1 Identification

- **Product identifier**
  - **Trade name:** Zirconium from ZrO(NO3)2 1000 μg/mL in 0.5% HNO3
  - **Article number:** 100069-1

- **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**
The product is not classified, according to the Globally Harmonized System (GHS).

- **Label elements**
  - **GHS label elements** Void
  - **Hazard pictograms** Void
  - **Signal word** Void
  - **Hazard statements** Void
  - **Classification system:**
    - **NFPA ratings (scale 0 - 4)**
      Health = 0
      Fire = 0
      Reactivity = 0
    - **HMIS-ratings (scale 0 - 4)**
      HEALTH 0
      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.

(Contd. on page 2)
Trade name: Zirconium from ZrO(NO3)2 1000 μg/mL in 0.5% HNO3

4 First-aid measures

· **Description of first aid measures**
  · **General information:** No special measures required.
  · **After inhalation:** Supply fresh air; consult doctor in case of complaints.
  · **After skin contact:** Generally the product does not irritate the skin.
  · **After eye contact:** Rinse opened eye for several minutes under running water.
  · **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.

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.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures** Not required.
· **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).
· **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:**
    | Chemical       | Concentration |
    |----------------|---------------|
    | 7697-37-2 nitric acid | 0.16 ppm     |
    | 13826-66-9 zirconium oxynitrate | 25 mg/m³ |

  · **PAC-2:**
    | Chemical       | Concentration |
    |----------------|---------------|
    | 7697-37-2 nitric acid | 24 ppm       |
    | 13826-66-9 zirconium oxynitrate | 220 mg/m³ |
Trade name: Zirconium from ZrO(NO₃)₂ 1000 μg/mL in 0.5% HNO₃

7 Handling and storage

· Handling:
  · Precautions for safe handling: No special measures required.
  · 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: None.
      · 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:
    The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
  · Additional information: The lists that were valid during the creation were used as basis.
· Exposure controls:
  · Personal protective equipment:
    · General protective and hygienic measures:
      The usual precautionary measures for handling chemicals should be followed.
    · Breathing equipment: Not required.
    · Protection of hands:
      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 cannot be calculated in advance and has therefore to be checked prior to the application.
    · Penetration time of glove material:
      The exact breakthrough time has to be found out by the manufacturer of the protective gloves and has to be observed.
    · Eye protection: Goggles recommended during refilling.
9 Physical and chemical properties

- Information on basic physical and chemical properties
- General Information
  - Appearance:
    - Form: Liquid
    - Color: colorless
  - Odor: Characteristic
  - Odor threshold: Not determined.
- pH-value: Not determined.
- Change in condition
  - Melting point/Melting range: Undetermined.
  - Boiling point/Boiling range: 100 °C (212 °F)
- Flash point: Not applicable.
- Flammability (solid, gaseous): Not applicable.
- Decomposition temperature: Not determined.
- Auto igniting: Product is not selfigniting.
- Danger of explosion: Product does not present an explosion hazard.
- Explosion limits:
  - Lower: Not determined.
  - Upper: Not determined.
- Vapor pressure at 20 °C (68 °F): 23 hPa (17.3 mm Hg)
- Density: 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: 99.4 %
  - 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: No irritant effect.
  · on the eye: No irritating effect.
· Sensitization: No sensitizing effects known.
· Additional toxicological information:
The product is not subject to classification according to internally approved calculation methods for preparations:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· 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.
  · 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: Smaller quantities can be disposed of with household waste.

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

14 Transport information

- UN-Number
  - DOT, ADR, IMDG, IATA: not regulated

- UN proper shipping name
  - DOT, ADR, IMDG, IATA: not regulated

- Transport hazard class(es)
  - DOT, ADR, ADN, IMDG, IATA: not regulated
  - Class: Not regulated

- Packing group
  - DOT, ADR, IMDG, IATA: not regulated

- Environmental hazards:
  - Not applicable.

- Special precautions for user
  - Not applicable.

- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
  - Not applicable.

- UN "Model Regulation":
  - not regulated

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

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

- Hazardous Air Pollutants
  - None of the ingredients is listed.

- Proposition 65
  - None of the ingredients is listed.
Trade name: Zirconium from ZrO(NO3)2 1000 μg/mL in 0.5% HNO3

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

- GHS label elements Void
  - Hazard pictograms Void
  - Signal word Void
  - Hazard statements Void
  - Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Department issuing SDS: Environment protection department.
- Contact:
  High-Purity Standards
  Tel:  843-767-7900
  Fax: 843-767-7906
- Date of preparation / last revision 09/12/2019 / -
- 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