

# Safety Data Sheet

## SECTION 1 – IDENTIFICATION

### Name, Address, and Telephone of the Responsible Party

Dyno Nobel Inc.

2795 East Cottonwood Parkway, Suite 500

Salt Lake City, Utah 84121

Phone: 801-364-4800 Fax 801-321-6703

E-Mail: [dna.hse@am.dynonobel.com](mailto:dna.hse@am.dynonobel.com) [www.dynonobel.com](http://www.dynonobel.com)

SDS #: 1021

Date: 10/12/2018

Supersedes: 05/15/2015

### Product Identifier

#### Product Name:

Ammonium Nitrate Liquor, 83%

DYNO NAL

### Other Means of Identification

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

### Intended Use of the Product

Used in the manufacture of UAN and AN Prill

### Emergency Telephone Number

FOR 24 HOUR **EMERGENCY**, CALL CHEMTREC (USA) 800-424-9300

CANUTEC (CANADA) 613-996-6666

## SECTION 2 – HAZARD(S) IDENTIFICATION

### Classification of the Substance or Mixture

#### Classification (GHS-US)

Ox. Liq. 3

H272

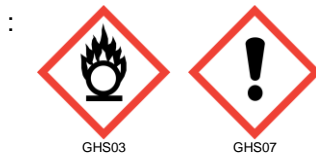
Eye Irrit. 2B

H320

#### Label Elements

#### GHS-US Labeling

#### Hazard Pictograms (GHS-US)



#### Signal Word (GHS-US)

: Warning

#### Hazard Statements (GHS-US)

: H272 - May intensify fire; oxidizer.

H320 - Causes eye irritation.

**Note:** This material is shipped at elevated temperatures and presents immediate physical thermal burn hazards to skin and eyes!

#### Precautionary Statements (GHS-US)

: P210 - Keep away from extremely high temperatures, ignition sources, and incompatible materials. - No smoking.  
P220 - Keep/Store away from combustible material, oxidizable materials, and incompatible materials.  
P221 - Take any precaution to avoid mixing with combustible material, oxidizable materials, and incompatible materials.  
P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.  
P280 - Wear protective gloves, protective clothing, and eye protection.  
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P337+P313 - If eye irritation persists: Get medical advice/attention.  
P370+P378 - In case of fire: Use appropriate media (see section 5) to extinguish.

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P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations.

## Other Hazards

**Hazards Not Otherwise Classified (HNOC):** Not available

Aquatic Acute 3 H402

H402 – Harmful to aquatic life

## SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

### Mixture

Name	Product identifier	% (w/w)	Ingredient Classification (GHS-US)
Ammonium nitrate (AN)	(CAS No) 6484-52-2	80 - 90	Ox. Sol. 3, H272 Eye Irrit. 2B, H320

Ingredients, other than those mentioned above, as used in this product are not hazardous as defined under current Department of Labor regulations, or are present in deminimus concentrations (less than 0.1% for carcinogens, less than 1.0% for other hazardous materials).

Full text of H-phrases: see section 16

## SECTION 4 - FIRST AID MEASURES

### Description of 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).

**Inhalation:** If symptoms occur, go into fresh air and ventilate suspected area. Seek medical attention.

**Skin Contact:** Contact with hot solution will immediately cause serious thermal burns. Dried salt may irritate skin. Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical attention if irritation develops or persists.

**Eye Contact:** Hot solution will cause serious burns and tissue damage. Dried salt or vapors may cause irritation, redness and tearing. Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists.

**Ingestion:** Hot solution will cause thermal tissue damage. May cause gastric irritation, abdominal spasms, nausea, pain and faintness. Large amounts may be harmful if swallowed, potentially causing systemic acidosis and methemoglobinemia. Rinse mouth. Do NOT induce vomiting. Seek medical attention immediately.

### Most Important Symptoms and Effects Both Acute and Delayed

**General:** Hot solution will cause thermal tissue damage. Dried salt or vapors may cause irritation, redness and tearing. May cause eye irritation. Decomposition of AN solution at high temperatures produces highly toxic Nitrogen Oxides (NO<sub>x</sub>). High level exposure to NO<sub>x</sub> can cause serious injury or death. Chronic exposure to NO<sub>x</sub> can produce respiratory and/or kidney damage.

**Inhalation:** May cause respiratory irritation. Dust or vapor may be irritating to mucous membranes and respiratory tract, and may cause sore throat, coughing, difficult breathing and severe lung congestion, and may also aggravate pre-existing lung conditions. Delayed reactions may result in pulmonary edema and chemical pneumonitis.

**Skin Contact:** May cause skin irritation.

**Eye Contact:** May cause eye irritation.

**Ingestion:** If Ingested, toxic effects may occur rapidly. Likely to be harmful or have adverse effects.

**Chronic Symptoms:** None known.

### Indication of Any Immediate Medical Attention and Special Treatment Needed

Hot ammonium nitrate solution may severely burn skin and tissue. If exposed, rinse immediately with cool water and seek medical advice and attention.

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## SECTION 5 - FIRE-FIGHTING MEASURES

### Extinguishing Media

**Suitable Extinguishing Media:** Water only or water spray. Do not attempt to smother. Do not use salt water, dry chemical, carbon dioxide, steam or foam.

**Unsuitable Extinguishing Media:** Dry chemical, carbon dioxide, or regular foam.

### Special Hazards Arising From the Substance or Mixture

**Fire Hazard:** May intensify fire; oxidizer. Will decompose if exposed to excessive heat, and in addition, will accelerate the burning of other combustibles, resulting in more rapid spread of fire.

**Explosion Hazard:** Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries. Smothering, contact with organic material, or combustible material may cause an explosive situation.

**Reactivity:** May intensify fire; oxidizer. May accelerate the burning of other combustible materials. Smothering, contact with organic material, or combustible material may cause an explosive situation.

### Advice for Firefighters

**Precautionary Measures Fire:** Hot AN solution may also ignite combustibles such as wood, paper, oil, clothing, etc. It will support and increase the rate of combustion in the presence of flammable or combustible materials even in the absence of oxygen. As it is an oxidizer, fires involving AN cannot be extinguished by conventional firefighting methods that "smother" a fire by excluding oxygen (air). When heated it will melt, decompose and release toxic gases including nitric acid vapor, nitrogen oxides (NOx) and ammonia gas (NH3). These gases can recombine as they cool, forming a white cloud of AN fumes that is both confusing and a visibility issue for emergency responders. When heated excessively (e.g. as in a fire) it can cause an explosion in an enclosed space and closed containers or vessels may rupture violently.

**Firefighting Instructions:** Large quantities of water should be used when fighting fires involving AN. Dry chemicals, CO2, halogen or foam should not be used. When using copious amounts of water, consideration should be given to the firewater run-off to protect against possible water pollution. Electrical equipment, if involved, should be isolated before the application of water.

Several different AN decomposition reactions may be involved during an AN fire and one of the products of the decomposition may be NOx fumes. These fumes are toxic. Therefore, positive pressure self-contained breathing apparatus may be required when fighting AN fires.

**Protection During Firefighting:** In the event of a fire, call the Emergency Fire and Rescue Service and consider evacuation to a safe place where people are not exposed to the fumes or risk from explosion. The initial evacuation distance in the event of a fire SHALL be established at least 1 mile/1600 meters from the storage building in all directions.

**Large Uncontrollable Fires:** Massive or uncontrollable/accelerating fires that might involve heating AN under confinement or involve highly reactive supporting fuels that could become intimately mixed with the AN SHALL not be fought.

Controllable fires involving AN should be fought by trained personnel in accordance with site emergency planning.

**Hazardous Combustion Products:** When heated, Ammonium Nitrate will melt, decompose and release toxic gases including nitric acid vapor, nitrogen oxides (NOx) and ammonia gas (NH3). These gases can recombine as they cool, forming a white cloud of AN fumes that is both confusing and a visibility issue for emergency responders. When heated excessively (e.g. as in a fire) it can cause an explosion in an enclosed space and closed containers or vessels may rupture violently.

**Other information:** May explode or detonate under confinement and high temperatures. Ammonium nitrate emits toxic nitrogen oxides when heated to decomposition and will release ammonia to air upon reaction with strong alkalis.

Explodes more readily if contaminated with organic materials or other fuels. Do not allow run-off from fire fighting to enter drains or water courses.

**Reference to Other Sections:** Refer to section 9 for flammability properties.

## SECTION 6 - ACCIDENTAL RELEASE MEASURES

### Personal Precautions, Protective Equipment and Emergency Procedures

**General Measures:** Handle in accordance with good industrial hygiene and safety practice. Avoid breathing (vapor, mist, spray, gas). Do not get in eyes, on skin, or on clothing. Keep away from combustible material.

### For Non-Emergency Personnel

**Protective Equipment:** Use appropriate personal protection equipment (PPE).

**Emergency Procedures:** Evacuate unnecessary personnel.

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## For Emergency Personnel

**Protective Equipment:** Equip cleanup crew with proper protection. Use appropriate personal protection equipment (PPE).

**Emergency Procedures:** Ventilate area.

## Environmental Precautions

Prevent entry to sewers and public waters.

## Methods and Material for Containment and Cleaning Up

**For Containment:** Dike and contain spill. Notify authorities in accordance with emergency response procedures. Only personnel trained in emergency response should respond. Contain with inorganic absorbents – do not use combustible material such as sawdust or cellulosic material.

**Methods for Cleaning Up:** 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. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Clean up spills immediately and dispose of waste safely. Will solidify upon cooling if not diluted, and may be suitable for reuse. Absorb and/or contain spill with inert material, then place in suitable container. Contact competent authorities after a spill. Do not take up with combustible material such as sawdust or cellulosic material.

## Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection

## SECTION 7 - HANDLING AND STORAGE

### Precautions for Safe Handling

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

**Additional Hazards When Processed:** When heated to decomposition, emits toxic fumes. Smothering or contact with organic or combustible material may cause an explosive situation. Do not puncture or incinerate container.

**Hygiene Measures:** Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work.

### Conditions for Safe Storage, Including Any Incompatibilities

**Storage Conditions:** Keep separate from other chemicals and combustible material. Empty containers may contain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flames, sparks or other sources of ignition without first thoroughly decontaminating the containers; they may evolve poisonous gas and cause injury or death.

**Incompatible Materials:** Flammable liquids, organic solvents and materials, explosives, metal powders and other combustible materials. Reducing agents, chlorides, phosphorus and sulfur. Corrosives (strong acids and bases).

## SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control Parameters

For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), or OSHA (PEL).

If exposed to "hot" AN solution, immediately irrigate with running water for at least fifteen minutes, including under the eyelids. Seek prompt medical attention for burns.

### Exposure Controls

**Appropriate Engineering Controls:** Ensure all national/local regulations are observed. Ensure adequate ventilation, especially in confined areas.

**Personal Protective Equipment:** Protect from exposure to "hot" solution. Use chemically resistant apron, protective goggles, faceshield, and chemical/heat resistant gloves. If insufficient ventilation: wear respiratory protection.

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**Materials for Protective Clothing:** Heat and chemically resistant materials and fabrics advised.

**Hand Protection:** Wear chemically resistant protective gloves.

**Eye Protection:** Faceshield and Safety eyewear goggles.

**Skin and Body Protection:** Chemical resistant gloves and work clothing that reduce skin contact (preferably tightly woven, non-porous or splash resistant) are recommended. Additional insulation in gloves and clothing is recommended for temperatures exceeding about 90°C (194°F).

**Respiratory Protection:** Use NIOSH-approved air-purifying or supplied-air respirator where airborne concentrations of vapor or mist are expected to exceed exposure limits.

## SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

### Information on Basic Physical and Chemical Properties

Physical State	: Liquid
Appearance	: Clear, colorless liquid
Odor	: Slight ammonia odor
Odor Threshold	: Not available
pH	: 4 - 6
Evaporation Rate	: Not available
Melting Point	: 85% Ammonium nitrate solidifies below 75 °C (167 °F)
Freezing Point	: Not available
Boiling Point	: 128 - 146 °C (262.4 - 294.8 °F)
Flash Point	: Not available
Auto-ignition Temperature	: Not available
Decomposition Temperature	: 179 - 210 °C (354.2 - 410 °F)
Flammability (solid, gas)	: Not available
Lower Flammable Limit	: Not available
Upper Flammable Limit	: Not available
Vapor Pressure	: 182 mm Hg (water vapor above 85% Ammonium nitrate solution at 200°F)
Relative Vapor Density at 20 °C	: Not available
Relative Density	: Not available
Specific gravity / density	: 1.33 - 1.42 g/cm <sup>3</sup>
Specific Gravity	: Not available
Solubility	: Water: 192 (dry) g/100ml
Partition Coefficient: N-Octanol/Water	: Not available
Viscosity	: Not available
Explosion Data – Sensitivity to Mechanical Impact	: Not sensitive to mechanical impact. Protect material from drying out.
Explosion Data – Sensitivity to Static Discharge	: Not sensitive to static discharge.

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## SECTION 10 - STABILITY AND REACTIVITY

**Reactivity:** May intensify fire; oxidizer. May accelerate the burning of other combustible materials. Smothering or contact with organic or combustible material may cause an explosive situation.

**Chemical Stability:** Stable under normal conditions.

**Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.

**Conditions to Avoid:** Overheating. Open flame. Combustible materials. Sources of ignition. Incompatible materials.

**Incompatible Materials:** Dissolved metals (copper, zinc, iron, cadmium, manganese, nickel, chromium) act as a catalyst for decomposition. The total level of these heavy metal contaminants should be maintained to less than 50 ppm. Copper should be maintained to less than 1 ppm. Strong acids. Strong bases. Strong oxidizers. Halogens. Chlorine compounds, chlorinated inorganics (potassium, calcium and sodium hypochlorite) and hydrogen peroxides. Combustible materials. Organic materials.

**Hazardous Decomposition Products:** Nitrogen Oxides (NO<sub>x</sub>), Ammonia (NH<sub>3</sub>), Nitric Acid (HNO<sub>3</sub>).

## SECTION 11 - TOXICOLOGICAL INFORMATION

### Information on Toxicological Effects - Product

**Acute Toxicity:** Not classified

**LD50 and LC50 Data:** Not available

**Skin Corrosion/Irritation:** Not classified

**pH:** 4 - 6

**Serious Eye Damage/Irritation:** Protect against thermal burns; May cause eye irritation.

**pH:** 4 - 6

**Respiratory or Skin Sensitization:** Not classified

**Germ Cell Mutagenicity:** Not classified

**Teratogenicity:** Not classified

**Carcinogenicity:** Not classified

**Specific Target Organ Toxicity (Repeated Exposure):** Not classified

**Reproductive Toxicity:** Not classified

**Specific Target Organ Toxicity (Single Exposure):** Not classified

**Aspiration Hazard:** Not classified

**Symptoms/Injuries After Inhalation:** May cause respiratory irritation.

**Symptoms/Injuries After Skin Contact:** May cause skin irritation.

**Symptoms/Injuries After Eye Contact:** May cause eye irritation.

**Symptoms/Injuries After Ingestion:** Ingestion is likely to be harmful or have adverse effects.

**Chronic Symptoms:** None known.

**Additional Information:** Extreme thermal burn damage to skin and tissue.

### Information on Toxicological Effects - Ingredient(s)

**LD50 and LC50 Data:**

#### Ammonium nitrate (6484-52-2)

LD50 Oral Rat	2217 mg/kg
LC50 Inhalation Rat	> 88.8 mg/l/4h

## SECTION 12: ECOLOGICAL INFORMATION

**Toxicity** Not classified

### Persistence and Degradability

#### Ammonium Nitrate Liquor, 83%

Persistence and Degradability | Not established.



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## Bioaccumulative Potential

### Ammonium Nitrate Liquor, 83%

Bioaccumulative Potential Not established.

### Ammonium nitrate (6484-52-2)

BCF fish 1 (no bioaccumulation expected)

Log Pow -3.1 (at 25 °C)

**Mobility in Soil** Not available

**Other Adverse Effects**

**Other Information:** Avoid release to the environment.

## SECTION 13 - DISPOSAL CONSIDERATIONS

**Waste Disposal Recommendations:** Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

**Additional Information:** Clean up even minor leaks or spills if possible without unnecessary risk.

## SECTION 14 - TRANSPORT INFORMATION

### In Accordance with DOT

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

**Proper Shipping Name** : AMMONIUM NITRATE, LIQUID (hot concentrated solution)

**Hazard Class** : 5.1

**Identification Number** : UN2426

**Label Codes** : 5.1



**ERG Number** : 140

### In Accordance with IMDG

**Proper Shipping Name** : AMMONIUM NITRATE, LIQUID(hot concentrated solution)

**Hazard Class** : 5.1

**Identification Number** : UN2426

**Label Codes** : 5.1

**EmS-No. (Fire)** : F-H

**EmS-No. (Spillage)** : S-Q



### In Accordance with IATA

**Proper Shipping Name** : AMMONIUM NITRATE, LIQUID (hot concentrated solution)

**Identification Number** : UN2426

**Hazard Class** : 5.1

**Label Codes** : 5.1

**ERG Code (IATA)** : 5L

### In Accordance with TDG

**Proper Shipping Name** : AMMONIUM NITRATE, LIQUID (hot concentrated solution)

**Hazard Class** : 5.1

**Identification Number** : UN2426

**Label Codes** : 5.1



## SECTION 15 - REGULATORY INFORMATION

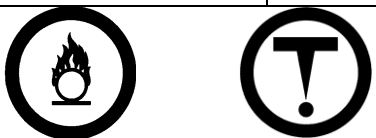
### US Federal Regulations

#### Ammonium Nitrate Liquor, 83%

**SARA Section 311/312 Hazard Classes**

Immediate (acute) health hazard  
Reactive hazard

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<b>Ammonium nitrate (6484-52-2)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>US State Regulations</b>	
<b>Ammonium nitrate (6484-52-2)</b>	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List	
U.S. - Pennsylvania - RTK (Right to Know) List	
<b>Canadian Regulations</b>	
<b>Ammonium Nitrate Liquor, 83% DYNO NAL</b>	
WHMIS Classification	Class C - Oxidizing Material Class D Division 2 Subdivision B - Toxic material causing other toxic effects
	
<b>Ammonium nitrate (6484-52-2)</b>	
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
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.	

## SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

**Revision Date** : 10/12/2018  
**Other Information** : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

### GHS Full Text Phrases:

Eye Irrit. 2B	Eye irritation Category 2B
Ox. Liq. 3	Oxidizing liquids Category 3
Ox. Sol. 3	Oxidizing solids Category 3
H272	May intensify fire; oxidizer
H320	May cause eye irritation

### Party Responsible for the Preparation of This Document

Dyno Nobel Inc.  
 2795 East Cottonwood Parkway, Suite 500  
 Salt Lake City, Utah 84121  
 Phone: 801-364-4800

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Groundbreaking Performance