

MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION

MATHESON TRI-GAS, INC.
150 Allen Road Suite 302
Basking Ridge, New Jersey 07920
Information: 1-800-416-2505

Emergency Contact:
CHEMTREC 1-800-424-9300
Calls Originating Outside the US:
703-527-3887 (Collect Calls Accepted)

PRODUCT NAME: HYDROGEN BROMIDE

TRADE NAMES/SYNONYMS:

MTG MSDS 50; HYDROBROMIC ACID; ANHYDROUS HYDROBROMIC ACID; HYDROGEN MONOBROMIDE; HYDROGEN BROMIDE (HBR); HYDROGEN BROMIDE (H2BR2); UN 1048; HBR; MAT11140

CHEMICAL FAMILY: acids, inorganic

2. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=0



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 SYMBOL:



GHS SIGNAL WORD: DANGER

GHS PRECAUTIONARY STATEMENTS: 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.

3. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT: HYDROGEN BROMIDE
CAS NUMBER: 10035-10-6
EC NUMBER (EINECS): 233-113-0
EC INDEX NUMBER: 035-002-00-0
PERCENTAGE: 100.0

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 CONTACT: 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 and shoes before reuse. Destroy contaminated shoes.

EYE CONTACT: 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.

SYMPTOMS/EFFECTS:

ACUTE: respiratory tract burns, skin burns, eye burns, mucous membrane burns

DELAYED: respiratory tract burns, skin burns, eye burns, mucous membrane burns, tooth erosion

NOTE TO PHYSICIAN: For inhalation, consider oxygen. Avoid gastric lavage or emesis.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: 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.

FIRE FIGHTING: 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.

FIRE FIGHTING PROTECTIVE EQUIPMENT: Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Wear personal protective clothing and equipment, see Section 8.

EMERGENCY PROCEDURES:

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.

ENVIRONMENTAL PRECAUTIONS:

Avoid release to the environment.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANUP:

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

7. HANDLING AND STORAGE

HANDLING: Subject to handling regulations: U.S. OSHA 29 CFR 1910.119.

STORAGE: 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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS:

HYDROGEN BROMIDE:

3 ppm (10 mg/m³) OSHA TWA

3 ppm (10 mg/m³) OSHA ceiling (vacated by 58 FR 35338, June 30, 1993)

2 ppm ACGIH ceiling
3 ppm (10 mg/m³) NIOSH recommended ceiling

BIOLOGICAL LIMIT VALUES:

HYDROGEN BROMIDE:

No biological limit value(s) available.

ENGINEERING CONTROLS: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH: 30 ppm

RESPIRATOR: 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: gas

COLOR: colorless

ODOR: pungent odor

MOLECULAR WEIGHT: 80.92

MOLECULAR FORMULA: H-BR

BOILING POINT: -67 C
FREEZING POINT: -86 C
FLASH POINT: Not available
LOWER FLAMMABLE LIMIT: Not available
UPPER FLAMMABLE LIMIT: Not available
VAPOR PRESSURE: 15750 mmHg @ 20 C
VAPOR DENSITY (air=1): 2.8
SPECIFIC GRAVITY (water=1): 2.16 @ -67 C
DENSITY: 3.5 g/L @ 0 C
WATER SOLUBILITY: 194%
PH: acidic in solution
VOLATILITY: Not applicable
ODOR THRESHOLD: Not available
EVAPORATION RATE: Not applicable
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable
OCTANOL/WATER PARTITION COEFFICIENT (LOG K_{ow}): Not available
SOLVENT SOLUBILITY:
Slightly Soluble: alcohol

10. STABILITY AND REACTIVITY

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.

INCOMPATIBILITIES: bases, combustible materials, halogens, oxidizing materials

HAZARDOUS DECOMPOSITION:

Decomposition products on contact with water or moisture: hydrobromic acid

Thermal decomposition products: miscellaneous decomposition products

11. TOXICOLOGICAL INFORMATION

HYDROGEN BROMIDE:

LIKELY ROUTES OF EXPOSURE: inhalation, skin, eyes

ASPIRATION HAZARD: No data available.

SENSITIZER:

DERMAL: No data available.

RESPIRATORY: No data available.

EFFECTS FROM EXPOSURE:

IMMEDIATE: respiratory tract burns, skin burns, eye burns, mucous membrane burns

DELAYED: respiratory tract burns, skin burns, eye burns, mucous membrane burns, tooth erosion

TOXICITY DATA: 76 mg/kg intraperitoneal-rat LD50; 26 mg/m³ inhalation-rat TCLo; 10 mg/m³/4

hour(s) inhalation-rat TCLo; 3000 ppm/30 minute(s) inhalation-rat LC50; 2858 ppm/1 hour(s) inhalation-rat LC50; 814 ppm/1 hour(s) inhalation-mouse LC50

CARCINOGEN STATUS: No data available.

LOCAL EFFECTS:

Corrosive: inhalation, skin, eye, ingestion

TARGET ORGANS: respiratory system, teeth

CHRONIC EFFECTS:

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

TUMORIGENIC DATA: No data available.

MUTAGENIC DATA: No data available.

REPRODUCTIVE EFFECTS DATA: No data available.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

FISH TOXICITY: No data available.

INVERTEBRATE TOXICITY: No data available.

ALGAL TOXICITY: No data available.

OTHER ECOLOGICAL INFORMATION: Dissociates in water to H⁺ and Br⁻ ions.

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:

PROPER SHIPPING NAME: Hydrogen bromide, anhydrous

ID NUMBER: UN1048

HAZARD CLASS OR DIVISION: 2.3

LABELING REQUIREMENTS: 2.3; 8

QUANTITY LIMITATIONS:

PASSENGER AIRCRAFT OR RAILCAR: Forbidden

CARGO AIRCRAFT ONLY: Forbidden

ADDITIONAL SHIPPING DESCRIPTION: Toxic-Inhalation Hazard Zone C

MARITIME TRANSPORT IMDG:

PROPER SHIPPING NAME: Hydrogen bromide, anhydrous

UN NUMBER: UN1048

CLASS OR DIVISION: 2.3
SUBSIDIARY RISK(S): 8

15. REGULATORY INFORMATION

U.S. REGULATIONS:

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): Not regulated.

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30): Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40): Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):

ACUTE: Yes

CHRONIC: No

FIRE: No

REACTIVE: No

SUDDEN RELEASE: Yes

SARA TITLE III SECTION 313 (40 CFR 372.65): Not regulated.

OSHA PROCESS SAFETY (29CFR1910.119):

HYDROGEN BROMIDE: 5000 LBS TQ

STATE REGULATIONS:

California Proposition 65: Not regulated.

CANADIAN REGULATIONS:

WHMIS CLASSIFICATION: A, E.

NATIONAL INVENTORY STATUS:

U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDL): Not determined.

16. OTHER INFORMATION

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