# 1 Identification

- **Product identifier**
- **Trade name:** Custom Standard
- **Part number:** ICUS-7246
- **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
    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

- **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

3 Composition/information on ingredients

- Chemical characterization: Mixtures
- Description: Mixture of the substances listed below with nonhazardous additions.

<table>
<thead>
<tr>
<th>Dangerous components:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2 nitric acid</td>
<td>1.98%</td>
</tr>
</tbody>
</table>

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: 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:

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Chemical Name</th>
<th>Concentration</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>7440-53-1</td>
<td>europium</td>
<td>30 mg/m³</td>
</tr>
<tr>
<td>7782-61-8</td>
<td>iron (III) nitrate nonahydrate</td>
<td>22 mg/m³</td>
</tr>
<tr>
<td>7440-74-6</td>
<td>indium</td>
<td>0.3 mg/m³</td>
</tr>
<tr>
<td>7757-79-1</td>
<td>potassium nitrate</td>
<td>9 mg/m³</td>
</tr>
<tr>
<td>13478-00-7</td>
<td>Nitric acid, nickel(2+) salt, hexahydrate</td>
<td>1.5 mg/m³</td>
</tr>
<tr>
<td>7722-76-1</td>
<td>ammonium dihydrogenorthophosphate</td>
<td>17 mg/m³</td>
</tr>
<tr>
<td>16919-19-0</td>
<td>alkali fluorosilicates (NH4)</td>
<td>12 mg/m³</td>
</tr>
<tr>
<td>7803-55-6</td>
<td>ammonium trioxovanadate</td>
<td>0.01 mg/m³</td>
</tr>
<tr>
<td>1314-36-9</td>
<td>yttrium oxide</td>
<td>3.8 mg/m³</td>
</tr>
<tr>
<td>10377-66-9</td>
<td>manganese dinitrate</td>
<td>9.8 mg/m³</td>
</tr>
<tr>
<td>1313-27-5</td>
<td>molybdenum trioxide</td>
<td>2.3 mg/m³</td>
</tr>
<tr>
<td>7631-99-4</td>
<td>sodium nitrate, containing in the dry state more than 16,3 per cent by weight of nitrogen</td>
<td>4.1 mg/m³</td>
</tr>
<tr>
<td>12060-08-1</td>
<td>scandium oxide</td>
<td>30 mg/m³</td>
</tr>
<tr>
<td>554-13-2</td>
<td>lithium carbonate</td>
<td>3.1 mg/m³</td>
</tr>
<tr>
<td>10042-76-9</td>
<td>strontium nitrate</td>
<td>5.7 mg/m³</td>
</tr>
<tr>
<td>471-34-1</td>
<td>calcium carbonate</td>
<td>45 mg/m³</td>
</tr>
</tbody>
</table>

PAC-2:

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Chemical Name</th>
<th>Concentration</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>7440-53-1</td>
<td>europium</td>
<td>330 mg/m³</td>
</tr>
<tr>
<td>7782-61-8</td>
<td>iron (III) nitrate nonahydrate</td>
<td>110 mg/m³</td>
</tr>
<tr>
<td>7440-74-6</td>
<td>indium</td>
<td>3.3 mg/m³</td>
</tr>
<tr>
<td>7757-79-1</td>
<td>potassium nitrate</td>
<td>100 mg/m³</td>
</tr>
<tr>
<td>13478-00-7</td>
<td>Nitric acid, nickel(2+) salt, hexahydrate</td>
<td>53 mg/m³</td>
</tr>
<tr>
<td>7722-76-1</td>
<td>ammonium dihydrogenorthophosphate</td>
<td>190 mg/m³</td>
</tr>
<tr>
<td>16919-19-0</td>
<td>alkali fluorosilicates (NH4)</td>
<td>130 mg/m³</td>
</tr>
<tr>
<td>7803-55-6</td>
<td>ammonium trioxovanadate</td>
<td>0.11 mg/m³</td>
</tr>
<tr>
<td>1314-36-9</td>
<td>yttrium oxide</td>
<td>43 mg/m³</td>
</tr>
<tr>
<td>10377-66-9</td>
<td>manganese dinitrate</td>
<td>16 mg/m³</td>
</tr>
<tr>
<td>1313-27-5</td>
<td>molybdenum trioxide</td>
<td>43 mg/m³</td>
</tr>
<tr>
<td>7631-99-4</td>
<td>sodium nitrate, containing in the dry state more than 16,3 per cent by weight of nitrogen</td>
<td>45 mg/m³</td>
</tr>
<tr>
<td>12060-08-1</td>
<td>scandium oxide</td>
<td>330 mg/m³</td>
</tr>
</tbody>
</table>
Trade name: Custom Standard

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Compound</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>554-13-2</td>
<td>lithium carbonate</td>
<td>34 mg/m³</td>
</tr>
<tr>
<td>10042-76-9</td>
<td>strontium nitrate</td>
<td>62 mg/m³</td>
</tr>
<tr>
<td>471-34-1</td>
<td>calcium carbonate</td>
<td>210 mg/m³</td>
</tr>
</tbody>
</table>

**PAC-3:**

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Compound</th>
<th>Concentration</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>7440-53-1</td>
<td>europium</td>
<td>2,000 mg/m³</td>
</tr>
<tr>
<td>7782-61-8</td>
<td>iron (III) nitrate nonahydrate</td>
<td>640 mg/m³</td>
</tr>
<tr>
<td>7440-74-6</td>
<td>indium</td>
<td>20 mg/m³</td>
</tr>
<tr>
<td>7757-79-1</td>
<td>potassium nitrate</td>
<td>600 mg/m³</td>
</tr>
<tr>
<td>13478-00-7</td>
<td>Nitric acid, nickel(2+) salt, hexahydrate</td>
<td>320 mg/m³</td>
</tr>
<tr>
<td>7722-76-1</td>
<td>ammonium dihydrogenorthophosphate</td>
<td>1,100 mg/m³</td>
</tr>
<tr>
<td>16919-19-0</td>
<td>alkali fluorosilicates (NH₄)</td>
<td>780 mg/m³</td>
</tr>
<tr>
<td>7803-55-6</td>
<td>ammonium trioxovanadate</td>
<td>80 mg/m³</td>
</tr>
<tr>
<td>1314-36-9</td>
<td>yttrium oxide</td>
<td>260 mg/m³</td>
</tr>
<tr>
<td>10377-66-9</td>
<td>manganese dinitrate</td>
<td>96 mg/m³</td>
</tr>
<tr>
<td>1313-27-5</td>
<td>molybdenum trioxide</td>
<td>260 mg/m³</td>
</tr>
<tr>
<td>7631-99-4</td>
<td>sodium nitrate, containing in the dry state more than 16,3 per cent by weight of nitrogen</td>
<td>270 mg/m³</td>
</tr>
<tr>
<td>12060-08-1</td>
<td>scandium oxide</td>
<td>2,000 mg/m³</td>
</tr>
<tr>
<td>554-13-2</td>
<td>lithium carbonate</td>
<td>210 mg/m³</td>
</tr>
<tr>
<td>10042-76-9</td>
<td>strontium nitrate</td>
<td>370 mg/m³</td>
</tr>
<tr>
<td>471-34-1</td>
<td>calcium carbonate</td>
<td>1,300 mg/m³</td>
</tr>
</tbody>
</table>

### 7 Handling and storage

- **Handling:** No special precautions are necessary if used correctly.
- **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:** 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.
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.
Trade name: Custom Standard

46.0.5

· pH-value: Not determined.

· Change in condition
  Melting point/Melting range: 0 °C (32 °F)
  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 at 20 °C (68 °F): 0.952 mPas
  Kinematic: Not determined.

· Solvent content:
  Water: 97.8 %
  VOC content: 0.00 %
  0.0 g/l / 0.00 lb/gl

· Solids content: 0.1 %

· 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 436 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: 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)
    - 13478-00-7 Nitric acid, nickel(2+) salt, hexahydrate 1
    - 543-81-7 acetic acid beryllium salt 1
  - NTP (National Toxicology Program)
    - 13478-00-7 Nitric acid, nickel(2+) salt, hexahydrate K
    - 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: Generally 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:
  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
    - Label
      - 8 Corrosive substances
      - 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):
  - Warning: Corrosive substances
  - 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

- **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
      - 10031-43-3 cupric nitrate
      - 7782-61-8 iron (III) nitrate nonahydrate
      - 7757-79-1 potassium nitrate
      - 13478-00-7 Nitric acid, nickel(2+) salt, hexahydrate
      - 7803-55-6 ammonium trioxovanadate
      - 10377-66-9 manganese dinitrate
      - 1313-27-5 molybdenum trioxide
      - 543-81-7 acetic acid beryllium salt
      - 554-13-2 lithium carbonate
      - 10042-76-9 strontium nitrate
  - **TSCA (Toxic Substances Control Act):**
    - 7697-37-2 nitric acid
    - 7664-39-3 hydrogen fluoride
    - 7440-53-1 europium
    - 7440-74-6 indium
    - 7757-79-1 potassium nitrate
    - 7722-76-1 ammonium dihydrogenorthophosphate
    - 16919-19-0 alkali fluorosilicates (NH4)
    - 16962-40-6 ammonium hexafluorotitanate
    - 7803-55-6 ammonium trioxovanadate
Trade name: Custom Standard

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Chemical Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1314-36-9</td>
<td>yttrium oxide</td>
</tr>
<tr>
<td>10377-66-9</td>
<td>manganese dinitrate</td>
</tr>
<tr>
<td>1313-27-5</td>
<td>molybdenum trioxide</td>
</tr>
<tr>
<td>7631-99-4</td>
<td>sodium nitrate, containing in the dry state more than 16.3% by weight of nitrogen</td>
</tr>
<tr>
<td>12060-08-1</td>
<td>scandium oxide</td>
</tr>
<tr>
<td>554-13-2</td>
<td>lithium carbonate</td>
</tr>
<tr>
<td>10042-76-9</td>
<td>strontium nitrate</td>
</tr>
<tr>
<td>471-34-1</td>
<td>calcium carbonate</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>water</td>
</tr>
</tbody>
</table>

- **TSCA new (21st Century Act) (Substances not listed)**
- **Proposition 65**
  - Chemicals known to cause cancer:
    - 13478-00-7 Nitric acid, nickel(2+) salt, hexahydrate
    - 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:
    - 554-13-2 lithium carbonate

- **Carcinogenic categories**
  - EPA (Environmental Protection Agency)
  - TLV (Threshold Limit Value established by ACGIH)
  - 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.

---

**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** 12/06/2017 / -

**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 Irrit. 2A: Serious eye damage/eye irritation – Category 2A