store
in a cool, dry place. Store in a well-ventilated area. Keep separated from incompatible substances.

Incompatibilities bases, combustible materials, halogens, oxidizing materials

** **Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION** **

Component Exposure Limits
HYDROGEN BROMIDE (10035-10-6)
ACGIH: 2 ppm Ceiling
Europe: 2 ppm STEL; 6.7 mg/m3 STEL
OSHA (Final): 3 ppm TWA; 10 mg/m3 TWA
OSHA (Vacated): 3 ppm Ceiling; 10 mg/m3 Ceiling
NIOSH: 3 ppm Ceiling; 10 mg/m3 Ceiling

Component Biological Limit Values
There are no biological limit values for any of this product's components.

IDLH
30 ppm

Engineering Controls
Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure
limits.

PERSONAL PROTECTIVE EQUIPMENT
Eyes/Face
Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick
drench shower in the immediate work area.

Protective Clothing
Wear appropriate chemical resistant clothing.

Glove Recommendations
Wear appropriate chemical resistant gloves.
Respiratory Protection

The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.

30 ppm
Any supplied-air respirator operated in a continuous-flow mode.
Any powered, air-purifying respirator with acid gas cartridge(s).
Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted acid gas canister.
Any self-contained breathing apparatus with a full facepiece.
Any supplied-air respirator with a full facepiece.
Emergency or planned entry into unknown concentrations or IDLH conditions -
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Escape -
Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted acid gas canister.
Any appropriate escape-type, self-contained breathing apparatus.

** Section 9 - PHYSICAL AND CHEMICAL PROPERTIES **

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<tr>
<th>Property</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Gas</td>
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<td>Color</td>
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<tr>
<td>Odor</td>
<td>pungent odor</td>
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<tr>
<td>pH</td>
<td>acidic in solution</td>
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<tr>
<td>Boiling Point</td>
<td>-67 °C</td>
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<td>Evaporation Rate</td>
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<tr>
<td>Vapor Density (air = 1)</td>
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<td>Specific Gravity (water=1)</td>
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<td>Viscosity</td>
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<tr>
<td>Density</td>
<td>3.5 g/L @ 0 °C</td>
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<td>Water Solubility</td>
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<td>Auto Ignition</td>
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<tr>
<td>Molecular Weight</td>
<td>80.92</td>
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</table>

Solvent Solubility

Slightly Soluble: alcohol

** Section 10 - STABILITY AND REACTIVITY **

Chemical Stability

Stable at normal temperatures and pressure.

Conditions to Avoid

Minimize contact with material. Avoid inhalation of material or combustion by-products. Containers may rupture or explode if exposed to heat.

Possibility of Hazardous Reactions

Will not polymerize.

Incompatible Materials

bases, combustible materials, halogens, oxidizing materials
Decomposition Products
miscellaneous decomposition products

Hazardous Decomposition
Water or Moisture: hydrobromic acid

* * *Section 11 - TOXICOLOGICAL INFORMATION* * *

Acute and Chronic Toxicity

Component Analysis - LD50/LC50
The components of this material have been reviewed in various sources and the following selected endpoints are published:
HYDROGEN BROMIDE (10035-10-6)
Inhalation LC50 Rat 2858 ppm 1 h

RTECS Acute Toxicity (selected)
The components of this material have been reviewed, and RTECS publishes the following endpoints:
HYDROGEN BROMIDE (10035-10-6)
Inhalation: 814 ppm/1 hour Inhalation Mouse LC50
3000 ppm/30 minute(s) Inhalation Rat LC50; 2858 ppm/1 hour Inhalation Rat LC50

Acute Toxicity Level
HYDROGEN BROMIDE (10035-10-6)
Moderately Toxic: inhalation

Immediate Effects
respiratory tract burns, skin burns, eye burns, mucous membrane burns

Delayed Effects
respiratory tract burns, skin burns, eye burns, mucous membrane burns, tooth erosion

Irritation/Corrosivity Data
No animal testing data available for skin or eyes.

RTECS Irritation
The components of this material have been reviewed and RTECS publishes no data as of the date on this document.

Local Effects
HYDROGEN BROMIDE (10035-10-6)
Corrosive: inhalation, skin, eye, ingestion

Respiratory Sensitizer
No data available.

Dermal Sensitizer
No data available.

Carcinogenicity

Component Carcinogenicity
None of this product's components are listed by ACGIH, IARC, NTP, OSHA or DFG.

RTECS Mutagenic
The components of this material have been reviewed, and RTECS publishes data for one or more components.

Reproductive Effects Data
No data available.

RTECS Tumorigenic
The components of this material have been reviewed, and RTECS publishes data for one or more components.

Specific Target Organ Toxicity - Single Exposure
respiratory system
Specific Target Organ Toxicity - Repeated Exposure
  teeth

Aspiration Hazard
  No data available.

Medical Conditions Aggravated by Exposure
  No data available.

** *Section 12 - ECOLOGICAL INFORMATION* **

Component Analysis - Aquatic Toxicity
  No LOLI ecotoxicity data are available for this product's components.

Abiotic Degradation
  Dissociates in water to H+ and Br- ions.

Persistence and Degradability
  No data available.

Bioaccumulative Potential
  No data available.

Mobility in Environmental Media
  No data available.

** *Section 13 - DISPOSAL CONSIDERATIONS* **

Disposal Methods
  Dispose in accordance with all applicable regulations.

Component Waste Numbers
  The U.S. EPA has not published waste numbers for this product's components.

** *Section 14 - TRANSPORT INFORMATION* **

US DOT Information
  Shipping Name: Hydrogen bromide, anhydrous
  UN/NA #: UN1048  Hazard Class: 2.3
  Required Label(s): 2.3, 8
  Additional Info.: Toxic-Inhalation Hazard Zone C

IMDG Information
  Shipping Name: Hydrogen bromide, anhydrous
  UN #: UN1048  Hazard Class: 2.3
  Required Label(s): 8

** *Section 15 - REGULATORY INFORMATION* **

Component Analysis

U.S. Federal Regulations
  This material contains one or more of the following chemicals required to be identified under SARA Section 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

HYDROGEN BROMIDE (10035-10-6)
  OSHA (safety):  5000 lb TQ

SARA 311/312 Hazardous Categories
  Acute Health: Yes  Chronic Health: No  Fire: No  Pressure: Yes  Reactive: No
U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>HYDROGEN BROMIDE</td>
<td>10035-10-6</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Not regulated under California Proposition 65

Component Analysis - Inventory

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>US</th>
<th>CA</th>
<th>EU</th>
<th>AU</th>
<th>PH</th>
<th>JP</th>
<th>KR</th>
<th>CN</th>
<th>NZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>HYDROGEN BROMIDE</td>
<td>10035-10-6</td>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Section 16 - OTHER INFORMATION**

NFPA Ratings: Health: 3 Fire: 0 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

Other Information

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End of Sheet MAT11140