1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name: Anhydrous hydrogen chloride
Chemical Synonyms: Hydrochloric Acid; Anhydrous hydrochloric acid; Chlorohydric acid; Hydrochloric acid gas; Hydrochloride; Muriatic acid; HCl; Hydrochloric acid, anhydrous; Hydrogen-chloride-anhydrous-; Acide chlorhydrique; Acido cloridrico; NA 1789; UN 1789; UN 2186; Anhydrous hydrogen chloride; Hydrogen chloride (acid); Marine acid; Soldering acid; Spirits of salts

Brand: Niacet
Index-No.: 017-002-00-2
CAS-No.: 7647-01-0

1.2 Product Overview

Anhydrous hydrogen chloride, also referred to as hydrogen chloride gas, is a clear, colorless gas with an extremely sharp odor. “Anhydrous” means dry or without water. Anhydrous hydrogen chloride is extremely attracted to water and when exposed to air, quickly reacts with the moisture in the air forming fumes, which are a mist of hydrochloric acid. NIACET® anhydrous hydrogen chloride is sold as liquefied gas. Aqueous hydrochloric acid is a highly corrosive liquid that is formed upon mixing anhydrous hydrogen chloride with water or moisture in the air. It emits a pungent odor and strong fumes in moist air. The color ranges from clear to slightly yellow.

1.3 Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Laboratory chemicals, Synthesis of substances

1.4 Details of the supplier of the safety data sheet

Company: Niacet Corporation
400 47th Street
Niagara Falls, NY 14304
USA
Telephone: (716) 285-1474
Fax: (716) 285-1495

1.5 Emergency telephone number

Emergency Phone #: CHEMTREC®, USA (800) 424-9300
CHEMTREC®, other countries 001 (703) 527-3887

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Gases under pressure (Compressed gas),
H280 Acute toxicity, Inhalation (Category 3),
H331 Skin corrosion (Category 1A), H314
Serious eye damage (Category 1), H318

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word: Danger
Hazard statement(s)
H280 Contains gas under pressure; may explode if heated.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H331 Toxic if inhaled.

Precautionary statement(s)
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing.
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
P305 + P351 + P338 + P310 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/doctor.
P363 Wash contaminated clothing before reuse.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P410 + P403 Protect from sunlight. Store in a well-ventilated place.
P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

<table>
<thead>
<tr>
<th>Substances</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen chloride (press. gas)</td>
<td>Press. Gas Compr. Gas; Acute Tox. 3; Skin Corr. 1A; Eye Dam. 1; H280, H314, H318, H331</td>
<td>90 - 100 %</td>
</tr>
</tbody>
</table>

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

**If swallowed**
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 **Most important symptoms and effects, both acute and delayed**
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 **Indication of any immediate medical attention and special treatment needed**
No data available

5. **FIREFIGHTING MEASURES**

5.1 **Extinguishing media**

**Suitable extinguishing media**
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 **Special hazards arising from the substance or mixture**
No data available

5.3 **Advice for firefighters**
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 **Further information**
Use water spray to cool unopened containers.

6. **ACCIDENTAL RELEASE MEASURES**

6.1 **Personal precautions, protective equipment and emergency procedures**
Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.
For personal protection see section 8.

6.2 **Environmental precautions**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 **Methods and materials for containment and cleaning up**
Clean up promptly by sweeping or vacuum.

6.4 **Reference to other sections**
For disposal see section 13.

7. **HANDLING AND STORAGE**

7.1 **Precautions for safe handling**
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
For precautions see section 2.2.

7.2 **Conditions for safe storage, including any incompatibilities**
Keep container tightly closed in a dry and well-ventilated place.

7.3 **Specific end use(s)**
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. **EXPOSURE CONTROLS/PERSONAL PROTECTION**

8.1 **Control parameters**

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen chloride (press. gas)</td>
<td>7647-01-0</td>
<td>C</td>
<td>2 ppm</td>
<td>USA, ACGIH Threshold Limit Values (TLV)</td>
</tr>
</tbody>
</table>

| Remarks | Upper Respiratory Tract irritation Not classifiable as a human carcinogen |
### 8.2 Exposure controls

#### Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

#### Personal protective equipment

**Eye/face protection**
Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin protection**
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
- Material: butyl-rubber
- Minimum layer thickness: 0.3 mm
- Break through time: 480 min
- Material tested: Butoject® (KCL 897 / Aldrich Z677647, Size M)

Splash contact
- Material: Nitrile rubber
- Minimum layer thickness: 0.4 mm
- Break through time: 30 min
- Material tested: Camatril® (KCL 730 / Aldrich Z677442, Size M)

Data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

**Body Protection**
Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection**
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Control of environmental exposure**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a) Appearance  Form: Compressed gas
b) Odour  No data available
c) Odour Threshold  No data available
d) pH  No data available
e) Melting point/freezing point  Melting point/range: -114 °C (-173 °F) - lit.
-85 °C (-121 °F) - lit.
f) Initial boiling point and boiling range  -85 °C (-121 °F) - lit.
g) Flash point.  No data available
h) Evaporation rate  No data available
i) Flammability (solid, gas)  No data available
j) Upper/lower flammability or explosive limits  No data available
k) Vapour pressure  No data available
l) Vapour density  No data available
m) Relative density  1.2 g/mL at 25 °C (77 °F)
n) Water solubility  No data available
o) Partition coefficient: n-octanol/water  No data available
p) Auto-ignition temperature  No data available
q) Decomposition temperature  No data available
r) Viscosity  No data available.
s) Explosive properties  No data available
t) Oxidizing properties  No data available

9.2 Other safety information
No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
No data available

10.6 Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Hydrogen chloride gas
Other decomposition products - No data available
In the event of fire: see section 5
11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

**Acute toxicity**
- LD50 Oral - Rabbit - 900 mg/kg
- LC50 Inhalation - Rat - 4 h - 1562 ppm
- Dermal: No data available
  - No data available

**Skin corrosion/irritation**
- Extremely corrosive and destructive to tissue.

**Serious eye damage/eye irritation**
- No data available

**Respiratory or skin sensitization**
- No data available

**Germ cell mutagenicity**
- No data available

**Carcinogenicity**
- IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probably, possible or confirmed human carcinogen by IARC.
- NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
- OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity**
- No data available
  - No data available

**Specific target organ toxicity - single exposure**
- No data available

**Specific target organ toxicity - repeated exposure**
- No data available

**Aspiration hazard**
- No data available

**Additional Information**
- RTECS: Not available
  - burning sensation, Cough, wheezing, laryngitis, Shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. ECOLOGICAL INFORMATION

12.1 Toxicity
- No data available

12.2 Persistence and degradability
- No data available

12.3 Bioaccumulative potential
- No data available

12.4 Mobility in soil
- No data available
12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Contact a licensed professional waste disposal service to dispose of this material. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 1050    Class: 2.3 (8)
Proper shipping name: Hydrogen chloride, anhydrous
Reportable Quantity (RQ): 5000 lbs
Poison Inhalation Hazard: Hazard zone C

IMDG
UN number: 1050    Class: 2.3 (8)
Proper shipping name: HYDROGEN CHLORIDE, ANHYDROUS
EMS-No: F-C, S-U

IATA
UN number: 1050    Class: 2.3 (8)
Proper shipping name: Hydrogen chloride, anhydrous
IATA Passenger: Not permitted for transport
IATA Cargo: Not permitted for transport

15. REGULATORY INFORMATION

SARA 302 Components
The following components are subject to reporting levels established by SARA Title III, Section 302:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen chloride (press. gas)</td>
<td>7647-01-0</td>
<td>2013-02-08</td>
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</tbody>
</table>

SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

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SARA 311/312 Hazards

Massachusetts Right To Know Components

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Pennsylvania Right To Know Components

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New Jersey Right To Know Components

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<tr>
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</tr>
</tbody>
</table>
California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

- Acute Tox.  Acute toxicity
- Eye Dam.  Serious eye damage
- H280  Contains gas under pressure; may explode if heated.
- H314  Causes severe skin burns and eye damage.
- H318  Causes serious eye damage.
- H331  Toxic if inhaled.
- Press. Gas  Gases under pressure
- Skin Corr.  Skin corrosion

**HMIS Rating**

- Health hazard: 3
- Chronic Health Hazard:
- Flammability: 0
- Physical Hazard: 1

**NFPA Rating**

- Health hazard: 3
- Fire Hazard: 0
- Reactivity Hazard: 0

**Further Information**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**Sources of key data used to compile the Safety Data Sheet**

Regulations, databases, literature, own tests.

**Additions, Deletions, Revisions**

Version 01-2019