SECTION I - PRODUCT IDENTIFICATION

Trade Name: DYNO NAL  
Chemical Name: Ammonium Nitrate, \( \text{NH}_4\text{NO}_3 \)

Synonyms: Strong Ammonium Nitrate Solution, AN Solution, AN Liquor, Nitrate of Ammonia Liquor (NAL)


DOT Hazard Shipping Description: Hazard labeling needed if 35% or less water.

Ammonium Nitrate, Liquid 5.1 UN2426

NOTE: If shipped at or above 100°C, the word "HOT" must precede the proper shipping name on shipping papers. An exemption from DOT must be obtained to ship at a temperature exceeding 240°F (116°C).

Label: Oxidizer

NFPA Hazard Classification  
Health (Blue) = 3
Flammability (Red) = 0
Reactivity (Yellow) = 3
Specific Hazard (White) = Oxidizer

HMIS Classification: 
Health 3
Flammability 0
Reactivity 3
PPE D

SECTION II - HAZARDOUS INGREDIENTS

Ingredients:  
CAS#  % (Range)  ACGIH-TLV  OSHA-PEL
Ammonium Nitrate  6484-52-2  80 – 90%  Not Established  Not Established

Ingredients, other than those mentioned above, as used in this product are not hazardous as defined under current Department of Labor regulations.

SECTION III - PHYSICAL DATA

Boiling Point: 128 – 146°C (263 – 295°F)  
Vapor Pressure: 182 mm Hg (85% AN @ 200°F)

Melting Point: 85% AN solidifies below 75°C  
Density: 1.33 – 1.42 g/cc

Percent Volatile by Volume: 10 – 20% (Water)  
Solubility in Water: 192 g (dry) / 100 ml @ 20°C

Evaporation Rate (Butyl Acetate = 1): Not Applicable
SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not Applicable
Flammable Limits: Not Applicable

Extinguishing Media: Water

Special Fire Fighting Procedures: Use large quantities of water to cool. Minimize confinement, providing as much ventilation as possible. If yellow or brown gas/vapors are present, wear a self-contained breathing apparatus. Fight small fires only in initial stages when not confined in containers. In advanced stage or for any large fire or fire engulfing confining containers, abandon fire-fighting efforts and evacuate personnel to a safe distance of at least 2,500 feet.

Unusual Fire and Explosion Hazards: Dry material may decompose explosively under confinement and high temperature. Presence of organic materials may lower decomposition temperature. Emits toxic vapors when heated to decomposition temperature.

SECTION V - HEALTH HAZARD DATA

Effects of Overexposure
Not found to be toxic by oral, dermal and inhalation exposure as defined by OSHA.

Eyes: May cause irritation, redness and tearing.

Skin: Contact with hot solution will cause thermal burns.

Ingestion: Large amounts are harmful if swallowed. Can cause abdominal spasms, nausea and pain.

Inhalation: May cause dizziness, nausea or intestinal upset and may aggravate lung conditions.

Systemic or Other Effects: Decomposition of AN solution at high temperatures produces highly toxic Nitrogen Oxides ($\text{NO}_x$). Chronic exposure to $\text{NO}_x$ can produce respiratory and/or kidney damage.

Emergency and First Aid Procedures

Eyes: Irrigate with running water for at least fifteen minutes. If irritation persists, seek medical attention.

Skin: Remove contaminated clothing. Flush area with copious amounts of water and treat as appropriate for thermal burns.

Ingestion: Seek medical attention.

Inhalation: Remove to fresh air, seek medical attention.

Special Considerations: If an exposure to toxic $\text{NO}_x$ vapors occurs, restore or support breathing as necessary, seek medical attention. Observe for delayed reactions to $\text{NO}_x$ exposure that may involve pulmonary edema.

SECTION VI - REACTIVITY DATA

Stability: Stable under normal conditions.

Conditions to Avoid: Keep away from excessive heat, flame and ignition sources.

Materials to Avoid (Incompatibility): Flammable liquids, organic materials, metal powders, explosives and other combustible materials. Corrosives (strong acids and strong bases).

Hazardous Decomposition Products: Nitrogen Oxides ($\text{NO}_x$), Ammonia ($\text{NH}_3$), Nitric Acid ($\text{HNO}_3$).

Hazardous Polymerization: Does not occur.
SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be taken in Case Material is Released or Spilled: Evacuate unnecessary personnel. Dike and contain spill. Notify authorities in accordance with emergency response procedures. Only personnel trained in emergency response should respond. Follow applicable federal, state, and local spill reporting requirements. Contact of this product with water may result in a reportable release.

Waste Disposal Method: Disposal must comply with Federal, State and local regulations. Ammonium Nitrate is used as a fertilizer and, in some cases, recovered material may be put to beneficial use. If product becomes a waste, it is potentially regulated as a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR, part 261. Review disposal requirements with a person knowledgeable with applicable environmental law (RCRA) before disposing of any hazardous material.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Ventilation: General room ventilation is normally adequate.

Respiratory Protection: None normally required.

Protective Clothing: Chemical resistant gloves and work clothing that reduce skin contact are recommended.

Eye Protection: Safety glasses with side shields and/or face shield. Eye baths should be provided when direct eye contact is likely.

Other Precautions Required: Ammonium Nitrate solution is normally handled at temperatures exceeding 176°F (80°C). Personal protective equipment should always reflect a thermal burn hazard.

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storage: Keep separate from other chemicals and combustible material.

Other Precautions: AN solution is normally handled at 176°F (80°C) or above. AN is corrosive to carbon steel and some other materials. Stainless steel or aluminum is preferred construction. Avoid mixing with basic materials that cause evolution of ammonia vapors.

SECTION X - SPECIAL INFORMATION

This product contains the following substances that are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>% By Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrate Compounds</td>
<td>N511</td>
<td>62 – 70%</td>
</tr>
<tr>
<td>(Water dissociable reportable only when in aqueous solution)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ammonia</td>
<td>7664-41-7</td>
<td>17 – 19%</td>
</tr>
<tr>
<td>(Aqueous from dissociable salts)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Slightly toxic to aquatic organisms as defined by USEPA.

DYNO NOBEL INC. Disclaimer

The information contained herein is provided for reference purposes only and is intended only for persons having relevant technical skills. Because conditions and manner of use are outside of our control, the user is responsible for determining the conditions of safe use of the product. While the information is believed to be correct, DYNO NOBEL INC. shall in no event be responsible for any damages whatsoever, directly or indirectly, resulting from the publication or use of or reliance upon the information contained herein.
(No warranty, either expressed or implied, of merchantability or fitness for a particular purpose, or of any nature with respect to the product, or to the information, is made herein.)