1 Identification

- **Product identifier**
- **Trade name:** Custom Standard
- **Part number:** ICUS-3984
- **Application of the substance / the mixture** Laboratory chemicals

- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
  ULTRA Scientific, Inc.
  250 Smith Street
  North Kingstown, RI  02852
  USA

- **Information department:**
  Telephone: (401) 294-9400
  Fax: (401) 295-2300
  E-mail: regulatory@ultrasci.com

- **Emergency telephone number:**
  US: (800) 424-9300
  Outside US: (703) 527-3887

2 Hazard(s) identification

- **Classification of the substance or mixture**
  
  ![GHS07](image)

  Skin Irrit. 2  H315  Causes skin irritation.
  Eye Irrit. 2A  H319  Causes serious eye irritation.

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

  ![GHS07](image)

- **Signal word** Warning
- **Hazard statements**
  Causes skin irritation.
  Causes serious eye irritation.
- **Precautionary statements**
  Wash thoroughly after handling.
  Wear protective gloves / eye protection / face protection.
  IF ON SKIN: Wash with plenty of water.
  If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  Specific treatment (see on this label).
  If skin irritation occurs: Get medical advice/attention.
  If eye irritation persists: Get medical advice/attention.
  Take off contaminated clothing and wash it before reuse.

(Contd. on page 2)
Trade name: Custom Standard

- Classification system:
- NFPA ratings (scale 0 - 4)
  Health = 1
  Fire = 0
  Reactivity = 0

- HMIS-ratings (scale 0 - 4)
  HEALTH
  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 1.98%

4 First-aid measures

- Description of first aid measures
  - After inhalation: In case of unconsciousness place patient stably in side position for transportation.
  - After skin contact: Immediately wash with water and soap and rinse thoroughly.
  - After eye contact:
    Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
  - After swallowing: If symptoms persist consult doctor.

- Information for doctor:
  - Most important symptoms and effects, both acute and delayed: No further relevant information available.
  - Indication of any immediate medical attention and special treatment needed: No further relevant information available.

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: 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).

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:

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Chemical</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2</td>
<td>nitric acid</td>
<td>0.16 ppm</td>
</tr>
<tr>
<td>7664-39-3</td>
<td>hydrogen fluoride</td>
<td>1.0 ppm</td>
</tr>
<tr>
<td>10294-41-4</td>
<td>Cerium (III) nitrate</td>
<td>13 mg/m³</td>
</tr>
<tr>
<td>12064-62-9</td>
<td>digadolinium trioxide</td>
<td>15 mg/m³</td>
</tr>
<tr>
<td>12061-16-4</td>
<td>erbium (III) oxide</td>
<td>15 mg/m³</td>
</tr>
<tr>
<td>10102-45-1</td>
<td>thallium nitrate</td>
<td>0.078 mg/m³</td>
</tr>
<tr>
<td>7440-69-9</td>
<td>bismuth</td>
<td>15 mg/m³</td>
</tr>
<tr>
<td>7446-07-3</td>
<td>tellurium dioxide</td>
<td>0.38 mg/m³</td>
</tr>
</tbody>
</table>

PAC-2:

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Chemical</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2</td>
<td>nitric acid</td>
<td>24 ppm</td>
</tr>
<tr>
<td>7664-39-3</td>
<td>hydrogen fluoride</td>
<td>24 ppm</td>
</tr>
<tr>
<td>10294-41-4</td>
<td>Cerium (III) nitrate</td>
<td>140 mg/m³</td>
</tr>
<tr>
<td>12064-62-9</td>
<td>digadolinium trioxide</td>
<td>170 mg/m³</td>
</tr>
<tr>
<td>12061-16-4</td>
<td>erbium (III) oxide</td>
<td>170 mg/m³</td>
</tr>
<tr>
<td>10102-45-1</td>
<td>thallium nitrate</td>
<td>4.3 mg/m³</td>
</tr>
<tr>
<td>7440-69-9</td>
<td>bismuth</td>
<td>170 mg/m³</td>
</tr>
<tr>
<td>7446-07-3</td>
<td>tellurium dioxide</td>
<td>4.3 mg/m³</td>
</tr>
</tbody>
</table>

PAC-3:

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Chemical</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2</td>
<td>nitric acid</td>
<td>92 ppm</td>
</tr>
<tr>
<td>7664-39-3</td>
<td>hydrogen fluoride</td>
<td>44 ppm</td>
</tr>
<tr>
<td>10294-41-4</td>
<td>Cerium (III) nitrate</td>
<td>830 mg/m³</td>
</tr>
<tr>
<td>12064-62-9</td>
<td>digadolinium trioxide</td>
<td>990 mg/m³</td>
</tr>
<tr>
<td>12061-16-4</td>
<td>erbium (III) oxide</td>
<td>990 mg/m³</td>
</tr>
<tr>
<td>10102-45-1</td>
<td>thallium nitrate</td>
<td>26 mg/m³</td>
</tr>
<tr>
<td>7440-69-9</td>
<td>bismuth</td>
<td>990 mg/m³</td>
</tr>
<tr>
<td>7446-07-3</td>
<td>tellurium dioxide</td>
<td>26 mg/m³</td>
</tr>
</tbody>
</table>

Handling and storage

- Handling:
  - Precautions for safe handling: No special precautions are necessary if used correctly.
  - Information about protection against explosions and fires: No special measures required.

- Conditions for safe storage, including any incompatibilities
  - Storage:
    - Requirements to be met by storerooms and receptacles: No special requirements.
    - Information about storage in one common storage facility: Not required.
    - Further information about storage conditions: Keep receptacle tightly sealed.
8 Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.

- Control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>Limit Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2 nitric acid</td>
<td></td>
</tr>
<tr>
<td>PEL Long-term value: 5 mg/m³, 2 ppm</td>
<td></td>
</tr>
<tr>
<td>REL Short-term value: 10 mg/m³, 4 ppm</td>
<td>Long-term value: 5 mg/m³, 2 ppm</td>
</tr>
<tr>
<td>TLV Short-term value: 10 mg/m³, 4 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 and skin.

  - Breathing equipment: Not required.

- Protection of hands:

  - Protective gloves
    - The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
    - Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
    - Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

  - Material of gloves
    - The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot 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: Fluid
      - Color: Colorless
    - Odor: Odorless
    - Odor threshold: Not determined.
  - pH-value: Not determined.
- Change in condition
  - Melting point/Melting range: Undetermined.
  - Boiling point/Boiling range: 100°C (°F)
- Flash point: Not applicable.
- Flammability (solid, gaseous): Not applicable.
- Ignition temperature:
  - 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 (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 at 20°C (68 °F): 0.952 mPas
  - Kinematic: Not determined.
- Solvent content:
  - Water: 98.0 %
  - VOC content: 0.00 %
    - 0.0 g/l / 0.00 lb/gl
- Solids content: 0.0 %
- Other information: No further relevant information available.

10 Stability and reactivity

- Reactivity: No further relevant information available.
11 Toxicological information

- Information on toxicological effects
  - Acute toxicity:
    - LD/LC50 values that are relevant for classification:
      
      | Substance       | Inhalative LC50/4 h | Oral LD50       |
      |-----------------|---------------------|----------------|
      | ATE (Acute Toxicity Estimate) | 3,384 mg/L (rat) | 1,276 mg/kg (rat) |
      | 7697-37-2 nitric acid | 67 mg/L (rat)     |                |
      | 7664-39-3 hydrogen fluoride |                |                |
  
  - Primary irritant effect:
    - on the skin: Irritant to skin and mucous membranes.
    - on the eye: Irritating effect.
    - Sensitization: No sensitizing effects known.
    - Additional toxicological information:
      The product shows the following dangers according to internally approved calculation methods for preparations: Irritant
  
- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    543-81-7 acetic acid beryllium salt 1
  - NTP (National Toxicology Program)
    543-81-7 acetic acid beryllium salt K
  - OSHA-Ca (Occupational Safety & Health Administration)
    None of the ingredients is listed.

12 Ecological information

- Toxicity
  - Aquatic toxicity: No further relevant information available.
  - Persistence and degradability: No further relevant information available.
  - Behavior in environmental systems:
  - Bioaccumulative potential: No further relevant information available.
  - Mobility in soil: No further relevant information available.
  - Additional ecological information:
  - General notes:
    Water hazard class 1 (Self-assessment): slightly hazardous for water
    Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
  - Results of PBT and vPvB assessment
  - PBT: Not applicable.
Trade name: Custom Standard

· 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, IMDG, IATA UN3264

- UN proper shipping name
- DOT
- IMDG, IATA Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid)

- Transport hazard class(es)
- DOT
- Class 8 Corrosive substances
- Label 8

- IMDG, IATA

- Class 8 Corrosive substances
- Label 8

- Packing group
- DOT, IMDG, IATA III

- Environmental hazards: Not applicable.

- Special precautions for user
- 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.
Trade name: Custom Standard

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

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

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

### 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  - **Sara**
    - **Section 355 (extremely hazardous substances):**
      - 7697-37-2 nitric acid
      - 7664-39-3 hydrogen fluoride
  - **Section 313 (Specific toxic chemical listings):**
    - 7697-37-2 nitric acid
    - 7664-39-3 hydrogen fluoride
    - 10294-41-4 Cerium (III) nitrate
    - 10102-45-1 thallium nitrate
    - 543-81-7 acetic acid beryllium salt
  - **TSCA (Toxic Substances Control Act):**
    - 7697-37-2 nitric acid
    - 7664-39-3 hydrogen fluoride
    - 12064-62-9 digadolinium trioxide
    - 12061-16-4 erbium (III) oxide
    - 10102-45-1 thallium nitrate
    - 7440-69-9 bismuth
    - 7446-07-3 tellurium dioxide
    - 7732-18-5 water
  - **Proposition 65**
    - **Chemicals known to cause cancer:**
      - 543-81-7 acetic acid beryllium salt
    - **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)**
  
  10102-45-1 thallium nitrate

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

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

### GHS label elements

The product is classified and labeled according to the Globally Harmonized System (GHS).

### Hazard pictograms

![GHS07]

- **Signal word** Warning
- **Hazard statements**
  - Causes skin irritation.
  - Causes serious eye irritation.
- **Precautionary statements**
  - Wash thoroughly after handling.
  - Wear protective gloves / eye protection / face protection.
  - IF ON SKIN: Wash with plenty of water.
  - IF in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
  - Continue rinsing.
  - Specific treatment (see on this label).
  - If skin irritation occurs: Get medical advice/attention.
  - If eye irritation persists: Get medical advice/attention.
  - Take off contaminated clothing and wash it before reuse.

### Chemical safety assessment:

A Chemical Safety Assessment has not been carried out.

### 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.

- **Date of preparation / last revision** 11/03/2017 / -

### 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
<table>
<thead>
<tr>
<th>TLV:</th>
<th>Threshold Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEL:</td>
<td>Permissible Exposure Limit</td>
</tr>
<tr>
<td>REL:</td>
<td>Recommended Exposure Limit</td>
</tr>
<tr>
<td>Skin Irrit. 2:</td>
<td>Skin corrosion/irritation – Category 2</td>
</tr>
<tr>
<td>Eye Irrit. 2A:</td>
<td>Serious eye damage/eye irritation – Category 2A</td>
</tr>
</tbody>
</table>