

Safety Data Sheet
acc. to OSHA HCS

Printing date 07/23/2019

Reviewed on 07/23/2019

1 Identification

- **Product identifier**
- **Trade name:** ICP-MS-68A-A
- **Article number:** ICP-MS-68A-A
- **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**



GHS05 Corrosion

- 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

- **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.

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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.
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)**



· **HMIS-ratings (scale 0 - 4)**



· **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**

| | | |
|------------|--------------------------|--------|
| 7440-38-2 | arsenic | 0.001% |
| 513-77-9 | barium carbonate | 0.001% |
| 543-81-7 | beryllium acetate | 0.001% |
| 7440-69-9 | bismuth | 0.001% |
| 10043-35-3 | boric acid | 0.001% |
| 7440-43-9 | cadmium (non-pyrophoric) | 0.001% |
| 471-34-1 | calcium carbonate | 0.001% |
| 1306-38-3 | cerium dioxide | 0.001% |
| 21351-79-1 | caesium hydroxide | 0.001% |
| 7440-47-3 | chromium | 0.001% |
| 7440-48-4 | cobalt | 0.001% |

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| | | |
|------------|--|---------|
| 7440-50-8 | <i>copper</i> | 0.001% |
| 7429-91-6 | <i>dysprosium</i> | 0.001% |
| 7440-52-0 | <i>erbium</i> | 0.001% |
| 7440-53-1 | <i>europium</i> | 0.001% |
| 7440-54-2 | <i>gadolinium</i> | 0.001% |
| 7440-55-3 | <i>gallium</i> | 0.001% |
| 7440-60-0 | <i>holmium</i> | 0.001% |
| 7440-74-6 | <i>indium</i> | 0.001% |
| 7439-89-6 | <i>iron</i> | 0.001% |
| 1312-81-8 | <i>lanthanum oxide</i> | 0.001% |
| 7439-92-1 | <i>lead</i> | 0.001% |
| 554-13-2 | <i>lithium carbonate</i> | 0.001% |
| 12032-20-1 | <i>lutetium oxide</i> | 0.001% |
| 7439-95-4 | <i>magnesium</i> | 0.001% |
| 6156-78-1 | <i>Manganese(II) acetate tetrahydrate</i> | 0.001% |
| 7440-00-8 | <i>neodymium</i> | 0.001% |
| 7440-02-0 | <i>nickel</i> | 0.001% |
| 7722-76-1 | <i>Ammonium dihydrogenphosphate</i> | 0.001% |
| 7757-79-1 | <i>potassium nitrate</i> | 0.001% |
| 12037-29-5 | <i>Praseodymium(III,IV) oxide</i> | 0.001% |
| 7440-15-5 | <i>rhenium</i> | 0.001% |
| 584-09-8 | <i>rubidium carbonate</i> | 0.001% |
| 7440-19-9 | <i>samarium</i> | 0.001% |
| 12060-08-1 | <i>scandium oxide</i> | 0.001% |
| 7782-49-2 | <i>selenium</i> | 0.001% |
| 497-19-8 | <i>sodium carbonate</i> | 0.001% |
| 10042-76-9 | <i>strontium nitrate</i> | 0.001% |
| 7440-27-9 | <i>terbium</i> | 0.001% |
| 7440-28-0 | <i>thallium</i> | 0.001% |
| 7440-29-1 | <i>thorium</i> | 0.001% |
| 12036-44-1 | <i>thulium oxide</i> | 0.001% |
| 10102-06-4 | <i>Uranyl nitrate</i> | 0.001% |
| 7803-55-6 | <i>Ammonium Vanadate</i> | 0.001% |
| 1314-37-0 | <i>ytterbium (III) oxide</i> | 0.001% |
| 1314-36-9 | <i>yttrium oxide</i> | 0.001% |
| 7440-66-6 | <i>zinc</i> | 0.001% |
| 7429-90-5 | <i>aluminium</i> | 0.001% |
| 7732-18-5 | <i>water, distilled, conductivity or of similar purity</i> | 97.952% |

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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.
- **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 |
| 7440-38-2 | arsenic | 1.5 mg/m ³ |
| 513-77-9 | barium carbonate | 2.2 mg/m ³ |
| 7440-69-9 | bismuth | 15 mg/m ³ |
| 10043-35-3 | boric acid | 6 mg/m ³ |
| 7440-43-9 | cadmium (non-pyrophoric) | 0.10 mg/m ³ |
| 471-34-1 | calcium carbonate | 45 mg/m ³ |

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| | | |
|------------|------------------------------------|------------------------|
| 1306-38-3 | cerium dioxide | 3 mg/m ³ |
| 21351-79-1 | caesium hydroxide | 6 mg/m ³ |
| 7440-47-3 | chromium | 1.5 mg/m ³ |
| 7440-48-4 | cobalt | 0.18 mg/m ³ |
| 7440-50-8 | copper | 3 mg/m ³ |
| 7429-91-6 | dysprosium | 30 mg/m ³ |
| 7440-53-1 | europium | 30 mg/m ³ |
| 7440-54-2 | gadolinium | 30 mg/m ³ |
| 7440-55-3 | gallium | 30 mg/m ³ |
| 7440-60-0 | holmium | 12 mg/m ³ |
| 7440-74-6 | indium | 0.3 mg/m ³ |
| 7439-89-6 | iron | 3.2 mg/m ³ |
| 1312-81-8 | lanthanum oxide | 4 mg/m ³ |
| 7439-92-1 | lead | 0.15 mg/m ³ |
| 554-13-2 | lithium carbonate | 3.1 mg/m ³ |
| 12032-20-1 | lutetium oxide | 30 mg/m ³ |
| 7439-95-4 | magnesium | 18 mg/m ³ |
| 6156-78-1 | Manganese(II) acetate tetrahydrate | 13 mg/m ³ |
| 7440-00-8 | neodymium | 30 mg/m ³ |
| 7440-02-0 | nickel | 4.5 mg/m ³ |
| 7722-76-1 | Ammonium dihydrogenphosphate | 17 mg/m ³ |
| 7757-79-1 | potassium nitrate | 9 mg/m ³ |
| 12037-29-5 | Praseodymium(III,IV) oxide | 15 mg/m ³ |

PAC-2:

| | | |
|------------|--------------------------|------------------------|
| 7697-37-2 | nitric acid | 24 ppm |
| 7440-38-2 | arsenic | 17 mg/m ³ |
| 513-77-9 | barium carbonate | 270 mg/m ³ |
| 7440-69-9 | bismuth | 170 mg/m ³ |
| 10043-35-3 | boric acid | 23 mg/m ³ |
| 7440-43-9 | cadmium (non-pyrophoric) | 0.76 mg/m ³ |
| 471-34-1 | calcium carbonate | 210 mg/m ³ |
| 1306-38-3 | cerium dioxide | 33 mg/m ³ |
| 21351-79-1 | caesium hydroxide | 19 mg/m ³ |
| 7440-47-3 | chromium | 17 mg/m ³ |
| 7440-48-4 | cobalt | 2 mg/m ³ |
| 7440-50-8 | copper | 33 mg/m ³ |
| 7429-91-6 | dysprosium | 330 mg/m ³ |
| 7440-53-1 | europium | 330 mg/m ³ |
| 7440-54-2 | gadolinium | 330 mg/m ³ |
| 7440-55-3 | gallium | 330 mg/m ³ |

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| | | |
|------------|------------------------------------|-----------------------|
| 7440-60-0 | holmium | 130 mg/m ³ |
| 7440-74-6 | indium | 3.3 mg/m ³ |
| 7439-89-6 | iron | 35 mg/m ³ |
| 1312-81-8 | lanthanum oxide | 44 mg/m ³ |
| 7439-92-1 | lead | 120 mg/m ³ |
| 554-13-2 | lithium carbonate | 34 mg/m ³ |
| 12032-20-1 | lutetium oxide | 330 mg/m ³ |
| 7439-95-4 | magnesium | 200 mg/m ³ |
| 6156-78-1 | Manganese(II) acetate tetrahydrate | 22 mg/m ³ |
| 7440-00-8 | neodymium | 330 mg/m ³ |
| 7440-02-0 | nickel | 50 mg/m ³ |
| 7722-76-1 | Ammonium dihydrogenphosphate | 190 mg/m ³ |
| 7757-79-1 | potassium nitrate | 100 mg/m ³ |
| 12037-29-5 | Praseodymium(III,IV) oxide | 170 mg/m ³ |

PAC-3:

| | | |
|------------|------------------------------------|-------------------------|
| 7697-37-2 | nitric acid | 92 ppm |
| 7440-38-2 | arsenic | 100 mg/m ³ |
| 513-77-9 | barium carbonate | 1,600 mg/m ³ |
| 7440-69-9 | bismuth | 990 mg/m ³ |
| 10043-35-3 | boric acid | 830 mg/m ³ |
| 7440-43-9 | cadmium (non-pyrophoric) | 4.7 mg/m ³ |
| 471-34-1 | calcium carbonate | 1,300 mg/m ³ |
| 1306-38-3 | cerium dioxide | 200 mg/m ³ |
| 21351-79-1 | caesium hydroxide | 110 mg/m ³ |
| 7440-47-3 | chromium | 99 mg/m ³ |
| 7440-48-4 | cobalt | 20 mg/m ³ |
| 7440-50-8 | copper | 200 mg/m ³ |
| 7429-91-6 | dysprosium | 2,000 mg/m ³ |
| 7440-53-1 | europium | 2,000 mg/m ³ |
| 7440-54-2 | gadolinium | 2,000 mg/m ³ |
| 7440-55-3 | gallium | 2,000 mg/m ³ |
| 7440-60-0 | holmium | 790 mg/m ³ |
| 7440-74-6 | indium | 20 mg/m ³ |
| 7439-89-6 | iron | 150 mg/m ³ |
| 1312-81-8 | lanthanum oxide | 270 mg/m ³ |
| 7439-92-1 | lead | 700 mg/m ³ |
| 554-13-2 | lithium carbonate | 210 mg/m ³ |
| 12032-20-1 | lutetium oxide | 2,000 mg/m ³ |
| 7439-95-4 | magnesium | 1,200 mg/m ³ |
| 6156-78-1 | Manganese(II) acetate tetrahydrate | 740 mg/m ³ |

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|------------|------------------------------|-------------------------|
| | | (Contd. of page 6) |
| 7440-00-8 | neodymium | 2,000 mg/m ³ |
| 7440-02-0 | nickel | 99 mg/m ³ |
| 7722-76-1 | Ammonium dihydrogenphosphate | 1,100 mg/m ³ |
| 7757-79-1 | potassium nitrate | 600 mg/m ³ |
| 12037-29-5 | Praseodymium(III,IV) oxide | 990 mg/m ³ |

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.
- **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/m ³ , 2 ppm |
| REL | Short-term value: 10 mg/m ³ , 4 ppm Long-term value: 5 mg/m ³ , 2 ppm |
| TLV | Short-term value: 10 mg/m ³ , 4 ppm Long-term value: 5.2 mg/m ³ , 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.

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· **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: | 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. |

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| | |
|---|--|
| · Vapor pressure at 20 °C (68 °F): | 23 hPa (17.3 mm Hg) |
| · Density: | Not determined. |
| · 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: | 98.0 % |
| · VOC content: | 0.00 % |
| | 0.0 g/l / 0.00 lb/gal |
| · Solids content: | 0.0 % |
| · 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.

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· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

| | | |
|-----------|--------------------------|----|
| 7440-38-2 | arsenic | I |
| 543-81-7 | beryllium acetate | I |
| 7440-43-9 | cadmium (non-pyrophoric) | I |
| 7440-47-3 | chromium | 3 |
| 7440-48-4 | cobalt | 2B |
| 7439-92-1 | lead | 2B |
| 7440-02-0 | nickel | 2B |
| 7782-49-2 | selenium | 3 |
| 7440-29-1 | thorium | I |

· **NTP (National Toxicology Program)**

| | | |
|-----------|--------------------------|---|
| 7440-38-2 | arsenic | K |
| 543-81-7 | beryllium acetate | K |
| 7440-43-9 | cadmium (non-pyrophoric) | K |
| 7440-48-4 | cobalt | R |
| 7439-92-1 | lead | R |
| 7440-02-0 | nickel | R |

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

| | |
|-----------|--------------------------|
| 7440-38-2 | arsenic |
| 7440-43-9 | cadmium (non-pyrophoric) |

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.

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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, ADR, IMDG, IATA | UN3264 |
| · UN proper shipping name · DOT · ADR · IMDG, IATA | Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid) 3264 Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid) CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID) |
| · Transport hazard class(es) · DOT | |
|  | |
| · Class · Label | 8 Corrosive substances 8 |
| · ADR, IMDG, IATA | |
|  | |
| · Class · Label | 8 Corrosive substances 8 |
| · Packing group · DOT, ADR, IMDG, IATA | III |
| · Environmental hazards: | Not applicable. |
| · Special precautions for user · Danger code (Kemler): · EMS Number: · Segregation groups · Stowage Category · Stowage Code | Warning: Corrosive substances 80 F-A,S-B Acids A SW2 Clear of living quarters. |
| · Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code | Not applicable. |

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· 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)

· Excepted quantities (EQ)

5L
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 |
|-----------|-------------|

· Section 313 (Specific toxic chemical listings):

| | |
|------------|--------------------------|
| 7697-37-2 | nitric acid |
| 7440-38-2 | arsenic |
| 513-77-9 | barium carbonate |
| 543-81-7 | beryllium acetate |
| 7440-43-9 | cadmium (non-pyrophoric) |
| 7440-47-3 | chromium |
| 7440-48-4 | cobalt |
| 7440-50-8 | copper |
| 7439-92-1 | lead |
| 554-13-2 | lithium carbonate |
| 7440-02-0 | nickel |
| 7757-79-1 | potassium nitrate |
| 7782-49-2 | selenium |
| 10042-76-9 | strontium nitrate |
| 7440-28-0 | thallium |
| 7803-55-6 | Ammonium Vanadate |
| 7440-66-6 | zinc |
| 7429-90-5 | aluminium |

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| TSCA (Toxic Substances Control Act): | |
|---|-------------------------------------|
| 7697-37-2 | <i>nitric acid</i> |
| 7440-38-2 | <i>arsenic</i> |
| 513-77-9 | <i>barium carbonate</i> |
| 7440-69-9 | <i>bismuth</i> |
| 10043-35-3 | <i>boric acid</i> |
| 7440-43-9 | <i>cadmium (non-pyrophoric)</i> |
| 471-34-1 | <i>calcium carbonate</i> |
| 1306-38-3 | <i>cerium dioxide</i> |
| 21351-79-1 | <i>caesium hydroxide</i> |
| 7440-47-3 | <i>chromium</i> |
| 7440-48-4 | <i>cobalt</i> |
| 7440-50-8 | <i>copper</i> |
| 7429-91-6 | <i>dysprosium</i> |
| 7440-52-0 | <i>erbium</i> |
| 7440-53-1 | <i>europium</i> |
| 7440-54-2 | <i>gadolinium</i> |
| 7440-55-3 | <i>gallium</i> |
| 7440-60-0 | <i>holmium</i> |
| 7440-74-6 | <i>indium</i> |
| 7439-89-6 | <i>iron</i> |
| 1312-81-8 | <i>lanthanum oxide</i> |
| 7439-92-1 | <i>lead</i> |
| 554-13-2 | <i>lithium carbonate</i> |
| 12032-20-1 | <i>lutetium oxide</i> |
| 7439-95-4 | <i>magnesium</i> |
| 7440-00-8 | <i>neodymium</i> |
| 7440-02-0 | <i>nickel</i> |
| 7722-76-1 | <i>Ammonium dihydrogenphosphate</i> |
| 7757-79-1 | <i>potassium nitrate</i> |
| 12037-29-5 | <i>Praseodymium(III,IV) oxide</i> |

Proposition 65

| Chemicals known to cause cancer: | |
|---|---------------------------------|
| 7440-38-2 | <i>arsenic</i> |
| 543-81-7 | <i>beryllium acetate</i> |
| 7440-43-9 | <i>cadmium (non-pyrophoric)</i> |
| 7440-48-4 | <i>cobalt</i> |
| 7439-92-1 | <i>lead</i> |
| 7440-02-0 | <i>nickel</i> |

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· Chemicals known to cause reproductive toxicity for females:

7439-92-1 lead

· Chemicals known to cause reproductive toxicity for males:

7440-43-9 cadmium (non-pyrophoric)

7439-92-1 lead

· Chemicals known to cause developmental toxicity:

7440-43-9 cadmium (non-pyrophoric)

7439-92-1 lead

554-13-2 lithium carbonate

· Carcinogenic categories

· EPA (Environmental Protection Agency) (Substances not listed)

7697-37-2 nitric acid

543-81-7 beryllium acetate

7440-69-9 bismuth

471-34-1 calcium carbonate

21351-79-1 caesium hydroxide

7440-48-4 cobalt

7429-91-6 dysprosium

7440-52-0 erbium

7440-53-1 europium

7440-54-2 gadolinium

7440-55-3 gallium

7440-60-0 holmium

7440-74-6 indium

7439-89-6 iron

1312-81-8 lanthanum oxide

554-13-2 lithium carbonate

12032-20-1 lutetium oxide

7439-95-4 magnesium

6156-78-1 Manganese(II) acetate tetrahydrate

7440-00-8 neodymium

7440-02-0 nickel

7722-76-1 Ammonium dihydrogenphosphate

7757-79-1 potassium nitrate

12037-29-5 Praseodymium(III,IV) oxide

7440-15-5 rhenium

584-09-8 rubidium carbonate

7440-19-9 samarium

12060-08-1 scandium oxide

497-19-8 sodium carbonate

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| | | |
|---|--------------------------|----|
| 10042-76-9 | strontium nitrate | |
| · TLV (Threshold Limit Value established by ACGIH) | | |
| 7440-38-2 | arsenic | A1 |
| 513-77-9 | barium carbonate | A4 |
| 10043-35-3 | boric acid | A4 |
| 7440-43-9 | cadmium (non-pyrophoric) | A2 |
| 7440-47-3 | chromium | A4 |
| 7440-48-4 | cobalt | A3 |
| 7439-92-1 | lead | A3 |
| 7440-02-0 | nickel | A5 |
| 7429-90-5 | aluminium | A4 |

| | | |
|---|--------------------------|--|
| · NIOSH-Ca (National Institute for Occupational Safety and Health) | | |
| 7440-38-2 | arsenic | |
| 7440-43-9 | cadmium (non-pyrophoric) | |
| 7440-02-0 | nickel | |

- **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.
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.

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· **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** 07/23/2019 / -· **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

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1 Identification

- **Product identifier**
- **Trade name:** Stock ICP Standard
- **Article number:** ICP-MS-68A-B
- **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**



GHS05 Corrosion

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.



GHS07

Acute Tox. 4 H312 Harmful in contact with skin.

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



GHS05 GHS07

- **Signal word** Danger
- **Hazard-determining components of labeling:**
nitric acid
Hydrofluoric acid
- **Hazard statements**
H290 May be corrosive to metals.
H312 Harmful in contact with skin.

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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.

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).

Take off contaminated clothing and wash it before reuse.

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 = 3

Fire = 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:

| | | |
|-----------|-------------|------|
| 7697-37-2 | nitric acid | 2.0% |
|-----------|-------------|------|

Chemical identification of the substance/preparation

| | | |
|-----------|-------------------|--------|
| 7664-39-3 | Hydrofluoric acid | 0.49% |
| 7440-58-6 | hafnium | 0.001% |
| 7439-98-7 | molybdenum | 0.001% |
| 7440-03-1 | niobium | 0.001% |
| 7440-21-3 | silicon | 0.001% |

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| | | |
|------------|---|---------|
| 7440-22-4 | silver | 0.001% |
| 7440-25-7 | tantalum | 0.001% |
| 13494-80-9 | tellurium | 0.001% |
| 7440-31-5 | tin | 0.001% |
| 7440-32-6 | titanium | 0.001% |
| 7440-33-7 | tungsten | 0.001% |
| 7440-67-7 | zirconium | 0.001% |
| 7440-56-4 | germanium | 0.001% |
| 7440-36-0 | antimony | 0.001% |
| 7732-18-5 | water, distilled, conductivity or of similar purity | 97.497% |

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.
- **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:** 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).
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.

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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 |
| 7664-39-3 | Hydrofluoric acid | 1.0 ppm |
| 7440-58-6 | hafnium | 1.5 mg/m ³ |
| 7439-98-7 | molybdenum | 30 mg/m ³ |
| 7440-03-1 | niobium | 30 mg/m ³ |
| 7440-21-3 | silicon | 45 mg/m ³ |
| 7440-22-4 | silver | 0.3 mg/m ³ |
| 7440-25-7 | tantalum | 10 mg/m ³ |
| 13494-80-9 | tellurium | 1.8 mg/m ³ |
| 7440-31-5 | tin | 6 mg/m ³ |
| 7440-32-6 | titanium | 30 mg/m ³ |
| 7440-33-7 | tungsten | 10 mg/m ³ |
| 7440-67-7 | zirconium | 10 mg/m ³ |
| 7440-56-4 | germanium | 3.2 mg/m ³ |
| 7440-36-0 | antimony | 1.5 mg/m ³ |

· **PAC-2:**

| | | |
|------------|-------------------|-----------------------|
| 7697-37-2 | nitric acid | 24 ppm |
| 7664-39-3 | Hydrofluoric acid | 24 ppm |
| 7440-58-6 | hafnium | 17 mg/m ³ |
| 7439-98-7 | molybdenum | 330 mg/m ³ |
| 7440-03-1 | niobium | 330 mg/m ³ |
| 7440-21-3 | silicon | 100 mg/m ³ |
| 7440-22-4 | silver | 170 mg/m ³ |
| 7440-25-7 | tantalum | 11 mg/m ³ |
| 13494-80-9 | tellurium | 20 mg/m ³ |
| 7440-31-5 | tin | 67 mg/m ³ |
| 7440-32-6 | titanium | 330 mg/m ³ |
| 7440-33-7 | tungsten | 330 mg/m ³ |
| 7440-67-7 | zirconium | 83 mg/m ³ |
| 7440-56-4 | germanium | 35 mg/m ³ |
| 7440-36-0 | antimony | 13 mg/m ³ |

· **PAC-3:**

| | | |
|-----------|-------------------|--------|
| 7697-37-2 | nitric acid | 92 ppm |
| 7664-39-3 | Hydrofluoric acid | 44 ppm |

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| | | (Contd. of page 4) |
|------------|------------|-------------------------|
| 7440-58-6 | hafnium | 99 mg/m ³ |
| 7439-98-7 | molybdenum | 2,000 mg/m ³ |
| 7440-03-1 | niobium | 2,000 mg/m ³ |
| 7440-21-3 | silicon | 630 mg/m ³ |
| 7440-22-4 | silver | 990 mg/m ³ |
| 7440-25-7 | tantalum | 64 mg/m ³ |
| 13494-80-9 | tellurium | 110 mg/m ³ |
| 7440-31-5 | tin | 400 mg/m ³ |
| 7440-32-6 | titanium | 2,000 mg/m ³ |
| 7440-33-7 | tungsten | 2,000 mg/m ³ |
| 7440-67-7 | zirconium | 500 mg/m ³ |
| 7440-56-4 | germanium | 170 mg/m ³ |
| 7440-36-0 | antimony | 80 mg/m ³ |

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.
- **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/m ³ , 2 ppm |
| REL | Short-term value: 10 mg/m ³ , 4 ppm Long-term value: 5 mg/m ³ , 2 ppm |
| TLV | Short-term value: 10 mg/m ³ , 4 ppm Long-term value: 5.2 mg/m ³ , 2 ppm |

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

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- **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.

- **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: | 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) |

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| | |
|---|---|
| · 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): | 1.00617 g/cm ³ (8.39649 lbs/gal) |
| · Bulk density: | ~1,006 kg/m ³ |
| · 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: | 97.5 % |
| VOC content: | 0.00 % |
| | 0.0 g/l / 0.00 lb/gal |
| Solids content: | 0.0 % |
| · 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.

US

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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:** 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:
Harmful
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:**

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.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.

· **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.
- **vPvB:** Not applicable.

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· **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, ADR, IMDG, IATA | UN3264 |
| · UN proper shipping name · DOT · ADR · IMDG, IATA | Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Hydrogen fluoride) 3264 Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Hydrogen fluoride) CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID, HYDROGEN FLUORIDE) |
| · Transport hazard class(es) · DOT | |
|  | |
| · Class · Label | 8 Corrosive substances 8 |
| · ADR, IMDG, IATA | |
|  | |
| · Class · Label | 8 Corrosive substances 8 |
| · Packing group · DOT, ADR, IMDG, IATA | III |
| · Environmental hazards: | Not applicable. |
| · Special precautions for user · Danger code (Kemler): · EMS Number: · Segregation groups | Warning: Corrosive substances 80 F-A,S-B Acids |

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| | |
|--|--|
| · 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. |
| · 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, HYDROGEN FLUORIDE), 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 |
| 13494-80-9 tellurium |
| · Section 313 (Specific toxic chemical listings): |
| 7697-37-2 nitric acid |
| 7664-39-3 Hydrofluoric acid |
| 7440-22-4 silver |
| 7440-36-0 antimony |
| · 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. |

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· **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 |
| 7664-39-3 | Hydrofluoric acid |
| 7440-58-6 | hafnium |
| 7439-98-7 | molybdenum |
| 7440-03-1 | niobium |
| 7440-21-3 | silicon |
| 7440-25-7 | tantalum |
| 13494-80-9 | tellurium |
| 7440-31-5 | tin |
| 7440-32-6 | titanium |
| 7440-33-7 | tungsten |
| 7440-67-7 | zirconium |
| 7440-56-4 | germanium |
| 7440-36-0 | antimony |
| 7732-18-5 | water, distilled, conductivity or of similar purity |

· **TLV (Threshold Limit Value established by ACGIH)**

| | | |
|-----------|------------|----|
| 7439-98-7 | molybdenum | A3 |
| 7440-67-7 | zirconium | 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 GHS07

· **Signal word** Danger

· **Hazard-determining components of labeling:**

nitric acid

Hydrofluoric acid

· **Hazard statements**

H290 May be corrosive to metals.

H312 Harmful in contact with skin.

H314 Causes severe skin burns and eye damage.

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· 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.**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).**Take off contaminated clothing and wash it before reuse.**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** *07/23/2019 / -***· 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**Met. Corr. 1: Corrosive to metals – Category 1**Acute Tox. 4: Acute toxicity – Category 4**Skin Corr. 1A: Skin corrosion/irritation – Category 1A**Eye Dam. 1: Serious eye damage/eye irritation – Category 1*

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1 Identification

- **Product identifier**
- **Trade name:** ICP Stock Standard
- **Article number:** ICP-MS-68A-C
- **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**



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.

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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.

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



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



- **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:**

| | | |
|-----------|-------------------|------|
| 7647-01-0 | hydrochloric acid | 2.0% |
|-----------|-------------------|------|

· **Chemical identification of the substance/preparation**

| | | |
|-----------|---|---------|
| 7439-88-5 | iridium | 0.001% |
| 7440-04-2 | osmium | 0.001% |
| 7440-05-3 | palladium | 0.001% |
| 7440-06-4 | platinum | 0.001% |
| 7440-16-6 | rhodium | 0.001% |
| 7440-18-8 | ruthenium | 0.001% |
| 7440-57-5 | Gold | 0.001% |
| 7732-18-5 | water, distilled, conductivity or of similar purity | 97.993% |

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.

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- **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**

· **PAC-1:**

| | | |
|-----------|-------------------|------------------------|
| 7647-01-0 | hydrochloric acid | 1.8 ppm |
| 7439-88-5 | iridium | 4.7 mg/m ³ |
| 7440-04-2 | osmium | 0.28 mg/m ³ |
| 7440-05-3 | palladium | 6 mg/m ³ |
| 7440-06-4 | platinum | 3 mg/m ³ |
| 7440-16-6 | rhodium | 3 mg/m ³ |
| 7440-18-8 | ruthenium | 30 mg/m ³ |
| 7440-57-5 | Gold | 0.46 mg/m ³ |

· **PAC-2:**

| | | |
|-----------|-------------------|-----------------------|
| 7647-01-0 | hydrochloric acid | 22 ppm |
| 7439-88-5 | iridium | 51 mg/m ³ |
| 7440-04-2 | osmium | 3.1 mg/m ³ |
| 7440-05-3 | palladium | 66 mg/m ³ |
| 7440-06-4 | platinum | 33 mg/m ³ |

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| | | |
|-----------------|-------------------|-------------------------|
| 7440-16-6 | rhodium | 33 mg/m ³ |
| 7440-18-8 | ruthenium | 330 mg/m ³ |
| 7440-57-5 | Gold | 5.1 mg/m ³ |
| · PAC-3: | | |
| 7647-01-0 | hydrochloric acid | 100 ppm |
| 7439-88-5 | iridium | 310 mg/m ³ |
| 7440-04-2 | osmium | 19 mg/m ³ |
| 7440-05-3 | palladium | 400 mg/m ³ |
| 7440-06-4 | platinum | 200 mg/m ³ |
| 7440-16-6 | rhodium | 200 mg/m ³ |
| 7440-18-8 | ruthenium | 2,000 mg/m ³ |
| 7440-57-5 | Gold | 30 mg/m ³ |

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.
- **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:**

7647-01-0 hydrochloric acid

| | |
|-----|---|
| PEL | Ceiling limit value: 7 mg/m ³ , 5 ppm |
| REL | Ceiling limit value: 7 mg/m ³ , 5 ppm |
| TLV | Ceiling limit value: 2.98 mg/m ³ , 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.

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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.

· **Eye protection:**



Tightly sealed goggles

9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

| | |
|------------------------|-----------------|
| Form: | Liquid |
| Color: | Amber colored |
| 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.

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| | |
|---|--|
| · Explosion limits: | |
| Lower: | Not determined. |
| Upper: | Not determined. |
| · Vapor pressure at 20 °C (68 °F): | 23 hPa (17.3 mm Hg) |
| · Density: | Not determined. |
| · 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: | 98.0 % |
| VOC content: | 0.00 % 0.0 g/l / 0.00 lb/gal |
| Solids content: | 0.0 % |
| · 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:**

· **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.

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· **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:**

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**

| | |
|-------------------------------|--------|
| · DOT, ADR, IMDG, IATA | UN3264 |
|-------------------------------|--------|

· **UN proper shipping name**

| | |
|--------------|---|
| · DOT | Corrosive liquid, acidic, inorganic, n.o.s. (Hydrochloric acid) |
|--------------|---|

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· **ADR** 3264 Corrosive liquid, acidic, inorganic, n.o.s. (Hydrochloric acid)
 · **IMDG, IATA** CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (HYDROCHLORIC 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 MARPOL 73/78 and the IBC Code** Not applicable.

· **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

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

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 |
|-----------|-------------------|

· **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)**

| | |
|-----------|---|
| 7647-01-0 | hydrochloric acid |
| 7439-88-5 | iridium |
| 7440-04-2 | osmium |
| 7440-05-3 | palladium |
| 7440-06-4 | platinum |
| 7440-16-6 | rhodium |
| 7440-18-8 | ruthenium |
| 7440-57-5 | Gold |
| 7732-18-5 | water, distilled, conductivity or of similar purity |

· **TLV (Threshold Limit Value established by ACGIH)**

| | | |
|-----------|-------------------|----|
| 7647-01-0 | hydrochloric acid | A4 |
| 7440-16-6 | rhodium | 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).

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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 *07/30/2019 / -*
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*

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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

US