

Material Safety Data Sheet

Printing date 07/30/2008

Version 3

Reviewed on 07/30/2008

1 Identification of substance

- **Product details**

- **Trade name:** Hydrogen Bromide

- **Article number:** 069-01-0007

- **Creation date:** 10/12/2006

- **Manufacturer/Supplier:**

Linde Canada Limited

5860 Chedworth Way

Mississauga, Ontario L5R 0A2

Telephone (905) 501-1700

24-HOUR EMERGENCY TELEPHONE NUMBER:

(905) 501-0802

Linde

575 Mountain Avenue

Murray Hill, NJ 07974

Telephone (908) 464-8100

24-HOUR EMERGENCY TELEPHONE NUMBER:

CHEMTREC (800) 424-9300

- **Information department:** Customer Service Centre: 1-866-385-5349

2 Composition/Data on components

- **Chemical characterization:**

- **CAS No. Description**

10035-10-6 hydrogen bromide

- **Identification number(s)**

- **EINECS Number:** 233-113-0

- **EU Number:** 035-002-00-0

3 Hazards identification

- **Hazard description:**



Very toxic

- **WHMIS-symbols:**

A - Compressed gas

D1A - Very toxic material causing immediate and serious toxic effects

D2B - Toxic material causing other toxic effects

E - Corrosive material



- **HMIS-ratings (scale 0 - 4)**

HEALTH	4	Health = 4
--------	---	------------

FIRE	0	Fire = 0
------	---	----------

REACTIVITY	0	Reactivity = 0
------------	---	----------------

(Contd. on page 2)

CDN

Material Safety Data Sheet

Printing date 07/30/2008

Version 3

Reviewed on 07/30/2008

Trade name: Hydrogen Bromide

(Contd. of page 1)

· NFPA ratings (scale 0 - 4)



Health = 4
Fire = 0
Reactivity = 0

· Information pertaining to particular dangers for man and environment:

Very toxic by inhalation.
Causes severe burns.
Irritating to respiratory system.

· Classification system:

The classification is in line with internationally approved calculation standards. It is expanded, however, by information from technical literature and by information furnished by supplier companies.

· GHS label elements

**Danger**

3.1/1 - Fatal if inhaled.
3.8/3 - May cause respiratory irritation.

**Danger**

3.2/1A - Causes severe skin burns and eye damage.

**Warning**

2.5/L - Contains gas under pressure; may explode if heated.

· Prevention:

Do not breathe dust/fume/gas/mist/vapours/spray.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
Wear respiratory protection.

· Response:

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER or doctor/physician.
Call a POISON CENTER or doctor/physician if you feel unwell.
Specific treatment is urgent (see label).
Specific treatment (see label).
Wash contaminated clothing before reuse.

· Storage:

Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Protect from sunlight. Store in a well-ventilated place.

(Contd. on page 3)

CDN

Material Safety Data Sheet

Printing date 07/30/2008

Version 3

Reviewed on 07/30/2008

Trade name: Hydrogen Bromide

(Contd. of page 2)

- **Disposal:**
Dispose of contents/container in accordance with local/regional/national/international regulations.

* 4 First aid measures

- **General information:**
Immediately remove any clothing soiled by the product.
Remove breathing apparatus only after contaminated clothing have been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.
- **After inhalation:**
Supply fresh air or oxygen; call for doctor.
In case of unconsciousness place patient stably on the body side position.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly for at least 15 minutes.
- **After eye contact:** Rinse opened eye for at least 15 minutes under running water. Then consult a doctor.
- **After swallowing:** Not applicable

5 Fire fighting measures

- **Suitable extinguishing agents:**
CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Protective equipment:** Wear self-contained respiratory protective device.

* 6 Accidental release measures

- **Person-related safety precautions:**
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation.
Stop leak - ONLY if possible to do so without risk.
- **Measures for environmental protection:**
Prevent seepage into sewage system, workpits and/or cellars.
In case of gas release or seepage into the ground inform responsible authorities.
- **Measures for cleaning/collecting:**
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.

* 7 Handling and storage

- **Handling:**
- **Information for safe handling:**
Ensure good ventilation/exhaustion at the workplace.
Open and handle cylinder with care.
Handle with care. Avoid jolting, friction, and impact.
Use only in well ventilated areas.
N/A
N/A

(Contd. on page 4)

CDN

Material Safety Data Sheet

Printing date 07/30/2008

Version 3

Reviewed on 07/30/2008

Trade name: Hydrogen Bromide

(Contd. of page 3)

- **Information about protection against explosions and fires:**

Keep ignition sources away - Do not smoke.

Keep respiratory protective device available.

Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C. Do not pierce or burn, even after use.

- **Storage:**

- **Requirements to be met by storerooms and receptacles:**

Do not expose cylinder to temperatures higher than 50°C (122 °F)

- **Information about storage in one common storage facility:**

Sources of ignition should be removed from storage area.

- **Further information about storage conditions:**

Keep cylinder valve tightly closed.

Store cylinder in a well ventilated area.

Store in accordance with local fire code and/or building code or any pertaining regulations.

8 Exposure controls and personal protection

- **Additional information about design of technical systems:**

Adequate local ventilation.

Safety showers and eyewash stations should be nearby.

- **Components with limit values that require monitoring at the workplace:**

10035-10-6 hydrogen bromide (23-100%)

EL Short-term value: C 2 ppm

- **Additional information:** The lists that were valid during the creation were used as basis.

- **Personal protective equipment:**

- **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Avoid contact with the eyes and skin.

Protective clothing should be kept free of oil and grease.

PPE should be inspected and maintained regularly to retain its effectiveness.

- **Breathing equipment:**

Use atmosphere-supplying respirators (e.g. supplied-air: demand, pressure-demand, or continuous-flow or self-contained breathing apparatus: demand or pressure-demand or combination supplied-air with auxiliary self-contained air supply atmosphere-supplying respirator) in case of insufficient ventilation.

- **Protection of hands:**



Protective gloves.

- **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

(Contd. on page 5)

Material Safety Data Sheet

Printing date 07/30/2008

Version 3

Reviewed on 07/30/2008

Trade name: Hydrogen Bromide

· **Eye protection:** Safety glasses

(Contd. of page 4)

9 Physical and chemical properties

· General Information

Form:	Gaseous.
Color:	Colorless
Odor:	Pungent

· Change in condition

Melting point/Melting range: -86.9°C
Boiling point/Boiling range: -66°C

· **Flash point:** Not applicable.

· **Danger of explosion:** Product does not present an explosion hazard.

· **Solubility in / Miscibility with Water at 20°C:** 2210 g/l

10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Dangerous reactions** No dangerous reactions known.
- **Dangerous products of decomposition:** No dangerous decomposition products known.

11 Toxicological information

· Acute toxicity:

· LD/LC50 values that are relevant for classification:

10035-10-6 hydrogen bromide

Inhalative	LC50/1hr	2858 ppm (rat)
------------	----------	----------------

· Primary irritant effect:

· on the skin:

Strong caustic effect on skin and mucous membranes.
 Irritant to skin and mucous membranes.

· **on the eye:** Strong caustic effect.

· **Sensitization:** No sensitizing effects known.

· Additional toxicological information:

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

CDN

(Contd. on page 6)

Material Safety Data Sheet

Printing date 07/30/2008

Version 3

Reviewed on 07/30/2008

Trade name: Hydrogen Bromide

(Contd. of page 5)

12 Ecological information

- **General notes:** Must not reach bodies of water or drainage ditch undiluted or unneutralized.

13 Disposal considerations

- **Product:**
- **Recommendation:** Unused product should be returned to vendor.
- **Uncleaned packagings:**
- **Recommendation:** Cylinder and unused product should be returned to vendor. Disposable cylinder must be disposed of in accordance with local regulations.
- **Recommended cleansing agent:** None applicable.

14 Transport information

- **TDG and DOT regulations:**



- **Hazard class:** 2
- **Identification number:** UN1048
- **Packing group:** -
- **Proper shipping name (technical name):** HYDROGEN BROMIDE, ANHYDROUS
- **Label:** 2.3+8
- **Packaging group:** -

- **Maritime transport IMDG:**



- **IMDG Class:** 2.3
- **UN Number:** 1048
- **Label:** 2.3+8
- **Packaging group:** -
- **EMS Number:** F-C,S-U
- **Marine pollutant:** No
- **Proper shipping name:** HYDROGEN BROMIDE, ANHYDROUS

(Contd. on page 7)

CDN

Material Safety Data Sheet

Printing date 07/30/2008

Version 3

Reviewed on 07/30/2008

Trade name: Hydrogen Bromide

(Contd. of page 6)

· Air transport ICAO-TI and IATA-DGR:


- ICAO/IATA Class: 2
- UN/ID Number: 1048
- Label: 2.3+8
- Packaging group: -
- Proper shipping name: HYDROGEN BROMIDE, ANHYDROUS

- UN "Model Regulation": UN1048; HYDROGEN BROMIDE, ANHYDROUS; 2.3 (8); -

15 Regulations

· Sara
· Section 355 (extremely hazardous substances):

Substance is not listed.

· Section 313 (Specific toxic chemical listings):

Substance is not listed.

· TSCA (Toxic Substances Control Act):

Substance is listed.

· Proposition 65
· Chemicals known to cause cancer:

Substance is not listed.

· Chemicals known to cause reproductive toxicity for females:

Substance is not listed.

· Chemicals known to cause reproductive toxicity for males:

Substance is not listed.

· Chemicals known to cause developmental toxicity:

Substance is not listed.

· Cancerogenity categories
· EPA (Environmental Protection Agency)

Substance is not listed.

· NTP (National Toxicology Program)

Substance is not listed.

· TLV (Threshold Limit Value established by ACGIH)

Substance is not listed.

· NIOSH-Ca (National Institute for Occupational Safety and Health)

Substance is not listed.

(Contd. on page 8)

Material Safety Data Sheet

Printing date 07/30/2008

Version 3

Reviewed on 07/30/2008

Trade name: Hydrogen Bromide

(Contd. of page 7)

· **OSHA-Ca (Occupational Safety & Health Administration)**

Substance is not listed.

· **Canadian substance listings:**

· **Canadian Domestic Substances List (DSL)**

Substance is listed.

· **Canadian Ingredient Disclosure list (limit 0.1%)**

Substance is not listed.

· **Canadian Ingredient Disclosure list (limit 1%)**

Substance is listed.

· **Product related hazard informations:**

The product was classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

· **Hazard symbols:**

Very toxic

· **Risk phrases:**

Very toxic by inhalation.

Causes severe burns.

Irritating to respiratory system.

· **Safety phrases:**

Keep locked up and out of the reach of children.

Keep container tightly closed and in a well-ventilated place.

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

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Please refer to the section 3 for NFPA and HMIS Hazard Codes.

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

GENERAL DISCLAIMER

For terms and conditions, including limitation of liability, please refer to the purchase agreement in effect between Linde Inc. (or any of its affiliates and subsidiaries) and the purchaser.

· **Department issuing MSDS:** Customer Service Centre: 1-866-385-5349

· **Abbreviations and Acronyms:**

(Contd. on page 9)

Material Safety Data Sheet

Printing date 07/30/2008

Version 3

Reviewed on 07/30/2008

Trade name: Hydrogen Bromide

(Contd. of page 8)

ACGIH: American Conference of Governmental Industrial Hygienists
HMIS: Hazardous Materials Identification System
NFPA: National Fire Protection Association
N/A: Not Applicable
LC50: Lethal Concentration, 50 Percent
LD50: Lethal Dose, 50 Percent
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
WHMIS: Workplace Hazardous Materials Information System (Canada)

CDN