## 1 Identification

- **Product identifier**
  - **Trade name:** Iron as Fe+3 (1000μg/mL in 2% HNO3)
  - **Article number:** 100026-7

- **Details of the supplier of the safety data sheet**
  - **Manufacturer/Supplier:** High-Purity Standards
    P.O. Box 41727
    Charleston, SC 29423
    Telephone: (843) 767-7900
    FAX: (843) 767-7906

  - **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](image)
    - **Met. Corr. 1** H290 May be corrosive to metals.
    - **Skin Corr. 1A** H314 Causes severe skin burns and eye damage.
    - **Eye Dam. 1** H318 Causes serious eye damage.

- **Label elements**
  - **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
  - **Hazard pictograms**
    - ![GHS05](image)

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  - nitric acid

- **Hazard statements**
  - H290 May be corrosive to metals.
  - H314 Causes severe skin burns and eye damage.

- **Precautionary statements**
  - Keep only in original container.
  - 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.
Trade name: Iron as Fe+3 (1000μg/mL in 2% HNO3)

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.
Absorb spillage to prevent material damage.
Store locked up.
Store in corrosive resistant container with a resistant inner liner.
Dispose of contents/container in accordance with local/regional/national/international regulations.

Classification system:

NFPA ratings (scale 0 - 4)

- Health = 3
- Fire = 0
- Reactivity = 0

HMIS-ratings (scale 0 - 4)

- HEALTH Health = 3
- FIRE Fire = 0
- REACTIVITY Reactivity = 0

Other hazards

Results of PBT and vPvB assessment
- PBT: Not applicable.
- vPvB: Not applicable.

3 Composition/information on ingredients

Chemical characterization: Mixtures
Description: Mixture of the substances listed below with nonhazardous additions.

Dangerous components:
- 7697-37-2 nitric acid 2.0%

Chemical identification of the substance/preparation
- 7439-89-6 iron 0.1%
- 7732-18-5 water, distilled, conductivity or of similar purity 97.9%

4 First-aid measures

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.

(Contd. of page 1)

(Contd. on page 3)
Trade name: Iron as Fe+3 (1000μg/mL in 2% HNO3)

· 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

| PAC-1       |  |  |
|-------------|  |
| 7697-37-2   | nitric acid | 0.16 ppm |
| 7439-89-6   | iron        | 3.2 mg/m³ |

| PAC-2       |  |  |
|-------------|  |
| 7697-37-2   | nitric acid | 24 ppm  |
| 7439-89-6   | iron        | 35 mg/m³ |

| PAC-3       |  |  |
|-------------|  |
| 7697-37-2   | nitric acid | 92 ppm  |
| 7439-89-6   | iron        | 150 mg/m³ |

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.
Trade name: Iron as Fe+3 (1000μg/mL in 2% HNO3)

- 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.
  - 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>7697-37-2 nitric acid</td>
</tr>
</tbody>
</table>

| PEL | Long-term value: 5 mg/m³, 2 ppm |
| REL | Short-term value: 10 mg/m³, 4 ppm |
|     | Long-term value: 5 mg/m³, 2 ppm |
| TLV | Short-term value: 10 mg/m³, 4 ppm |
|     | Long-term value: 5.2 mg/m³, 2 ppm |

- 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.
  - 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.
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· Eye protection:

Tightly sealed goggles

9 Physical and chemical properties

· Information on basic physical and chemical properties
  · General Information
    · Appearance:
      Form: Liquid
      Color: Colorless
    · Odor:
      Odor: Characteristic
      Odor threshold: Not determined.
    · pH-value:
      pH-value: Not determined.
  · Change in condition
    Melting point/Melting range: Undetermined.
    Boiling point/Boiling range: 100 °C (212 °F)
  · Flash point:
    Flash point: Not applicable.
  · Flammability (solid, gaseous):
    Flammability: Not applicable.
  · Decomposition temperature:
    Decomposition temperature: Not determined.
  · Auto igniting:
    Auto igniting: Product is not selfigniting.
  · Danger of explosion:
    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):
    1.01692 g/cm³ (8.4862 lbs/gal)
  · Bulk density:
    1,012 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.
Trade name: Iron as Fe+3 (1000μg/mL in 2% HNO3)

- **Solvent content:**
  - Water: 97.9%
  - VOC content: 0.00%
  - 0.0 g/l / 0.00 lb/gal

- **Solids content:** 0.1%
- **Other information** No further relevant information available.

### 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:**
    - **Primary irritant effect:**
      - on the skin: Strong caustic effect on skin and mucous membranes.
      - on the eye: Strong caustic effect. Strong irritant with the danger of severe eye injury.
    - **Sensitization:** No sensitizing effects known.
  - **Additional toxicological information:**
    The product shows the following dangers according to internally approved calculation methods for preparations:
    - Corrosive
    - Irritant
    - 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)**
    None of the ingredients is listed.
  - **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:
    Generally 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: UN3264
- DOT, ADR, IMDG, IATA
- UN proper shipping name: Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid)
- DOT: 3264 Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid)
- ADR: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)
- IMDG, IATA
- Transport hazard class(es)
  - DOT
  - Class: 8 Corrosive substances
Trade name: Iron as Fe+3 (1000μg/mL in 2% HNO3)

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- Label
- ADR, IMDG, IATA

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- Class
- Label
- Packing group
- DOT, ADR, IMDG, IATA
- Environmental hazards:
- Special precautions for user
- Danger code (Kemler):
- EMS Number:
- Segregation groups
- Stowage Category
- Stowage Code
- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
- Transport/Additional information:
- DOT
- Quantity limitations
- ADR
- Excepted quantities (EQ)
- IMDG
- Limited quantities (LQ)
- Excepted quantities (EQ)
- UN "Model Regulation":

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Sara
- Section 355 (extremely hazardous substances):

7697-37-2 nitric acid

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Trade name: Iron as Fe+3 (1000μg/mL in 2% HNO3)

- Section 313 (Specific toxic chemical listings):
  7697-37-2 nitric acid

- TSCA (Toxic Substances Control Act):
  All ingredients are listed.

- 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) (Substances not listed)
  7697-37-2 nitric acid
  7439-89-6 iron
  7732-18-5 water, distilled, conductivity or of similar purity

- TLV (Threshold Limit Value established by ACGIH)
  None of the ingredients is listed.

- 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:
  nitric acid

- Hazard statements
  H290 May be corrosive to metals.
  H314 Causes severe skin burns and eye damage.

- Precautionary statements
  Keep only in original container.
  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.
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Immediately call a poison center/doctor.
Specific treatment (see on this label).
Wash contaminated clothing before reuse.
Absorb spillage to prevent material damage.
Store locked up.
Store in corrosive resistant container with a resistant inner liner.
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 03/29/2019 / -
- 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)
  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
  Met. Corr. 1: Corrosive to metals – Category 1
  Skin Corr. 1A: Skin corrosion/irritation – Category 1A
  Eye Dam. 1: Serious eye damage/eye irritation – Category 1