Section 1: Identification

1.1. Identification

Product form: Mixtures
Product name: Ceric Ammonium Sulfate, 0.1N (0.1M) in Sulfuric Acid, 1.0N
Product code: LC12930

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture: For laboratory and manufacturing use only.
Recommended use: Laboratory chemicals
Restrictions on use: Not for food, drug or household use

1.3. Details of the supplier of the safety data sheet

LabChem Inc
Jackson's Pointe Commerce Park Building 1000, 1010 Jackson's Pointe Court
Zelienople, PA 16063 - USA
T 412-826-5230 - F 724-473-0647
info@labchem.com - www.labchem.com

1.4. Emergency telephone number

Emergency number: CHEMTREC: 1-800-424-9300 or 011-703-527-3887

Section 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification
Skin corrosion/irritation Category 1B H314
Serious eye damage/eye irritation Category 1 H318
Full text of H statements: see section 16

2.2. Label elements

GHS-US labeling
Hazard pictograms (GHS-US):

Signal word (GHS-US): Danger
Hazard statements (GHS-US):
H314 - Causes severe skin burns and eye damage
Precautionary statements (GHS-US):
P260 - Do not breathe mist
P264 - Wash exposed skin thoroughly after handling
P280 - Wear protective gloves, protective clothing, eye protection, face protection
P301+P330+P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P303+P361+P330 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P305+P351+P338 - IF in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a poison center or doctor/physician
P363 - Wash contaminated clothing before reuse
P405 - Store locked up
P501 - Dispose of contents/container to comply with local, state and federal regulations

2.3. Other hazards

Other hazards not contributing to the classification: None under normal conditions.

2.4. Unknown acute toxicity (GHS US)

Not applicable
Ceric Ammonium Sulfate, 0.1N (0.1M) in Sulfuric Acid, 1.0N
Safety Data Sheet

SECTION 3: Composition/Information on ingredients

3.1. Substances
Not applicable

3.2. Mixtures

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>(CAS No) 7732-18-5</td>
<td>91.3</td>
<td>Not classified</td>
</tr>
<tr>
<td>Ceric Ammonium Nitrate</td>
<td>(CAS No) 16774-21-3</td>
<td>5.7</td>
<td>Ox. Sol. 2, H272 Skin Irrit. 2, H315 Eye Irrit. 2A, H319</td>
</tr>
<tr>
<td>Sulfuric Acid</td>
<td>(CAS No) 7664-93-9</td>
<td>3</td>
<td>Skin Corr. 1A, H314 Eye Dam. 1, H318</td>
</tr>
</tbody>
</table>

Full text of hazard classes and H-statements : see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a poison center or doctor/physician.

First-aid measures after skin contact : Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a poison center or doctor/physician.

First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Immediately call a poison center or doctor/physician.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries : Causes severe skin burns and eye damage.
Symptoms/injuries after inhalation : Irritation of the nasal mucous membranes.
Symptoms/injuries after skin contact : Caustic burns/corrosion of the skin.
Symptoms/injuries after eye contact : Causes serious eye damage.

4.3. Indication of any immediate medical attention and special treatment needed

Obtain medical assistance.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Reactivity : Thermal decomposition generates : Corrosive vapors.

5.3. Advice for firefighters

Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment : Equip cleanup crew with proper protection.
Emergency procedures : Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.
Ceric Ammonium Sulfate, 0.1N (0.1M) in Sulfuric Acid, 1.0N
Safety Data Sheet

6.3. Methods and material for containment and cleaning up
Methods for cleaning up: Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

6.4. Reference to other sections
See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Precautions for safe handling: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor. Do not breathe mist.

Hygiene measures: Wash exposed skin thoroughly after handling. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities
Technical measures: Comply with applicable regulations.
Storage conditions: Keep only in the original container in a cool, well ventilated place away from: combustible materials, metals. Keep container closed when not in use.

Incompatible materials: Sources of ignition. Direct sunlight.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Ceric Ammonium Nitrate (16774-21-3)</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid (7664-93-9)</td>
<td></td>
</tr>
<tr>
<td>ACGIH</td>
<td>ACGIH TWA (mg/m³)</td>
</tr>
<tr>
<td>OSHA</td>
<td>OSHA PEL (TWA) (mg/m³)</td>
</tr>
<tr>
<td>IDLH</td>
<td>US IDLH (mg/m³)</td>
</tr>
<tr>
<td>NIOSH</td>
<td>NIOSH REL (TWA) (mg/m³)</td>
</tr>
<tr>
<td>Water (7732-18-5)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

8.2. Exposure controls

Appropriate engineering controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation.

Personal protective equipment: Avoid all unnecessary exposure. Protective clothing. Face shield. Safety glasses.

Hand protection: Wear protective gloves.
Eye protection: Chemical goggles or face shield.
Skin and body protection: Wear suitable protective clothing.
Respiratory protection: Respiratory protection not required in normal conditions.
Other information: Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Physical state</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>orange</td>
</tr>
<tr>
<td>Odor</td>
<td>None.</td>
</tr>
</tbody>
</table>
Odor threshold : No data available
pH : ≤ 1
Melting point : No data available
Freezing point : No data available
Boiling point : No data available
Flash point : No data available
Relative evaporation rate (butyl acetate=1) : No data available
Flammability (solid, gas) : Non flammable.
Vapor pressure : No data available
Relative vapor density at 20 °C : No data available
Relative density : No data available
Solubility : Soluble in water. Soluble in acids.
Log Pow : No data available
Auto-ignition temperature : No data available
Decomposition temperature : No data available
Viscosity, kinematic : No data available
Viscosity, dynamic : No data available
Explosion limits : No data available
Explosive properties : No data available
Oxidizing properties : No data available

9.2. Other information
VOC content : 0 %

SECTION 10: Stability and reactivity

10.1. Reactivity
Thermal decomposition generates : Corrosive vapors.

10.2. Chemical stability
Stable under normal conditions.

10.3. Possibility of hazardous reactions
Not established.

10.4. Conditions to avoid
Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

10.6. Hazardous decomposition products

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Likely routes of exposure : Skin and eye contact
Acute toxicity : Not classified

Sulfuric Acid (7664-93-9)
LD50 oral rat 2140 mg/kg body weight (Rat; Experimental value)

Water (7732-18-5)
LD50 oral rat ≥ 90000 mg/kg
ATE US (oral) 90000.000 mg/kg body weight
Skin corrosion/irritation : Causes severe skin burns and eye damage.
pH: ≤ 1
Serious eye damage/irritation : Causes serious eye damage.
pH: ≤ 1
## Ceric Ammonium Sulfate, 0.1N (0.1M) in Sulfuric Acid, 1.0N Safety Data Sheet

### Respiratory or skin sensitization : Not classified

### Germ cell mutagenicity : Not classified

### Carcinogenicity : Not classified

### Sulfuric Acid (7664-93-9)

<table>
<thead>
<tr>
<th>Additional information</th>
<th>Strong inorganic acid mists containing sulfuric acid are carcinogenic to humans</th>
</tr>
</thead>
<tbody>
<tr>
<td>IARC group</td>
<td>1 - Carcinogenic to humans</td>
</tr>
<tr>
<td>National Toxicology Program (NTP) Status</td>
<td>2 - Known Human Carcinogens</td>
</tr>
</tbody>
</table>

### Reproductive toxicity : Not classified

### Specific target organ toxicity – single exposure : Not classified

### Specific target organ toxicity – repeated exposure : Not classified

### Aspiration hazard : Not classified

### Potential Adverse human health effects and symptoms : Based on available data, the classification criteria are not met.

#### Symptoms/injuries after inhalation : Irritation of the nasal mucous membranes.

#### Symptoms/injuries after skin contact : Caustic burns/corrosion of the skin.

#### Symptoms/injuries after eye contact : Causes serious eye damage.


## SECTION 12: Ecological information

### 12.1. Toxicity

<table>
<thead>
<tr>
<th>Sulfuric Acid (7664-93-9)</th>
<th>42 mg/l (LC50; 96 h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC50 Daphnia 1</td>
<td>29 mg/l (EC50; 24 h)</td>
</tr>
</tbody>
</table>

### 12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>Ceric Ammonium Sulfate, 0.1N (0.1M) in Sulfuric Acid, 1.0N</th>
<th>Persistence and degradability</th>
<th>Not established.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceric Ammonium Nitrate (16774-21-3)</td>
<td>Persistence and degradability</td>
<td>Not established.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sulfuric Acid (7664-93-9)</th>
<th>Persistence and degradability</th>
<th>Biodegradability: not applicable.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Biochemical oxygen demand (BOD)</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td>Chemical oxygen demand (COD)</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td>ThOD</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

| Water (7732-18-5)         | Persistence and degradability | Not established.                 |

### 12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Ceric Ammonium Sulfate, 0.1N (0.1M) in Sulfuric Acid, 1.0N</th>
<th>Bioaccumulative potential</th>
<th>Not established.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceric Ammonium Nitrate (16774-21-3)</td>
<td>Bioaccumulative potential</td>
<td>Not established.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sulfuric Acid (7664-93-9)</th>
<th>Log Pow</th>
<th>-2.2 (Estimated value)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bioaccumulative potential</td>
<td>Bioaccumulation: not applicable.</td>
</tr>
</tbody>
</table>

| Water (7732-18-5)         | Bioaccumulative potential | Not established.                 |

### 12.4. Mobility in soil

No additional information available
12.5. Other adverse effects

Effect on the global warming : No known effects from this product.

GWPmix comment : No known effects from this product.

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to comply with local, state and federal regulations.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN2796 Sulfuric acid, 8, II

UN-No.(DOT) : 2796

Proper Shipping Name (DOT) : Sulfuric acid

Transport hazard class(es) (DOT) : 8 - Class 8 - Corrosive material 49 CFR 173.136

Packing group (DOT) : II - Medium Danger

Hazard labels (DOT) : 8 - Corrosive

DOT Packaging Non Bulk (49 CFR 173.xxx) : 202

DOT Packaging Bulk (49 CFR 173.xxx) : 242

DOT Special Provisions (49 CFR 172.102) : A3 - For combination packaging, if glass inner packaging (including ampoules) are used, they must be packed with absorbent material in tightly closed metal receptacles before packing in outer packaging.

A7 - Steel packaging must be corrosion-resistant or have protection against corrosion.

B2 - MC 300, MC 301, MC 302, MC 303, MC 305, and MC 306 and DOT 406 cargo tanks are not authorized.

IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized.

N6 - Battery fluid packaged with electric storage batteries, wet or dry, must conform to the packaging provisions of 173.159 (g) or (h) of this subchapter.

N34 - Aluminum construction materials are not authorized for any part of a packaging which is normally in contact with the hazardous material.

T8 - 4 178.274(d)(2) Normal............. Prohibited

TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: (image) Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and a is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: (image) Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively.

TP12 - This material is considered highly corrosive to steel.

DOT Packaging Exceptions (49 CFR 173.xxx) : 154

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 1 L

DOT Quantity Limitations Cargo aircraft only (49 CFR 173.75) : 30 L
Ceric Ammonium Sulfate, 0.1N (0.1M) in Sulfuric Acid, 1.0N
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DOT Vessel Stowage Location: B
- (i) The material may be stowed “on deck” or “under deck” on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) “On deck only” on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.

Other information: No supplementary information available.

SECTION 15: Regulatory information

15.1. US Federal regulations

<table>
<thead>
<tr>
<th>Ceric Ammonium Sulfate, 0.1N (0.1M) in Sulfuric Acid, 1.0N</th>
<th>Immediate (acute) health hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>SARA Section 311/312 Hazard Classes</td>
<td>Immediate (acute) health hazard</td>
</tr>
<tr>
<td>All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory</td>
<td></td>
</tr>
<tr>
<td>Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ceric Ammonium Nitrate (16774-21-3)</th>
<th>Immediate (acute) health hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>SARA Section 311/312 Hazard Classes</td>
<td>Reactive hazard</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sulfuric Acid (7664-93-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ (Reportable quantity, section 304 of EPA's List of Lists)</td>
</tr>
<tr>
<td>SARA Section 302 Threshold Planning Quantity (TPQ)</td>
</tr>
<tr>
<td>SARA Section 311/312 Hazard Classes</td>
</tr>
</tbody>
</table>

15.2. International regulations

CANADA

<table>
<thead>
<tr>
<th>Ceric Ammonium Sulfate, 0.1N (0.1M) in Sulfuric Acid, 1.0N</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHMIS Classification</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ceric Ammonium Nitrate (16774-21-3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHMIS Classification</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sulfuric Acid (7664-93-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHMIS Classification</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Water (7732-18-5)

| WHMIS Classification | Uncontrolled product according to WHMIS classification criteria |

EU-Regulations

No additional information available

National regulations

<table>
<thead>
<tr>
<th>Ceric Ammonium Nitrate (16774-21-3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not listed on the Canadian IDL (Ingredient Disclosure List)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sulfuric Acid (7664-93-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed on IARC (International Agency for Research on Cancer)</td>
</tr>
<tr>
<td>Listed as carcinogen on NTP (National Toxicology Program)</td>
</tr>
</tbody>
</table>

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm
Ceric Ammonium Sulfate, 0.1N (0.1M) in Sulfuric Acid, 1.0N
Safety Data Sheet

SECTION 16: Other information

Revision date : 03/14/2017
Other information : None.

Full text of H-phrases: see section 16:

<table>
<thead>
<tr>
<th>H272</th>
<th>May intensify fire; oxidizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>H314</td>
<td>Causes severe skin burns and eye damage</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation</td>
</tr>
<tr>
<td>H318</td>
<td>Causes serious eye damage</td>
</tr>
<tr>
<td>H319</td>
<td>Causes serious eye irritation</td>
</tr>
</tbody>
</table>

NFPA health hazard : 3 - Materials that, under emergency conditions, can cause serious or permanent injury.

NFPA fire hazard : 0 - Materials that will not burn under typical dire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity : 1 - Materials that in themselves are normally stable but can become unstable at elevated temperatures and pressures.

HMIS III Rating
Health : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given
Flammability : 0 Minimal Hazard - Materials that will not burn
Physical : 1 Slight Hazard - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

Personal protection : H
   H - Splash goggles, Gloves, Synthetic apron, Vapor respirator

SDS US LabChem

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