1 Identification

· Product identifier
  · Trade name: 100-1-1 (Aluminum 100 μg/mL in 2% HNO2)
  · Article number: 100-1-1

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

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

2 Hazard(s) identification

· Classification of the substance or mixture
  GHS05 Corrosion
  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.
Trade name: 100-1-1 (Aluminum 100 μg/mL in 2% HNO2)

(Contd. of page 1)

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).
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
  7732-18-5 water, distilled, conductivity or of similar purity 97.99%
  7429-90-5 aluminium 0.01%

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. on page 3)
Trade name: 100-1-1 (Aluminum 100 μg/mL in 2% HNO2)

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
  - PAC-2:
    7697-37-2 nitric acid 24 ppm
  - PAC-3:
    7697-37-2 nitric acid 92 ppm

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.
  - Information about storage in one common storage facility: Not required.
Trade name: 100-1-1 (Aluminum 100 μg/mL in 2% HNO2)

- 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:

<table>
<thead>
<tr>
<th>Substance</th>
<th>PEL</th>
<th>REL</th>
<th>TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2 nitric acid</td>
<td>Long-term value: 5 mg/m³, 2 ppm</td>
<td>Short-term value: 10 mg/m³, 4 ppm</td>
<td>Short-term value: 10 mg/m³, 4 ppm</td>
</tr>
<tr>
<td></td>
<td>Long-term value: 5 mg/m³, 2 ppm</td>
<td>Long-term value: 5.2 mg/m³, 2 ppm</td>
<td>Long-term value: 5.2 mg/m³, 2 ppm</td>
</tr>
</tbody>
</table>

- Additional information: The lists that were valid during the creation were used as basis.
- Exposure controls
- Personal protective equipment:
- General protective and hygienic measures:
  - Keep away from foodstuffs, beverages and feed.
  - Immediately remove all soiled and contaminated clothing.
  - Wash hands before breaks and at the end of work.
  - Avoid contact with the eyes.
  - 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.

(Contd. on page 5)
Trade name: 100-1-1 (Aluminum 100 μg/mL in 2% HNO2)

9 Physical and chemical properties

<table>
<thead>
<tr>
<th>· Information on basic physical and chemical properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>· General Information</td>
</tr>
<tr>
<td>· Appearance:</td>
</tr>
<tr>
<td>Form: Liquid</td>
</tr>
<tr>
<td>Color: teal</td>
</tr>
<tr>
<td>· Odor: Characteristic</td>
</tr>
<tr>
<td>· Odor threshold: Not determined.</td>
</tr>
<tr>
<td>· pH-value: Not determined</td>
</tr>
<tr>
<td>· Change in condition</td>
</tr>
<tr>
<td>Melting point/Melting range: Undetermined.</td>
</tr>
<tr>
<td>Boiling point/Boiling range: 100 °C (212 °F)</td>
</tr>
<tr>
<td>· Flash point: Not applicable.</td>
</tr>
<tr>
<td>· Flammability (solid, gaseous): Not applicable.</td>
</tr>
<tr>
<td>· Decomposition temperature: Not determined.</td>
</tr>
<tr>
<td>· Auto igniting: Product is not selfigniting.</td>
</tr>
<tr>
<td>· Danger of explosion: Product does not present an explosion hazard.</td>
</tr>
<tr>
<td>· Explosion limits:</td>
</tr>
<tr>
<td>Lower: Not determined.</td>
</tr>
<tr>
<td>Upper: Not determined.</td>
</tr>
<tr>
<td>· Vapor pressure at 20 °C (68 °F): 23 hPa (17.3 mm Hg)</td>
</tr>
<tr>
<td>· Density at 20 °C (68 °F): 1.01023 g/cm³ (8.43037 lbs/gal)</td>
</tr>
<tr>
<td>· Bulk density: 1,010 kg/m³</td>
</tr>
<tr>
<td>· Relative density: Not determined.</td>
</tr>
<tr>
<td>· Vapor density: Not determined.</td>
</tr>
<tr>
<td>· Evaporation rate: Not determined.</td>
</tr>
<tr>
<td>· Solubility in / Miscibility with Water: Not miscible or difficult to mix.</td>
</tr>
<tr>
<td>· Partition coefficient (n-octanol/water): Not determined.</td>
</tr>
<tr>
<td>· Viscosity:</td>
</tr>
<tr>
<td>Dynamic: Not determined.</td>
</tr>
<tr>
<td>Kinematic: Not determined.</td>
</tr>
</tbody>
</table>
Trade name: 100-1-1 (Aluminum 100 μg/mL in 2% HNO2)

- **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.

- **Addtional 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:
  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. (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
Trade name: 100-1-1 (Aluminum 100 μg/mL in 2% HNO2)

- **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.

- **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
Trade name: 100-1-1 (Aluminum 100 μg/mL in 2% HNO2)

· **Section 313 (Specific toxic chemical listings):**
  - 7697-37-2 nitric acid
  - 7429-90-5 aluminium

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

· **Hazardous Air Pollutants**
  None of the ingredients is 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)**
    None of the ingredients is listed.
  - **TLV (Threshold Limit Value established by ACGIH)**
    7429-90-5 aluminium A4
  - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
    None of the ingredients is listed.

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
  · **Hazard pictograms**
    - **GHS05**

· **Signal word** Danger

· **Hazard-determining components of labeling:**
  - 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: 100-1-1 (Aluminum 100 μg/mL in 2% HNO2)

(Contd. of page 9)

- **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.**
- **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 08/19/2019 / -**
- **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