SECTION 1: Identification

1.1. Identification

Product form: Mixture
Product name: Ferric Nitrate Solution, for Chloride
Product code: LC14420

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

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
- Specific target organ toxicity (single exposure) Category 3 : H335

Full text of H statements: see section 16

2.2. Label elements

GHS-US labeling
- 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, vapors, spray
  - P264 - Wash exposed skin thoroughly after handling
  - P271 - Use only outdoors or in a well-ventilated area
  - P280 - Wear protective gloves, protective clothing, eye protection, face protection
  - P301+P330+P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
  - P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
  - P304+P340 - IF INHALED: Remove person to fresh air and keep 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
  - P403+P233 - Store in a well-ventilated place. Keep container tightly closed
  - 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
SECTION 3: Composition/Information on ingredients

3.1. Substance
Not applicable

3.2. Mixture

<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>77.7</td>
<td>Not classified</td>
</tr>
<tr>
<td>Ferric Nitrate, Nonahydrate</td>
<td>(CAS No) 7782-61-8</td>
<td>20.2</td>
<td>Ox. Sol. 3, H272 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335</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 : May cause respiratory irritation.
Symptoms/injuries after skin contact : Caustic burns/corrosion of the skin.
Symptoms/injuries after eye contact : Causes serious eye damage.
Symptoms/injuries after ingestion : Burns.

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 : 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.

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, vapors, spray. Use only outdoors or in a well-ventilated area.

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: Protect from sunlight. Keep container tightly closed.
Incompatible materials: Sources of ignition. Direct sunlight.

SECTION 8: Exposure controls/personal protection
8.1. Control parameters

<table>
<thead>
<tr>
<th>Substance</th>
<th>ACGIH TWA (mg/m³)</th>
<th>NIOSH REL (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferric Nitrate, Nonahydrate</td>
<td>1 mg/m³ as Fe</td>
<td></td>
</tr>
<tr>
<td>Nitric Acid, 70% w/w</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACGIH TWA (ppm)</td>
<td>2 ppm</td>
<td></td>
</tr>
<tr>
<td>ACGIH STEL (ppm)</td>
<td>4 ppm</td>
<td></td>
</tr>
<tr>
<td>OSHA PEL (TWA) (mg/m³)</td>
<td>5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>OSHA PEL (TWA) (ppm)</td>
<td>2 ppm</td>
<td></td>
</tr>
<tr>
<td>US IDLH (ppm)</td>
<td>25 ppm</td>
<td></td>
</tr>
<tr>
<td>NIOSH REL (mg/m³)</td>
<td>5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>NIOSH REL (TWA) (mg/m³)</td>
<td>2 ppm</td>
<td></td>
</tr>
<tr>
<td>NIOSH REL (STEL) (mg/m³)</td>
<td>10 mg/m³</td>
<td></td>
</tr>
<tr>
<td>NIOSH REL (STEL) (ppm)</td>
<td>4 ppm</td>
<td></td>
</tr>
</tbody>
</table>

Water (7732-18-5)
Not applicable

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.

Hand protection: Wear protective gloves.
Eye protection: Chemical goggles or face shield.
Skin and body protection: Wear suitable protective clothing.
Respiratory protection: Wear appropriate mask.
Other information: Do not eat, drink or smoke during use.
**SECTION 9: Physical and chemical properties**

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

**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**

Nitrogen oxides. Thermal decomposition generates: Corrosive vapors.

**SECTION 11: Toxicological information**

**11.1. Information on toxicological effects**

<table>
<thead>
<tr>
<th>Route of exposure</th>
<th>Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin and eye contact</td>
<td>Not classified</td>
</tr>
<tr>
<td>LD50 oral rat</td>
<td>3250 mg/kg</td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>3250.000 mg/kg body weight</td>
</tr>
</tbody>
</table>
**Ferric Nitrate Solution, for Chloride**

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<table>
<thead>
<tr>
<th>Water (7732-18-5)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>≥ 90000 mg/kg</td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>90000.000 mg/kg body weight</td>
</tr>
</tbody>
</table>

- Skin corrosion/irritation: Causes severe skin burns and eye damage.
- Serious eye damage/irritation: Causes serious eye damage.
- Respiratory or skin sensitization: Not classified
- Germ cell mutagenicity: Not classified
- Carcinogenicity: Not classified
- Reproductive toxicity: Not classified
- Specific target organ toxicity (single exposure): May cause respiratory irritation.
- 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**: May cause respiratory irritation.

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

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

**Symptoms/injuries after ingestion**: Burns.

**SECTION 12: Ecological information**

12.1. **Toxicity**

**Nitric Acid, 70% w/w (7697-37-2)**

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC50 Daphnia 1</td>
<td>180 mg/l (EC50; 48 h)</td>
</tr>
<tr>
<td>LC50 fish 2</td>
<td>72 ppm (LC50; 96 h)</td>
</tr>
<tr>
<td>Threshold limit algae 1</td>
<td>&gt; 19 mg/l (EC0)</td>
</tr>
</tbody>
</table>

12.2. **Persistence and degradability**

**Ferric Nitrate Solution, for Chloride**

 Persistence and degradability: Not established.

**Ferric Nitrate, Nonahydrate (7782-61-8)**

 Persistence and degradability: Not established.

**Nitric Acid, 70% w/w (7697-37-2)**

 Persistence and degradability: Biodegradability: not applicable. No test data on mobility of the components available.

 Biochemical oxygen demand (BOD): Not applicable

 Chemical oxygen demand (COD): Not applicable

 ThOD: Not applicable

**Water (7732-18-5)**

 Persistence and degradability: Not established.

12.3. **Bioaccumulative potential**

**Ferric Nitrate Solution, for Chloride**

 Bioaccumulative potential: Not established.

**Ferric Nitrate, Nonahydrate (7782-61-8)**

 Bioaccumulative potential: Not established.

**Nitric Acid, 70% w/w (7697-37-2)**

 BCF fish 1: ≤ 1 (BCF)

 Log Pow: -2.3 (OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method)

 Bioaccumulative potential: Bioaccumulation: not applicable.
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 : UN3264 Corrosive liquid, acidic, inorganic, n.o.s., 8, II
UN-No.(DOT) : UN3264
Proper Shipping Name (DOT) : Corrosive liquid, acidic, inorganic, n.o.s.
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 Symbols : G - Identifies PSN requiring a technical name
DOT Special Provisions (49 CFR 172.102) : 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 (31H21). 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
                      T11 - 6 178.274(d)(2) Normal............. 178.275(d)(3)
                      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
                      TP27 - A portable tank having a minimum test pressure of 4 bar (400 kPa) may be used provided the calculated test pressure is 4 bar or less based on the MAWP of the hazardous material, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP

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 175.75) : 30 L
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

DOT Vessel Stowage Other: 40 - Stow “clear of living quarters”

Other information: No supplementary information available.

TDG

Transport by sea

UN-No. (IMDG): 3264
Proper Shipping Name (IMDG): CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
Class (IMDG): 8 - Corrosive substances
Packing group (IMDG): II - substances presenting medium danger
Limited quantities (IMDG): 1 L

Air transport

SECTION 15: Regulatory information

15.1. US Federal regulations

Ferric Nitrate Solution, for Chloride
SARA Section 311/312 Hazard Classes: Immediate (acute) health hazard

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.

Nitric Acid, 70% w/w: CAS No 7697-37-2 2.1%

Ferric Nitrate, Nonahydrate (7782-61-8)

Not listed on the United States TSCA (Toxic Substances Control Act) inventory

SARA Section 311/312 Hazard Classes: Reactive hazard

Nitric Acid, 70% w/w (7697-37-2)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

RQ (Reportable quantity, section 304 of EPA’s List of Lists): 1000 lb

SARA Section 302 Threshold Planning Quantity (TPQ): 1000 lb

SARA Section 311/312 Hazard Classes: Immediate (acute) health hazard

Water (7732-18-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

Ferric Nitrate Solution, for Chloride
WHMIS Classification: Class E - Corrosive Material

Ferric Nitrate, Nonahydrate (7782-61-8)

Not listed on the Canadian DSL (Domestic Substances List)

WHMIS Classification: Class C - Oxidizing Material
Class D Division 2 Subdivision B - Toxic material causing other toxic effects

Nitric Acid, 70% w/w (7697-37-2)

WHMIS Classification: Class E - Corrosive Material
Class C - Oxidizing Material
Ferric Nitrate Solution, for Chloride
Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<table>
<thead>
<tr>
<th>Component</th>
<th>WHMIS Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water (7732-18-5)</td>
<td>Uncontrolled product according to WHMIS classification criteria</td>
</tr>
</tbody>
</table>

Software: WHOIS 2100

EU-Regulations
No additional information available

National regulations

<table>
<thead>
<tr>
<th>Unique Identifier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferric Nitrate, Nonahydrate (7782-61-8)</td>
<td>Listed on the Canadian IDL (Ingredient Disclosure List)</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

SECTION 16: Other information
Revision date : 07/08/2016
Other information : None.

Full text of H-phrases: see section 16:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H272</td>
<td>May intensify fire; oxidizer</td>
</tr>
<tr>
<td>H290</td>
<td>May be corrosive to metals</td>
</tr>
<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>
<tr>
<td>H335</td>
<td>May cause respiratory irritation</td>
</tr>
</tbody>
</table>

NFPA health hazard : 3 - Short exposure could cause serious temporary or residual injury even though prompt medical attention was given.

NFPA fire hazard : 0 - Materials that will not burn.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.

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 : 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

Personal protection : C
C - Safety glasses, Gloves, Synthetic apron

SDS US LabChem
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