# Safety Data Sheet acc. to OSHA HCS

**Printing date 06/22/2017**

**Version Number 1**

**Reviewed on 06/22/2017**

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## 1 Identification

- **Product identifier**
  - **Trade name:** Custom Standard
  - **Part number:** ICUS-3820
- **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

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## 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.

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

- Classification system:
- NFPA ratings (scale 0 - 4)
  - Health = 2
  - Fire = 0
  - Reactivity = 0

- HMIS-ratings (scale 0 - 4)
  - Health = 2
  - 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.
Trade name: Custom Standard

- **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>PAC-1 Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2</td>
<td>nitric acid</td>
<td>0.16 ppm</td>
</tr>
<tr>
<td>7784-27-2</td>
<td>aluminium nitrate</td>
<td>83 mg/m3</td>
</tr>
<tr>
<td>13446-18-9</td>
<td>magnesium nitrate hexahydrate</td>
<td>16 mg/m3</td>
</tr>
<tr>
<td>7664-39-3</td>
<td>hydrogen fluoride</td>
<td>1.0 ppm</td>
</tr>
<tr>
<td>7782-61-8</td>
<td>iron (III) nitrate nonahydrate</td>
<td>22 mg/m3</td>
</tr>
<tr>
<td>16919-19-0</td>
<td>alkali fluorosilicates (NH4)</td>
<td>12 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>10026-22-9</td>
<td>cobalt (II) nitrate hexahydrate</td>
<td>0.3 mg/m3</td>
</tr>
<tr>
<td>10196-18-6</td>
<td>zinc(II) nitrate hexahydrate</td>
<td>27 mg/m3</td>
</tr>
<tr>
<td>7783-20-2</td>
<td>ammonium sulfate</td>
<td>13 mg/m3</td>
</tr>
<tr>
<td>7631-99-4</td>
<td>sodium nitrate, containing in the dry statemore than 16,3 per cent by weight of nitrogen</td>
<td>4.1 mg/m3</td>
</tr>
<tr>
<td>10377-66-9</td>
<td>manganese dinitrate</td>
<td>9.8 mg/m3</td>
</tr>
<tr>
<td>3251-23-8</td>
<td>copper dinitrate</td>
<td>8.9 mg/m3</td>
</tr>
<tr>
<td>10022-68-1</td>
<td>Nitric acid, cadmium salt, tetrahydrate</td>
<td>0.27 mg/m3</td>
</tr>
<tr>
<td>7757-79-1</td>
<td>potassium nitrate</td>
<td>9 mg/m3</td>
</tr>
<tr>
<td>471-34-1</td>
<td>calcium carbonate</td>
<td>45 mg/m3</td>
</tr>
<tr>
<td>13520-83-7</td>
<td>uranyl nitrate, hexahydrate</td>
<td>1.3 mg/m3</td>
</tr>
<tr>
<td>10099-74-8</td>
<td>lead dinitrate</td>
<td>0.24 mg/m3</td>
</tr>
<tr>
<td>1313-27-5</td>
<td>molybdenum trioxide</td>
<td>2.3 mg/m3</td>
</tr>
<tr>
<td>1327-53-3</td>
<td>diarsenic trioxide</td>
<td>0.27 mg/m3</td>
</tr>
</tbody>
</table>

  **PAC-2:**

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Chemical Name</th>
<th>PAC-2 Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2</td>
<td>nitric acid</td>
<td>24 ppm</td>
</tr>
<tr>
<td>7784-27-2</td>
<td>aluminium nitrate</td>
<td>920 mg/m3</td>
</tr>
<tr>
<td>13446-18-9</td>
<td>magnesium nitrate hexahydrate</td>
<td>180 mg/m3</td>
</tr>
<tr>
<td>7664-39-3</td>
<td>hydrogen fluoride</td>
<td>24 ppm</td>
</tr>
<tr>
<td>7782-61-8</td>
<td>iron (III) nitrate nonahydrate</td>
<td>110 mg/m3</td>
</tr>
<tr>
<td>16919-19-0</td>
<td>alkali fluorosilicates (NH4)</td>
<td>130 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>10026-22-9</td>
<td>cobalt (II) nitrate hexahydrate</td>
<td>23 mg/m3</td>
</tr>
<tr>
<td>10196-18-6</td>
<td>zinc(II) nitrate hexahydrate</td>
<td>300 mg/m3</td>
</tr>
<tr>
<td>7783-20-2</td>
<td>ammonium sulfate</td>
<td>140 mg/m3</td>
</tr>
<tr>
<td>7631-99-4</td>
<td>sodium nitrate, containing in the dry statemore than 16,3 per cent by weight of nitrogen</td>
<td>45 mg/m3</td>
</tr>
<tr>
<td>10377-66-9</td>
<td>manganese dinitrate</td>
<td>16 mg/m3</td>
</tr>
<tr>
<td>3251-23-8</td>
<td>copper dinitrate</td>
<td>31 mg/m3</td>
</tr>
<tr>
<td>10022-68-1</td>
<td>Nitric acid, cadmium salt, tetrahydrate</td>
<td>2.1 mg/m3</td>
</tr>
</tbody>
</table>
7 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.
    - **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 Long-term</th>
<th>REL Short-term</th>
<th>TLV Short-term</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2 nitric acid</td>
<td>5 mg/m³, 2 ppm</td>
<td>10 mg/m³, 4 ppm</td>
<td>10 mg/m³, 4 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></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 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.

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.
Trade name: Custom Standard

- **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.
- **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 (17 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:**
  - Organic solvents: 0.0 %
  - Water: 97.0 %
  - VOC content: 0.0 g/l / 0.00 lb/gl
- **Solids content:** 0.9 %
- **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)**
    
    | Mode     | Value     |
    |----------|-----------|
    | Oral LD50 | 1276000 mg/kg (rat) |
    | Dermal LD50 | 5000 mg/kg |
    | Inhalative LC50/4 h | 500 mg/L |

    - **7697-37-2 nitric acid**
      - Inhalative LC50/4 h 67 mg/L (rat)
    - **7664-39-3 hydrogen fluoride**
      - Oral LD50 1276 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)**
    
    | IARC Code | Substance Description |
    |-----------|-----------------------|
    | 1         | Nitric acid, nickel(2+) salt, hexahydrate |
    | 2B        | Cobalt (II) nitrate hexahydrate |
    | 1         | Nitric acid, cadmium salt, tetrahydrate |
    | 2A        | Lead dinitrate |
    | 1         | Diarsenic trioxide |

  - **NTP (National Toxicology Program)**
    
    | Code | Substance Description |
    |------|-----------------------|
    | K    | Nitric acid, nickel(2+) salt, hexahydrate |
    | K    | Nitric acid, cadmium salt, tetrahydrate |
    | R    | Lead dinitrate |
    | K    | Diarsenic trioxide |

  - **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
Trade name: Custom Standard

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.
- 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
  - Warning: Corrosive substances

- Danger code (Kemler):
  - 80

- EMS Number:
  - F-A-S-B

- Segregation groups
  - Acids

- Stowage Category: A
Trade name: Custom Standard

- **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
      - 1327-53-3 diarsenic trioxide
    - **Section 313 (Specific toxic chemical listings)**:
      - 7697-37-2 nitric acid
      - 7784-27-2 aluminium nitrate
      - 13446-18-9 magnesium nitrate hexahydrate
      - 7789-02-8 chromium (III) nitrate nonahydrate
      - 7664-39-3 hydrogen fluoride
      - 7782-61-8 iron (III) nitrate nonahydrate
      - 13478-00-7 Nitric acid, nickel(2+) salt, hexahydrate
      - 10026-22-9 cobalt (II) nitrate hexahydrate
      - 10196-18-6 zinc(II) nitrate hexahydrate
      - 7783-20-2 ammonium sulfate
      - 10377-66-9 manganese dinitrate
      - 3251-23-8 copper dinitrate
      - 10022-68-1 Nitric acid, cadmium salt, tetrahydrate
      - 7757-79-1 potassium nitrate
      - 10099-74-8 lead dinitrate
      - 1313-27-5 molybdenum trioxide
      - 1327-53-3 diarsenic trioxide
  - **TSCA (Toxic Substances Control Act)**:
    - 7697-37-2 nitric acid
## Trade name: Custom Standard

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Chemical Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>7664-39-3</td>
<td>hydrogen fluoride</td>
</tr>
<tr>
<td>16919-19-0</td>
<td>alkali fluorosilicates (NH4)</td>
</tr>
<tr>
<td>7783-20-2</td>
<td>ammonium sulfate</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>
</tr>
<tr>
<td>10377-66-9</td>
<td>manganese dinitrate</td>
</tr>
<tr>
<td>3251-23-8</td>
<td>copper dinitrate</td>
</tr>
<tr>
<td>7757-79-1</td>
<td>potassium nitrate</td>
</tr>
<tr>
<td>471-34-1</td>
<td>calcium carbonate</td>
</tr>
<tr>
<td>10099-74-8</td>
<td>lead dinitrate</td>
</tr>
<tr>
<td>1313-27-5</td>
<td>molybdenum trioxide</td>
</tr>
<tr>
<td>1327-53-3</td>
<td>diarsenic trioxide</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>water</td>
</tr>
</tbody>
</table>

### Proposition 65

- **Chemicals known to cause cancer:**
  - 13478-00-7 Nitric acid, nickel(2+) salt, hexahydrate
  - 10022-68-1 Nitric acid, cadmium salt, tetrahydrate
  - 10099-74-8 lead dinitrate
  - 1327-53-3 diarsenic trioxide

- **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:**
  - 1327-53-3 diarsenic trioxide

### Carcinogenic categories

- **EPA (Environmental Protection Agency)**
  - 10377-66-9 manganese dinitrate D
  - 10099-74-8 lead dinitrate B2
  - 1327-53-3 diarsenic trioxide A

- **TLV (Threshold Limit Value established by ACGIH)**
  - 13520-83-7 uranyl nitrate, hexahydrate A1
  - 10099-74-8 lead dinitrate A3
  - 1327-53-3 diarsenic trioxide A1

- **NIOSH-Ca (National Institute for Occupational Safety and Health)**
  - 13520-83-7 uranyl nitrate, hexahydrate

### 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** 06/22/2017 / -

· **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

* Data compared to the previous version altered.