1 Identification

· Product identifier
  · Trade name: Iron (1000µg/mL in 2% HCl)
  · Article number: 100026-2

· Details of the supplier of the safety data sheet
  · Manufacturer/Supplier: High-Purity Standards
    PO Box 41727 Charleston, SC 29423 United States
    Telephone: +1-843-767-7900
    Fax: +1-843-767-7906
    highpuritystandards.com
    Email: info@highpuritystandards.com

· Information department: Product safety department
· Emergency telephone number: INFOTRAC
  Emergency telephone numbers 1-800-535-5053
  Other emergency telephone numbers 1-352-323-3500

2 Hazard(s) identification

· Classification of the substance or mixture
  GHS05 Corrosion
  Skin Corr. 1A H314 Causes severe skin burns and eye damage.

· Label elements
  · GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).
  · Hazard pictograms

    GHS05

· Signal word Danger

· Hazard-determining components of labeling:
  hydrochloric acid

· Hazard statements
  H314 Causes severe skin burns and eye damage.

· Precautionary statements
  Do not breathe dusts or mists.
  Wash thoroughly after handling.
  Wear protective gloves/protective clothing/eye protection/face protection.
  If swallowed: Rinse mouth. Do NOT induce vomiting.
  If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  IF INHALED: Remove person to fresh air and keep 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/doctor.

(Contd. on page 2)
4.1 Description of first aid measures

- General information: Immediately remove any clothing soiled by the product.
- After inhalation: In case of unconsciousness place patient stably in side position for transportation.
- After skin contact: Immediately wash with water and soap and rinse thoroughly.
- After eye contact: Rinse opened eye for several minutes under running water. Then consult a doctor.
- After swallowing: Drink copious amounts of water and provide fresh air. Immediately call a doctor.
- Information for doctor:
  - Most important symptoms and effects, both acute and delayed: No further relevant information available.
  - Indication of any immediate medical attention and special treatment needed: No further relevant information available.
5 Fire-fighting measures

· Extinguishing media
· Suitable extinguishing agents: Use fire fighting measures that suit the environment.
· Special hazards arising from the substance or mixture
  During heating or in case of fire poisonous gases are produced.
· Advice for firefighters
· Protective equipment: Mouth respiratory protective device.

6 Accidental release measures

· Personal precautions, protective equipment and emergency procedures
  Mount respiratory protective device.
  Wear protective equipment. Keep unprotected persons away.
· Environmental precautions: No special measures required.
· Methods and material for containment and cleaning up:
  Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  Use neutralizing agent.
  Dispose contaminated material as waste according to item 13.
  Ensure adequate ventilation.
· Reference to other sections
  See Section 7 for information on safe handling.
  See Section 8 for information on personal protection equipment.
  See Section 13 for disposal information.
· Protective Action Criteria for Chemicals

<table>
<thead>
<tr>
<th>PAC-1:</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>7647-01-0</td>
<td>hydrochloric acid</td>
<td>1.8 ppm</td>
</tr>
<tr>
<td>7439-89-6</td>
<td>iron</td>
<td>3.2 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-2:</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>7647-01-0</td>
<td>hydrochloric acid</td>
<td>22 ppm</td>
</tr>
<tr>
<td>7439-89-6</td>
<td>iron</td>
<td>35 mg/m³</td>
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<table>
<thead>
<tr>
<th>PAC-3:</th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7647-01-0</td>
<td>hydrochloric acid</td>
<td>100 ppm</td>
</tr>
<tr>
<td>7439-89-6</td>
<td>iron</td>
<td>150 mg/m³</td>
</tr>
</tbody>
</table>

7 Handling and storage

· Handling:
· Precautions for safe handling
  Ensure good ventilation/exhaustion at the workplace.
  Prevent formation of aerosols.
· Information about protection against explosions and fires: Keep respiratory protective device available.
· Conditions for safe storage, including any incompatibilities
· Storage:
· Requirements to be met by storerooms and receptacles: No special requirements.
· Information about storage in one common storage facility: Not required.
Trade name: Iron(1000µg/mL in 2% HCl)

- Further information about storage conditions: Keep receptacle tightly sealed.
- Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.

- Control parameters

<table>
<thead>
<tr>
<th>Components with limit values that require monitoring at the workplace:</th>
</tr>
</thead>
<tbody>
<tr>
<td>7647-01-0 hydrochloric acid</td>
</tr>
<tr>
<td>PEL Ceiling limit value: 7 mg/m³, 5 ppm</td>
</tr>
<tr>
<td>REL Ceiling limit value: 7 mg/m³, 5 ppm</td>
</tr>
<tr>
<td>TLV Ceiling limit value: 2.98 mg/m³, 2 ppm</td>
</tr>
</tbody>
</table>

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

- Exposure controls

- 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.
  - Avoid contact with the eyes and skin.

- Breathing equipment:
  - In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

- Protection of hands:

  Protective gloves

  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

  - 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. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

  - Penetration time of glove material
  - The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
### 9 Physical and chemical properties

- **Information on basic physical and chemical properties**
- **General Information**
  - **Appearance:**
    - **Form:** Liquid
    - **Color:** colorless
  - **Odor:** Characteristic
  - **Odor threshold:** Not determined.
  - **pH-value:** Not determined.
  - **Change in condition**
    - **Melting point/Melting range:** Undetermined.
    - **Boiling point/Boiling range:** 100 °C (212 °F)
  - **Flash point:** Not applicable.
  - **Flammability (solid, gaseous):** Not applicable.
  - **Decomposition temperature:** Not determined.
  - **Auto igniting:** Product is not selfigniting.
  - **Danger of explosion:** Product does not present an explosion hazard.
  - **Explosion limits:**
    - **Lower:** Not determined.
    - **Upper:** Not determined.
  - **Vapor pressure at 20 °C (68 °F):** 23 hPa (17.3 mm Hg)
  - **Density at 20 °C (68 °F):** 1.00986 g/cm³ (8.42728 lbs/gal)
  - **Bulk density:** 1,005 kg/m³
  - **Relative density** Not determined.
  - **Vapor density** Not determined.
  - **Evaporation rate** Not determined.
  - **Solubility in / Miscibility with**
    - **Water:** Not miscible or difficult to mix.
  - **Partition coefficient (n-octanol/water):** Not determined.
  - **Viscosity:**
    - **Dynamic:** Not determined.
    - **Kinematic:** Not determined.
10 Stability and reactivity

- **Reactivity**: No further relevant information available.
- **Chemical stability**: 
- **Thermal decomposition / conditions to be avoided**: No decomposition if used according to specifications.
- **Possibility of hazardous reactions**: No dangerous reactions known.
- **Conditions to avoid**: No further relevant information available.
- **Incompatible materials**: No further relevant information available.
- **Hazardous decomposition products**: No dangerous decomposition products known.

11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity**: 
  - **LD/LC50 values that are relevant for classification**:
    - 7647-01-0 hydrochloric acid
      - Oral LD50: 900 mg/kg (rabbit)
- **Primary irritant effect**:
  - **on the skin**: Strong caustic effect on skin and mucous membranes.
  - **on the eye**: Strong caustic effect.
- **Sensitization**: No sensitizing effects known.
- **Additional toxicological information**:
  The product shows the following dangers according to internally approved calculation methods for preparations: 
  - **Corrosive**
  - Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.
- **Carcinogenic categories**
  - **IARC (International Agency for Research on Cancer)**
    - 7647-01-0 hydrochloric acid
    - 3
  - **NTP (National Toxicology Program)**
    - None of the ingredients is listed.
  - **OSHA-Ca (Occupational Safety & Health Administration)**
    - None of the ingredients is listed.
12 Ecological information

- **Toxicity**
- **Aquatic toxicity**: No further relevant information available.
- **Persistence and degradability**: No further relevant information available.
- **Behavior in environmental systems**:
  - **Bioaccumulative potential**: No further relevant information available.
  - **Mobility in soil**: No further relevant information available.
- **Additional ecological information**:
  - **General notes**: Not hazardous for water. Must not reach bodies of water or drainage ditch undiluted or unneutralized.
  - **Results of PBT and vPvB assessment**
    - **PBT**: Not applicable.
    - **vPvB**: Not applicable.
  - **Other adverse effects**: No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation**: Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

- **Uncleaned packagings**:
- **Recommendation**: Disposal must be made according to official regulations.

14 Transport information

- **UN-Number**
  - DOT UN3264
  - ADR, IMDG, IATA UN1789

- **UN proper shipping name**
  - DOT Corrosive liquid, acidic, inorganic, n.o.s. (Hydrochloric acid)
  - ADR 1789 HYDROCHLORIC ACID mixture
  - IMDG, IATA HYDROCHLORIC ACID mixture

- **Transport hazard class(es)**
  - DOT 8 Corrosive substances

(Contd. of page 6)
### 49.4.3.4

**Label**

<table>
<thead>
<tr>
<th>ADR, IMDG, IATA</th>
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</thead>
<tbody>
<tr>
<td>Class</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>Label</td>
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<tr>
<td>8</td>
</tr>
</tbody>
</table>

**Packing group**

<table>
<thead>
<tr>
<th>DOT, ADR, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
</tr>
</tbody>
</table>

**Environmental hazards:**

- Not applicable.

**Special precautions for user**

- Warning: Corrosive substances

**Danger code (Kemler):**

| 80 |

**EMS Number:**

| F-A,S-B |

**Segregation groups**

- Strong acids

**Stowage Category**

| C |

**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**

- Not applicable.

**Transport/Additional information:**

**DOT**

<table>
<thead>
<tr>
<th>Quantity limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>On passenger aircraft/rail: 1 L</td>
</tr>
<tr>
<td>On cargo aircraft only: 30 L</td>
</tr>
</tbody>
</table>

**ADR**

<table>
<thead>
<tr>
<th>Excepted quantities (EQ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code: E2</td>
</tr>
<tr>
<td>Maximum net quantity per inner packaging: 30 ml</td>
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<tr>
<td>Maximum net quantity per outer packaging: 500 ml</td>
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</tbody>
</table>

**IMDG**

<table>
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<th>Limited quantities (LQ)</th>
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<td>1L</td>
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**UN "Model Regulation":**

- UN 1789 HYDROCHLORIC ACID MIXTURE, 8, II

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## 15 Regulatory information

**Safety, health and environmental regulations/legislation specific for the substance or mixture**

**Sara**

- **Section 355 (extremely hazardous substances):**
  - 7647-01-0 hydrochloric acid

- **Section 313 (Specific toxic chemical listings):**
  - 7647-01-0 hydrochloric acid

(Contd. on page 9)
Trade name: Iron(1000µg/mL in 2% HCl)

- TSCA (Toxic Substances Control Act):
  All components have the value ACTIVE.

- Hazardous Air Pollutants
  7647-01-0 hydrochloric acid

- Proposition 65

- Chemicals known to cause cancer:
  None of the ingredients is listed.

- Chemicals known to cause reproductive toxicity for females:
  None of the ingredients is listed.

- Chemicals known to cause reproductive toxicity for males:
  None of the ingredients is listed.

- Chemicals known to cause developmental toxicity:
  None of the ingredients is listed.

- Carcinogenic categories

- EPA (Environmental Protection Agency)
  None of the ingredients is listed.

- TLV (Threshold Limit Value established by ACGIH)
  7647-01-0 hydrochloric acid A4

- NIOSH-Ca (National Institute for Occupational Safety and Health)
  None of the ingredients is listed.

- GHS label elements
  The product is classified and labeled according to the Globally Harmonized System (GHS).

- Hazard pictograms
  GHS05

- Signal word
  Danger

- Hazard-determining components of labeling:
  hydrochloric acid

- Hazard statements
  H314 Causes severe skin burns and eye damage.

- Precautionary statements
  Do not breathe dusts or mists.
  Wash thoroughly after handling.
  Wear protective gloves/protective clothing/eye protection/face protection.
  If swallowed: Rinse mouth. Do NOT induce vomiting.
  If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  IF INHALED: Remove person to fresh air and keep 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/doctor.
  Specific treatment (see on this label).
  Wash contaminated clothing before reuse.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### 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.

- **Department issuing SDS:** Environment protection department.
- **Contact:**
  High-Purity Standards  
  Tel: 843-767-7900  
  Fax: 843-767-7906  
- **Date of preparation / last revision** 09/11/2019 / -
- **Abbreviations and acronyms:**
  ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
  IMDG: International Maritime Code for Dangerous Goods  
  DOT: US Department of Transportation  
  IATA: International Air Transport Association  
  ACGIH: American Conference of Governmental Industrial Hygienists  
  EINECS: European Inventory of Existing Commercial Chemical Substances  
  ELINCS: European List of Notified Chemical Substances  
  CAS: Chemical Abstracts Service (division of the American Chemical Society)  
  NFPA: National Fire Protection Association (USA)  
  HMIS: Hazardous Materials Identification System (USA)  
  VOC: Volatile Organic Compounds (USA, EU)  
  LC50: Lethal concentration, 50 percent  
  LD50: Lethal dose, 50 percent  
  PBT: Persistent, Bioaccumulative and Toxic  
  vPvB: very Persistent and very Bioaccumulative  
  NIOSH: National Institute for Occupational Safety  
  OSHA: Occupational Safety & Health  
  TLV: Threshold Limit Value  
  PEL: Permissible Exposure Limit  
  REL: Recommended Exposure Limit  
  Skin Corr. 1A: Skin corrosion/irritation – Category 1A