1 Identification

- Product identifier
- Trade name: Custom Standard
- Part number: ICUS-4613
- 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

  GHS05 Corrosion
  Eye Dam. 1 H318 Causes serious eye damage.
  GHS07
  Skin Irrit. 2 H315 Causes skin irritation.

- 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
  Causes skin irritation.
  Causes serious eye damage.
- Precautionary statements
  Wash thoroughly after handling.
  Wear protective gloves / eye protection / face protection.
  IF ON SKIN: Wash with plenty of water.

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

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). If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

- Classification system:
  - NFPA ratings (scale 0 - 4)
    
    ![NFPA ratings](image)
    
    Health = 3
    Fire = 0
    Reactivity = 0
  
  - HMIS-ratings (scale 0 - 4)
    
    ![HMIS-ratings](image)
    
    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 4.95%

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. Then 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.
### 6 Accidental release measures

- **Advice for firefighters**
  - No special measures required.

- **Protective equipment:**
  - No special equipment required.

#### Personal precautions, protective equipment and emergency procedures
- 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.

#### 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**

<table>
<thead>
<tr>
<th>PAC-1:</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2 nitric acid</td>
<td>0.16 ppm</td>
</tr>
<tr>
<td>7664-39-3 hydrogen fluoride</td>
<td>1.0 ppm</td>
</tr>
<tr>
<td>1310-53-8 germanium dioxide</td>
<td>3.8 mg/m³</td>
</tr>
<tr>
<td>7440-74-6 indium</td>
<td>0.3 mg/m³</td>
</tr>
<tr>
<td>12060-08-1 scandium oxide</td>
<td>30 mg/m³</td>
</tr>
<tr>
<td>554-13-2 lithium carbonate</td>
<td>3.1 mg/m³</td>
</tr>
<tr>
<td>7440-69-9 bismuth</td>
<td>15 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-2:</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2 nitric acid</td>
<td>24 ppm</td>
</tr>
<tr>
<td>7664-39-3 hydrogen fluoride</td>
<td>24 ppm</td>
</tr>
<tr>
<td>1310-53-8 germanium dioxide</td>
<td>41 mg/m³</td>
</tr>
<tr>
<td>7440-74-6 indium</td>
<td>3.3 mg/m³</td>
</tr>
<tr>
<td>12060-08-1 scandium oxide</td>
<td>330 mg/m³</td>
</tr>
<tr>
<td>554-13-2 lithium carbonate</td>
<td>34 mg/m³</td>
</tr>
<tr>
<td>7440-69-9 bismuth</td>
<td>170 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-3:</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2 nitric acid</td>
<td>92 ppm</td>
</tr>
<tr>
<td>7664-39-3 hydrogen fluoride</td>
<td>44 ppm</td>
</tr>
<tr>
<td>1310-53-8 germanium dioxide</td>
<td>250 mg/m³</td>
</tr>
<tr>
<td>7440-74-6 indium</td>
<td>20 mg/m³</td>
</tr>
<tr>
<td>12060-08-1 scandium oxide</td>
<td>2,000 mg/m³</td>
</tr>
<tr>
<td>554-13-2 lithium carbonate</td>
<td>210 mg/m³</td>
</tr>
<tr>
<td>7440-69-9 bismuth</td>
<td>990 mg/m³</td>
</tr>
</tbody>
</table>

### 7 Handling and storage

- **Handling:**
  - No special precautions are necessary if used correctly.
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>7697-37-2 nitric acid</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEL Long-term value: 5 mg/m³, 2 ppm</td>
</tr>
<tr>
<td>REL Short-term value: 10 mg/m³, 4 ppm</td>
</tr>
<tr>
<td>Long-term value: 5 mg/m³, 2 ppm</td>
</tr>
<tr>
<td>TLV Short-term value: 10 mg/m³, 4 ppm</td>
</tr>
<tr>
<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 skin.
  Avoid contact with the eyes and skin.

- Breathing equipment: Not required.

- Protection of hands:

  Protective gloves

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

- Material of gloves

  The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and
  varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of
  the glove material can not be calculated in advance and has therefore to be checked prior to the application.

- Penetration time of glove material

  The exact break through time has to be found out by the manufacturer of the protective gloves and has to be
  observed.
Safety Data Sheet
acc. to OSHA HCS

Trade name: Custom Standard

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: Fluid</td>
</tr>
<tr>
<td>Color: According to product specification</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 (°F)</td>
</tr>
<tr>
<td>Flash point: Not applicable.</td>
</tr>
<tr>
<td>Flammability (solid, gaseous): Not applicable.</td>
</tr>
<tr>
<td>Ignition temperature:</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 (mm Hg)</td>
</tr>
<tr>
<td>Density: Not determined.</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>
<tr>
<td>Solvent content:</td>
</tr>
<tr>
<td>Water: 94.9 %</td>
</tr>
<tr>
<td>VOC content: 0.00 %</td>
</tr>
<tr>
<td>0.0 g/l / 0.00 lb/gl</td>
</tr>
</tbody>
</table>

(Contd. on page 6)
Trade name: Custom Standard

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:
      ATE (Acute Toxicity Estimate)
      Oral LD50 1,276,000 mg/kg (rat)
      Dermal LD50 5,000 mg/kg
      Inhalative LC50/4 h 365 mg/L
      7697-37-2 nitric acid
      Inhalative LC50/4 h 67 mg/L (rat)
      7664-39-3 hydrogen fluoride
      Oral LD50 1,276 mg/kg (rat)
      · Primary irritant effect:
        · on the skin: Irritant to skin and mucous membranes.
        · on the eye: 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:
          Irritant
· 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 2 (Self-assessment): hazardous for water
  Do not allow product to reach ground water, water course or sewage system.
  Must not reach bodies of water or drainage ditch undiluted or unneutralized.
  Danger to drinking water if even small quantities leak into the ground.
- 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, IMDG, IATA: UN3264
- UN proper shipping name
  DOT: Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid)
  IMDG, IATA: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)
- Transport hazard class(es)
  - DOT
    Class: 8 Corrosive substances
    Label: 8
### IMDG, IATA

- **Class**: 8 Corrosive substances
- **Label**: 8
- **Packing group**: Not applicable.
- **DOT, IMDG, IATA**: II

#### Environmental hazards:
- **Special precautions for user**: Not applicable.
- **Danger code (Kemler)**: Warning: Corrosive substances 80
- **EMS Number**: F-A,S-B
- **Segregation groups**: Acids
- **Stowage Category**: B
- **Stowage Code**: SW2 Clear of living quarters.

#### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
- **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: 1 L
    - On cargo aircraft only: 30 L
- **IMDG**
  - **Limited quantities (LQ)**: 1L
  - **Excepted quantities (EQ)**: Code: E2
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 500 ml

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

### 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
      - 554-13-2 lithium carbonate
    - **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:
  554-13-2 lithium carbonate

· Carcinogenic categories
- EPA (Environmental Protection Agency)
  None of the ingredients is listed.
- TLV (Threshold Limit Value established by ACGIH)
  None of the ingredients is listed.
- NIOSH-Ca (National Institute for Occupational Safety and Health)
  None of the ingredients is listed.

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

  GHS05

- Signal word Danger

- Hazard-determining components of labeling:
  nitric acid
- Hazard statements
  Causes skin irritation.
  Causes serious eye damage.

- 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.
  Immediately call a POISON CENTER/doctor.
  Specific treatment (see on this label).
  If skin irritation occurs: 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.

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.

- 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
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Dam. 1: Serious eye damage/eye irritation – Category 1