1 Identification

· Product identifier
  · Trade name: Silica (1000µg/mL in % HNO3 + Tr HF)
  · Article number: 1000SIO2-3

· Details of the supplier of the safety data sheet
  · Manufacturer/Supplier:
    High-Purity Standards
    Address PO Box 41727 Charleston, SC 29423 United States
    Telephone +1-843-767-7900
    Fax +1-843-767-7906
    Website 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
  GHS07
  Acute Tox. 4 H312 Harmful in contact with skin.
  Skin Irrit. 2 H315 Causes skin irritation.
  Eye Irrit. 2A H319 Causes serious eye irritation.

· Label elements
  · GHS label elements: The product is classified and labeled according to the Globally Harmonized System (GHS).
  · Hazard pictograms
  GHS07

· Signal word: Warning
  · Hazard-determining components of labeling:
    Hydrofluoric acid
  · Hazard statements
    H312 Harmful in contact with skin.
    H315 Causes skin irritation.
49.4.0

H319 Causes serious eye irritation.

· Precautionary statements
Washington thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
If on skin: Wash with plenty of water.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call a poison center/doctor if you feel unwell.
Specific treatment (see on this label).
Take off contaminated clothing and wash it before reuse.
If skin irritation occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Dispose of contents/container in accordance with local/regional/national/international regulations.

· Classification system:
· NFPA ratings (scale 0 - 4)

2 0 0 Health = 2 Fire = 0 Reactivity = 0

· HMIS-ratings (scale 0 - 4)

HEALTH 2 Health = 2
FIRE 0 Fire = 0
REACTIVITY 0 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:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>nitric acid</td>
<td>1.0%</td>
</tr>
<tr>
<td>Hydrofluoric acid</td>
<td>0.49%</td>
</tr>
</tbody>
</table>

· Chemical identification of the substance/preparation

<table>
<thead>
<tr>
<th>Substance</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>water, distilled, conductivity or of similar purity</td>
<td>98.41%</td>
</tr>
<tr>
<td>silicon dioxide, chemically prepared</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

4 First-aid measures

· Description of first aid measures
· General information:
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
49.4.0

· 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. If symptoms persist, consult a doctor.

· After swallowing: If symptoms persist consult 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.

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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: No further relevant information available.

· Advice for firefighters

· Protective equipment: No special measures required.

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6 Accidental release measures

· Personal precautions, protective equipment and emergency procedures: Not required.

· Environmental precautions: Do not allow to enter sewers/surface or ground water.

· Methods and material for containment and cleaning up:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

· 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 |
| 7664-39-3 Hydrofluoric acid | 1.0 ppm |
| 7631-86-9 silicon dioxide, chemically prepared | 18 mg/m³ |

| PAC-2: |  |
|-------|---|---|---|---|
| 7697-37-2 nitric acid | 24 ppm |
| 7664-39-3 Hydrofluoric acid | 24 ppm |
| 7631-86-9 silicon dioxide, chemically prepared | 740 mg/m³ |

| PAC-3: |  |
|-------|---|---|---|---|
| 7697-37-2 nitric acid | 92 ppm |
| 7664-39-3 Hydrofluoric acid | 44 ppm |
| 7631-86-9 silicon dioxide, chemically prepared | 4,500 mg/m³ |
7 Handling and storage

- Handling:
- Precautions for safe handling: No special precautions are necessary if used correctly.
- Information about protection against explosions and fires: No special measures required.
- 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:
  - Components with limit values that require monitoring at the workplace:
    - 7697-37-2 nitric acid
      - 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
    - 7664-39-3 Hydrofluoric acid
      - PEL: Long-term value: 3 ppm as F
      - REL: Long-term value: 2.5 mg/m³, 3 ppm
        - Ceiling limit value: 5* mg/m³, 6* ppm
        - 15-min, as F
      - TLV: Long-term value: 0.41 mg/m³, 0.5 ppm
        - Ceiling limit value: 1.64 mg/m³, 2 ppm
        - as F; Skin, BEI
  - Ingredients with biological limit values:
    - 7664-39-3 Hydrofluoric acid
      - BEI: 3 mg/g creatinine
        - Medium: urine
        - Time: prior to shift
        - Parameter: Fluorides (background, nonspecific)
      - 10 mg/g creatinine
        - Medium: urine
        - Time: end of shift
        - Parameter: Fluorides (background, nonspecific)
- Additional information: The lists that were valid during the creation were used as basis.
Trade name: Silica (1000µg/mL in % HNO3 + Tr HF)

· 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: Not required.
  · 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.
  · 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:
      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 (solid, gaseous): Not applicable.
Trade name: Silica (1000µg/mL in % HNO3 + Tr HF)

- 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): 1.00104 g/cm³ (8.35368 lbs/gal)
- Bulk density: 1,001 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.
- Solvent content:
  - Water: 98.4 %
  - 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.
Safety Data Sheet  
acc. to OSHA HCS 

Trade name: Silica (1000µg/mL in % HNO3 + Tr HF) 

11 Toxicological information

- Information on toxicological effects
  - Acute toxicity:
    - LD/LC50 values that are relevant for classification:
      - 7664-39-3 Hydrofluoric acid
        - Oral LD50 1,276 mg/kg (rat)

- Primary irritant effect:
  - on the skin: Irritant to skin and mucous membranes.
  - on the eye: Irritating effect.

- Sensitization: No sensitizing effects known.

- Additional toxicological information:
  The product shows the following dangers according to internally approved calculation methods for preparations:
  - Harmful
  - Irritant

- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    - 7631-86-9 silicon dioxide, chemically prepared
      - 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:
    - Water hazard class 1 (Self-assessment): slightly hazardous for water
    - Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

- 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.
Trade name: Silica (1000µg/mL in % HNO3 + Tr HF)

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

14 Transport information

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

- **UN proper shipping name**
  - DOT: Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid)
  - ADR: 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)
  - IMDG, IATA: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)

- **Transport hazard class(es)**
  - **DOT**
    - Class: 8 Corrosive substances
    - Label: 8
  - **ADR, IMDG, IATA**
    - Class: 8 Corrosive substances
    - Label: 8

- **Packing group**
  - DOT, ADR, IMDG, IATA: III

- **Environmental hazards:** Not applicable.

- **Special precautions for user**
  - Warning: Corrosive substances
  - Danger code (Kemler): 80
  - EMS Number: F-A.S-B
  - Segregation groups: Acids
  - Stowage Category: A
  - Stowage Code: SW2 Clear of living quarters.

- **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.
Safety Data Sheet
acc. to OSHA HCS

Printing date 08/09/2019
Reviewed on 08/09/2019

Trade name: Silica (1000µg/mL in % HNO3 + Tr HF)

(Contd. of page 8)

- Transport/Additional information:
  - DOT
  - Quantity limitations
    - On passenger aircraft/rail: 5 L
    - On cargo aircraft only: 60 L

- ADR
  - Excepted quantities (EQ)
    - Code: E1
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 1000 ml

- IMDG
  - Limited quantities (LQ)
    - 5L
  - Excepted quantities (EQ)
    - Code: E1
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 1000 ml

- UN "Model Regulation":
  - UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID), 8, III

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
    - 7664-39-3 Hydrofluoric acid
  - Section 313 (Specific toxic chemical listings):
    - 7697-37-2 nitric acid
    - 7664-39-3 Hydrofluoric acid
  - TSCA (Toxic Substances Control Act):
    - All components have the value ACTIVE.
  - Hazardous Air Pollutants
    - 7664-39-3 Hydrofluoric 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.

(Contd. on page 10)
### Carcinogenic categories

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

- **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**
  
  ![GHS07](image)

- **Signal word** Warning

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

- **Hazard statements**
  - H312 Harmful in contact with skin.
  - H315 Causes skin irritation.
  - H319 Causes serious eye irritation.

- **Precautionary statements**
  - Wash thoroughly after handling.
  - Wear protective gloves/protective clothing/eye protection/face protection.
  - If on skin: Wash with plenty of water.
  - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - Call a poison center/doctor if you feel unwell.
  - Specific treatment (see on this label).
  - Take off contaminated clothing and wash it before reuse.
  - If skin irritation occurs: Get medical advice/attention.
  - If eye irritation persists: Get medical advice/attention.
  - Dispose of contents/container in accordance with local/regional/national/international regulations.

### Chemical safety assessment

- **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** 08/09/2019 / -
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
BEI: Biological Exposure Limit
Acute Tox. 4: Acute toxicity – Category 4
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A