1 Identification

- **Product identifier**
- **Trade name:** Custom Standard
- **Part number:** ICUS-3390
- **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**
  - GHS08 Health hazard
  - Carc. 1A   H350  May cause cancer.
  - 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
    - GHS08

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  - acetic acid beryllium salt

- **Hazard statements**
  - Causes skin irritation.
  - Causes serious eye irritation.
  - May cause cancer.

- **Precautionary statements**
  - Obtain special instructions before use.
  - Do not handle until all safety precautions have been read and understood.
Wash thoroughly after handling.
Wear protective gloves/protective clothing/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.
IF exposed or concerned: Get medical advice/attention.
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.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

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

HMIS-ratings (scale 0 - 4)
- HEALTH Health = 1
- FIRE Fire = 0
- REACTIVITY 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%
- 543-81-7 acetic acid beryllium salt 0.705%
- 10026-22-9 cobalt (II) nitrate hexahydrate 0.247%

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.
45.2.5 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).
  Dispose contaminated material as waste according to item 13.
  Ensure adequate ventilation.
- 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></th>
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</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2</td>
<td>nitric acid</td>
<td>0.16 ppm</td>
</tr>
<tr>
<td>10026-22-9</td>
<td>cobalt (II) nitrate hexahydrate</td>
<td>0.3 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>7803-55-6</td>
<td>ammonium trioxovanadate</td>
<td>0.01 mg/m³</td>
</tr>
<tr>
<td>13520-83-7</td>
<td>uranyl nitrate, hexahydrate</td>
<td>1.3 mg/m³</td>
</tr>
<tr>
<td>7664-39-3</td>
<td>hydrogen fluoride</td>
<td>1.0 ppm</td>
</tr>
<tr>
<td>87-69-4</td>
<td>(+)-tartaric acid</td>
<td>1.6 mg/m³</td>
</tr>
<tr>
<td>10099-74-8</td>
<td>lead dinitrate</td>
<td>0.24 mg/m³</td>
</tr>
<tr>
<td>7761-88-8</td>
<td>silver nitrate</td>
<td>0.047 mg/m³</td>
</tr>
<tr>
<td>7446-08-4</td>
<td>selenium dioxide</td>
<td>0.84 mg/m³</td>
</tr>
<tr>
<td>7440-36-0</td>
<td>antimony</td>
<td>1.5 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-2:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2</td>
<td>nitric acid</td>
<td>24 ppm</td>
</tr>
<tr>
<td>10026-22-9</td>
<td>cobalt (II) nitrate hexahydrate</td>
<td>23 mg/m³</td>
</tr>
<tr>
<td>10022-68-1</td>
<td>Nitric acid, cadmium salt, tetrahydrate</td>
<td>2.1 mg/m³</td>
</tr>
<tr>
<td>7803-55-6</td>
<td>ammonium trioxovanadate</td>
<td>0.11 mg/m³</td>
</tr>
<tr>
<td>13520-83-7</td>
<td>uranyl nitrate, hexahydrate</td>
<td>7 mg/m³</td>
</tr>
<tr>
<td>7664-39-3</td>
<td>hydrogen fluoride</td>
<td>24 ppm</td>
</tr>
<tr>
<td>87-69-4</td>
<td>(+)-tartaric acid</td>
<td>17 mg/m³</td>
</tr>
<tr>
<td>10099-74-8</td>
<td>lead dinitrate</td>
<td>180 mg/m³</td>
</tr>
<tr>
<td>7761-88-8</td>
<td>silver nitrate</td>
<td>0.9 mg/m³</td>
</tr>
</tbody>
</table>
7 Handling and storage

- **Handling:**
  - Precautions for safe handling: Ensure good ventilation/exhaustion at the workplace.
  - 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:

    The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.

    At this time, the other constituents have no known exposure limits.

    **7697-37-2 nitric acid**

    |   | Value       |
    |---|------------|
    | PEL | Long-term: 5 mg/m³, 2 ppm |
    | REL | Short-term: 10 mg/m³, 4 ppm |
    | TLV | Long-term: 5 mg/m³, 2 ppm |

- **Additional information:** The lists that were valid during the creation were used as basis.
### 45.2.5
Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Store protective clothing separately. Avoid contact with the eyes and skin.

- **Breathing equipment:**
  In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

- **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

<table>
<thead>
<tr>
<th>Information on basic physical and chemical properties</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Information</strong></td>
</tr>
<tr>
<td><strong>Appearance:</strong></td>
</tr>
<tr>
<td>Form: Fluid</td>
</tr>
<tr>
<td>Color: Colorless</td>
</tr>
<tr>
<td>Odor: Odorless</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>
</tbody>
</table>

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

45.2.5

· 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: 96.1 %
  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.
· 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 4,318 mg/kg
  Dermal LD50 5,000 mg/kg
  Inhalative LC50/4 h 227 mg/L
  7697-37-2 nitric acid
  Inhalative LC50/4 h 67 mg/L (rat)
Trade name: Custom Standard

### 45.2.5

**10026-22-9 cobalt (II) nitrate hexahydrate**
- **Oral LD50**: 691 mg/kg (rat)

**10022-68-1 Nitric acid, cadmium salt, tetrahydrate**
- **Oral LD50**: 300 mg/kg (rat)

**7803-55-6 ammonium trioxovanadate**
- **Oral LD50**: 58 mg/kg (rat)
- **Dermal LD50**: 2,102 mg/kg (rat)
- **Inhalative LC50/4 h**: 7.8 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)**
  - 543-81-7 acetic acid beryllium salt: 1
  - 10026-22-9 cobalt (II) nitrate hexahydrate: 2B
  - 10022-68-1 Nitric acid, cadmium salt, tetrahydrate: 1
  - 10099-74-8 lead dinitrate: 2A
  - 7446-08-4 selenium dioxide: 3

- **NTP (National Toxicology Program)**
  - 543-81-7 acetic acid beryllium salt: K
  - 10022-68-1 Nitric acid, cadmium salt, tetrahydrate: K
  - 10099-74-8 lead dinitrate: R

- **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.
  - Danger to drinking water if even small quantities leak into the ground.

- **Results of PBT and vPvB assessment**
  - **PBT**: Not applicable.
  - **vPvB**: Not applicable.
### 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**
  - 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

- **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

<table>
<thead>
<tr>
<th>Transport/Additional information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- <strong>DOT</strong></td>
</tr>
<tr>
<td>- <strong>Quantity limitations</strong></td>
</tr>
<tr>
<td>On passenger aircraft/rail: 5 L</td>
</tr>
<tr>
<td>On cargo aircraft only: 60 L</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IMDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>- <strong>Limited quantities (LQ)</strong></td>
</tr>
<tr>
<td>5L</td>
</tr>
<tr>
<td>- <strong>Excepted quantities (EQ)</strong></td>
</tr>
<tr>
<td>Code: E1</td>
</tr>
<tr>
<td>Maximum net quantity per inner packaging: 30 ml</td>
</tr>
<tr>
<td>Maximum net quantity per outer packaging: 1000 ml</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UN &quot;Model Regulation&quot;:</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID), 8, III</td>
</tr>
</tbody>
</table>

### 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
- 543-81-7 acetic acid beryllium salt
- 10026-22-9 cobalt (II) nitrate hexahydrate
- 10022-68-1 Nitric acid, cadmium salt, tetrahydrate
- 7803-55-6 ammonium trioxovanadate
- 7664-39-3 hydrogen fluoride
- 10099-74-8 lead dinitrate
- 7761-88-8 silver nitrate
- 7446-08-4 selenium dioxide
- 7440-36-0 antimony

#### TSCA (Toxic Substances Control Act):

- 7697-37-2 nitric acid
- 7803-55-6 ammonium trioxovanadate
- 7664-39-3 hydrogen fluoride
- 87-69-4 (+)-tartaric acid
- 10099-74-8 lead dinitrate
- 7761-88-8 silver nitrate
- 7446-08-4 selenium dioxide
- 7440-36-0 antimony
- 7732-18-5 water

#### Proposition 65

- Chemicals known to cause cancer:
  - 543-81-7 acetic acid beryllium salt

(Contd. on page 10)
Trade name: Custom Standard

- 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)
    - 10099-74-8 lead dinitrate B2
    - 7446-08-4 selenium dioxide D
  - TLV (Threshold Limit Value established by ACGIH)
    - 13520-83-7 uranyl nitrate, hexahydrate A1
    - 10099-74-8 lead dinitrate A3
  - 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
  - GHS08

- Signal word
  Danger

- Hazard-determining components of labeling:
  acetic acid beryllium salt

- Hazard statements
  Causes skin irritation.
  Causes serious eye irritation.
  May cause cancer.

- Precautionary statements
  Obtain special instructions before use.
  Do not handle until all safety precautions have been read and understood.
  Wash thoroughly after handling.
  Wear protective gloves/protective clothing/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.
  IF exposed or concerned: Get medical advice/attention.
  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.
  Store locked up.
  Dispose of contents/container in accordance with local/regional/national/international regulations.
Trade name: Custom Standard

(Contd. of page 10)

- National regulations:
  - Additional classification according to Decree on Hazardous Materials:
    Carcinogenic hazardous material group III (dangerous).
  - Information about limitation of use:
    Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation. Exceptions can be made by the authorities in certain cases.
  - 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 08/28/2017 / -
- 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
  Carc. 1A: Carcinogenicity – Category 1A