Section 1 – Identification

Product: Urea Ammonium Nitrate Solution (32 UAN, UAN Fertilizer Solution)
Recommended Use:
Used in nitrogen fertilizer.

Section 2 – Hazard Identification

Hazard: Product is not hazardous under normal conditions.

Section 3 – Composition

Ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
<th>Percent by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium Nitrate (NH₄NO₃)</td>
<td>6484-52-2</td>
<td>45.7%</td>
</tr>
<tr>
<td>Urea (CO(NH₂)₂)</td>
<td>57-13-6</td>
<td>34.9%</td>
</tr>
<tr>
<td>Water (H₂O)</td>
<td>7732-18-5</td>
<td>19.4%</td>
</tr>
</tbody>
</table>

Section 4 – First Aid Measures

Inhalation: If inhaled: Remove person to fresh air and keep comfortable for breathing. Provide artificial respiration if necessary. Seek medical attention if necessary.

Skin Contact: If on skin (or hair): Take off all contaminated clothing. Rinse skin with soap and water for at least 15 minutes.

Eye Contact: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing for at least 15 minutes. Seek medical attention if irritation persists.

Ingestion: If swallowed: Do NOT induce vomiting. Drink large amounts of water. Never give anything by mouth to an unconscious person. Seek medical attention.

Acute Health Hazards: High levels of nitrates may reduce the blood's ability to transport oxygen causing headache, fatigue, dizziness and blue lips and skin (methemoglobinemia).

Chronic Health Hazards: Methemoglobinemia is the primary health effect, but possible excessive action of the kidneys and perhaps bowels can occur.

Section 5 – Fire Fighting Measures

Suitable Extinguishing Techniques & Equipment: UAN is non-flammable aqueous solution. Use extinguishing media suitable for surrounding material.

Chemical Hazards From Fire: If product evaporates, residual solid can be explosive. In a fire, carbon oxides, nitrogen oxides and ammonia may be present.

Special Fire Fighting Procedures: Use extinguishing agent most appropriate to surrounding materials. Keep material wet to prevent nitrate salts from forming as they can support combustion or become explosive.

NFPA Rating: Health - 1 (Slight), Fire - 0 (Least), Reactivity - 0 (Least)

Section 6 – Accidental Release Measure

Personal Precautions: Avoid splashing. Prevent exposure to spilled material with the use of proper PPE.

Protective Equipment: PPE should include gloves, goggles, face shield and level C protective suit.

Containment: Control the flow of product using dikes of soil, sand bags or other commercially available inert sorbent socks or booms.

In Case of Spill: Absorb product with inert absorbent. Avoid splashing or spraying. Contain and pick up spill in diked area. Prevent discharge to sewers or water ways. If uncontaminated, recover and re-use.
Section 7 – Safe Handling and Storage

**Precautions for Safe Handling and Storage**
Store in a well ventilated cool dry place.

**Incompatibility**
Avoid contact with readily oxidizable materials, strong acids and chlorates. Contact with alkaline materials will produce ammonia. Will corrode copper and brass.

**Corrosion Inhibitor**
Urea Ammonium Nitrate contains a corrosion inhibitor to reduce the corrosion rate of carbon steel under normal conditions.

Section 8 – Exposure Controls / Personal Protection

<table>
<thead>
<tr>
<th>Component</th>
<th>Permissible Exposure Limit</th>
<th>Threshold Limit Value</th>
<th>Short Term Exposure Limit</th>
<th>Immediately Dangerous to Life or Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea Ammonium Nitrate</td>
<td>Not Established</td>
<td>Not Established</td>
<td>Not Established</td>
<td>Not Established</td>
</tr>
<tr>
<td>Urea (CO(NH₂)₂)</td>
<td>Not Established</td>
<td>Not Established</td>
<td>Not Established</td>
<td>Not Established</td>
</tr>
<tr>
<td>Ammonium Nitrate (NH₄NO₃)</td>
<td>Not Established</td>
<td>Not Established</td>
<td>Not Established</td>
<td>Not Established</td>
</tr>
<tr>
<td>Water (H₂O)</td>
<td>Not Established</td>
<td>Not Established</td>
<td>Not Established</td>
<td>Not Established</td>
</tr>
</tbody>
</table>

**Engineering Controls**
Local or general exhaust. Eyewash facilities should be available.

**Personal Protective Equipment**
Eyes - Chemical safety goggles or safety glasses.
Hands - Impervious gloves
Respiratory - None required under normal conditions. NIOSH approved respirator if there is a mist of the product.

Section 9 – Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance and Odor</td>
<td>Colorless liquid may have a slight ammonia odor.</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>&gt; 212°F at 1 atmosphere</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>0.06 psia @ 60°F</td>
</tr>
<tr>
<td>Nitrogen per Gallon</td>
<td>3.54 pounds @ 60°F (0.42 kg/L @ 15.5°C)</td>
</tr>
<tr>
<td>Gallons per Ton</td>
<td>180.8 (0.754 L/kg)</td>
</tr>
<tr>
<td>Weight per gallon</td>
<td>11.06 lbs/gal at 60°F (1.325 kg/L @ 15.5°C)</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>Miscible in water</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.326 @ 60°F (15.5°C)</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>N/A</td>
</tr>
<tr>
<td>Water Reactive</td>
<td>N/A</td>
</tr>
<tr>
<td>Evaporative Rate</td>
<td>N/A</td>
</tr>
<tr>
<td>pH</td>
<td>6.3 - 7.8</td>
</tr>
<tr>
<td>Salt-Out Temp</td>
<td>32°F (0°C)</td>
</tr>
</tbody>
</table>

Section 10 – Stability and Reactivity

**Reactivity**
Product is not reactive under normal conditions.

**Stability**
Product is stable under normal conditions.

**Hazardous Reactions**
Hazardous polymerization will not occur.

**Conditions to Avoid**
Do not allow product to evaporate to dryness. Elevated temperatures may cause container to rupture. Avoid contact with organics, strong acids and strong oxidizers.

**Incompatible Materials**
Avoid contact with readily oxidizable materials, strong acids and chlorates. Contact with alkaline materials will produce ammonia. Will corrode copper and brass.

**Hazardous Decomposition Products**
If product evaporates, residual solid (Ammonium) can be explosive. In a fire, carbon oxides, nitrogen oxides and ammonia may be present.

Section 11 – Toxicology Information

**Routes of Exposure**
Inhalation, ingestion or skin/eye absorption
Section 11 – Toxicology Information Continued

Symptoms and Signs of Exposure
Eyes & Skin: mild irritant.
Inhalation: mist may irritate respiratory tract.
Ingestion: can cause methemoglobinemia and excessive use of the kidneys and possibly bowels.

Long Term Effects
Methemoglobinemia is the primary health effect, but possible excessive action of the kidneys and perhaps bowels can occur.

Toxicity
RAT Oral LD50 >2,000 mg/kg

Carcinogen
The International Agency for Research on Cancer has not classified urea for its carcinogenic potential (IARC 1987).

Section 12 – Ecological Information

Water
Low concentrations are not toxic to fish or other aquatic organisms. High concentrations may encourage excessive algae growth.

Section 13 – Disposal Considerations

Waste
Urea Ammonium Nitrate is not considered a hazardous waste. Disposal must be done in accordance with local, state and federal environmental regulations. Place waste in an appropriate container with correct labeling.

Section 14 – Transport Information

Shipping
Urea Ammonium Nitrate is not hazardous as defined by 49 CFR 172.101 by the US Department of Transportation.

Section 15 – Regulatory Information

United States - SARA Hazard Category
This product has been reviewed according to the EPA Hazard Categories promulgated under Sections 311 and 312 of Title III of the Superfund Amendments and Reauthorization Act (SARA) and is considered, under applicable definitions, to meet the following categories:

<table>
<thead>
<tr>
<th>Fire</th>
<th>Pressure</th>
<th>Reactive</th>
<th>Acute</th>
<th>Chronic</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

SARA Title III Information
This product contains the following substances subject to the reporting requirements of Title III (EPCRA) of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS No.</th>
<th>CERCLA RQ (pounds)</th>
<th>SARA Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea Ammonium Nitrate</td>
<td>15978-77-5</td>
<td>N/A</td>
<td>302 304 313</td>
</tr>
<tr>
<td>Ammonium Nitrate</td>
<td>6484-52-2</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Urea</td>
<td>57-13-6</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

(1) As nitrate compounds (water dissociable)

CERCLA / Superfund, 40 CFR Part 117, 302
If this product contains components subject to substances designated as CERCLA reportable Quantity (RQ) Substances, it will be designated in the above table with the RQ value in pounds. If there is a release of RQ Substance to the environment, notification to the National Response Center, Washington DC (800-424-8802) is required.

TSCA
Urea Ammonium Nitrate is not on the TSCA inventory list.

Section 16 – Other Information

Date of Revision

Disclaimer
The information contained in this SDS refers only to the specific material designated and does not relate to any process or use with any other materials. This information is furnished free of charge and is based on data believed to be accurate and reliable as of the date hereof. It is intended for use by persons possessing technical knowledge at their own discretion and risk. Since actual use is beyond our control, no warranty, expressed or implied, and no liability is assumed by TradeMark Nitrogen Corp. in conjunction with the use of this information. Nothing herein is to be construed as a recommendation to infringe any patents. TradeMark Nitrogen Corp. assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

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