



# Material Safety Data Sheet

<b>NFPA Classification</b>	<b>DOT/TDG Pictograms</b>	<b>WHMIS Classification</b>	<b>Protective Clothing</b>
Health  Flammability Reactivity Specific Hazard			

## Section I. Chemical Product and Company Identification

<b>PRODUCT NAME / TRADE NAME</b>	Ammonium Nitrate Liquor, 80-90 Percent		
<b>SYNONYM</b>	AN Liquor		
<b>CHEMICAL NAME</b>	Ammonium Nitrate	<b>Revision Number: 1</b>	
<b>CHEMICAL FAMILY</b>	Nitrate Salt. (Oxidizing agent)	<b>MSDS prepared by Technical Services on:</b> June 27, 2005	
<b>CHEMICAL FORMULA</b>	NH <sub>4</sub> NO <sub>3</sub>	<b>24 Hour Emergency Telephone Number:</b>  (520) 720-2150 (Ask for the Shift Supervisor) CHEMTREC 1-800-424-9300	
<b>MATERIAL USES</b>	Agricultural industry: Fertilizer. Industrial applications: Manufacture of chemicals. Manufacture of specialty fertilizers.		
<b>MANUFACTURER</b>	<b>SUPPLIER</b>		
Apache Nitrogen Products, Inc. P. O. Box 700 Benson, AZ 85602 Fax (520) 720-4158 www.apachenitro.com	Apache Nitrogen Products, Inc. P. O. Box 700 Benson, AZ 85602 Fax (520) 720-4158 www.apachenitro.com		

## Section II. Hazardous Ingredients

NAME	CAS #	Exposure Limits (ACGIH)				% by Weight
		TLV-TWA 10mg/m <sup>3</sup>	TLV-TWA ppm	STEL 10mg/m <sup>3</sup>	STEL ppm	
Ammonium Nitrate	6484-52-2	10				80-90

## Section III. Hazards Identification

<b>POTENTIAL ACUTE HEALTH EFFECT</b>	<p>Dangerous in case of ingestion. May interfere with the circulation and oxygen carrying capacity of the blood. Over-exposure by inhalation may cause respiratory irritation.</p> <p>Hot! This product may cause thermal burns to the eyes or skin if splashed at normal shipping and handling temperatures. When cold, this product may irritate eyes and skin upon contact but is unlikely to injure tissue.</p> <p>Symptoms of overexposure may include:</p> <ul style="list-style-type: none"> <li>Cardiovascular: methemoglobinemia, low blood pressure (hypotension), irregular heart beat (arrhythmia), shock (vasodilatation)</li> <li>CNS: headache, dizziness, generalized tingling sensation (paresthesia) Gastrointestinal: nausea, vomiting, diarrhea, abdominal pain</li> <li>Eye: redness and inflammation (conjunctivitis)</li> <li>Skin: bluish discoloration (cyanosis) with profuse sweating following ingestion or irritation and flushed skin following contact with moist skin surfaces.</li> </ul>
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**Section III. Hazards Identification**

<b>POTENTIAL CHRONIC HEALTH EFFECTS</b>	<p>CARCINOGENIC EFFECTS: NONE by ACGIH, EPA, IARC, NTP, OSHA.  MUTAGENIC EFFECTS: NONE by ACGIH, EPA, IARC, NTP, OSHA.  TERATOGENIC EFFECTS: NONE by ACGIH, EPA, IARC, NTP, OSHA.</p> <p>Repeated or prolonged overexposure by ingestion can reduce the oxygen carrying capacity of the blood producing anoxia in infants or individuals with preexisting bowel or blood diseases. Ensure that nitrate containing fertilizers are not applied near wells where contamination may occur. Consult your agronomist regarding the advisability and precautions for use of nitrate fertilizers on fruit or vegetable crops.</p> <p>If breathing fumes of decomposition, a sensation of tightness, burning of the chest and shortness of breath may occur in 6-48 hours.</p>
<b>ROUTE(S) of ENTRY</b>	Inhalation – Yes                      Skin – Yes                      Ingestion - Yes

**Section IV. First Aid Measures**

<b>EYE CONTACT</b>	Hot! May cause eye burns. IMMEDIATELY flush eyes with running water for at least <u>15 minutes keeping eyelids open</u> . OBTAIN IMMEDIATE MEDICAL ATTENTION.
<b>MINOR SKIN CONTACT</b>	Hot! May cause skin burns. Flush with water to cool affected area. Cover with a gauze pad or clean cotton or linen cloth. DO NOT attempt to remove adhered material from the skin. Get immediate medical attention.
<b>EXTENSIVE SKIN CONTACT</b>	No additional information.
<b>MINOR INHALATION</b>	Repeated or prolonged inhalation of vapors or spray mist may produce severe irritation of the respiratory tract, headache, nausea or weakness. Loosen tight clothing. Allow the affected individual to rest in a well ventilated area. Obtain medical attention.
<b>SEVERE INHALATION</b>	In emergency situations use proper respiratory protection to evacuate affected individuals to a safe area as soon as possible. Loosen tight clothing around the person's neck and waist. Oxygen may be administered if breathing is difficult. If the person is not breathing, perform artificial respiration. Obtain immediate medical attention.
<b>SLIGHT INGESTION</b>	Have conscious person drink several glasses of water or milk. Induce vomiting. Lower the head so that the vomit will not reenter the mouth and throat. NEVER give an unconscious person anything to drink. Obtain medical attention.
<b>EXTENSIVE INGESTION</b>	No additional information.

**Section V. Fire and Explosion Data**

<b>THE PRODUCT IS</b>	Non-flammable.
<b>AUTO-IGNITION TEMPERATURE</b>	Not applicable.
<b>FLASH POINT</b>	Not applicable.
<b>PRODUCTS OF COMBUSTION</b>	Material will not burn, but thermal decomposition may result in flammable/toxic gases being formed. These products are nitrogen oxides and ammonia (NO, NO <sub>2</sub> , NH <sub>3</sub> ).
<b>FIRE HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES</b>	<p>Dangerous in contact with organic materials. May form explosive mixtures. When contaminated, it is very sensitive.</p> <p>Explosive when exposed to heat or flame under confinement. Avoid temperatures above 210° C (410° F) in confined or poorly ventilated spaces.</p> <p>Thermal decomposition or explosion may result. Evacuate surrounding areas.</p>
<b>EXPLOSION HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES</b>	<p>Oxidizer: Material is an oxidizer which may react readily with other materials, especially upon heating.</p> <p>In confinement and in the presence of a strong detonation source, the material can explode when subject to sudden shock, pressure, or high temperature. Avoid temperatures above 210°C (410 OF) which may cause thermal decomposition or explosion, especially in confined or poorly ventilated spaces.</p> <p>Incompatible with sulfur, chlorides, reducing agents, or other oxidizers. Incompatible with finely powdered metals (cadmium, copper, lead, cobalt, nickel, bismuth, chromium, <u>magnesium, zinc, sodium, potassium and aluminum</u>).</p>
<b>FIRE FIGHTING MEDIA AND INSTRUCTIONS</b>	Powerful oxidizing agent supports combustion by liberating oxygen even if smothered. Cool containing vessels with flooding quantities of water until well after fire is out. A self-contained breathing apparatus should be used to avoid inhalation of toxic fumes. Evacuate area and fight fire from a safe distance.
<b>SPECIAL REMARKS ON FIRE HAZARDS</b>	<p>Dangerous in contact with organic materials.</p> <p>Avoid temperatures above 210°C (410°F) in confined or poorly ventilated spaces. Evolves toxic fumes when heated to decomposition state.</p> <p>Thermal decomposition or explosion may result. Ventilate to cool and flood with water to stop decomposition reaction. Contain and collect all runoff for treatment.</p> <p>Prevent fire water from reaching water courses or aquifers.</p>

**Section V. Fire and Explosion Data**

<b>SPECIAL REMARKS ON EXPLOSION HAZARDS</b>	Industry studies have proposed the following rules for blends of ammonium nitrate with phosphate and potassium containing fertilizers: a) Ammonium nitrate fertilizers are reported not to detonate unless the fertilizer contains at least 70% ammonium nitrate, unless ammonium sulfate is present in the blend. Blended ammonium nitrate - ammonium sulfate fertilizers may detonate with as little as 45% ammonium nitrate present. b) It has been reported that it is desirable to keep the ammonium to nitrate ratio above 1.5 in fertilizer blends in order to minimize toxic gas release during fires.
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**Section VI. Accidental Release Measures**

<b>SMALL SPILL</b>	Stop leak if possible to do so without risk. Dike and contain spilled material. Ensure that the spilled material does not enter sewers, wells, or watercourses. Allow to solidify. Use appropriate tools to put the spilled material in a convenient container for disposal. Call for <u>information on disposal alternatives</u> . Ensure disposal complies with local regulations.
<b>LARGE SPILL</b>	In the event of a spill, prevent additional discharge of material, if possible to do so without hazard. Prevent spills from entering sewers, watercourses, wells, etc. Will dissolve and disperse in water. Product will promote algae growth which may degrade water quality and taste. Notify downstream water users. Nitrate in potable drinking water should be maintained below 10 mg/L. Allow to solidify. Use a shovel to put the material into a container for disposal. Call for assistance on disposal. Ensure disposal complies with government requirements and local regulations.

**Section VII. Handling and Storage**

<b>PRECAUTIONS</b>	Keep away from heat, combustible materials, and reducing agents. Avoid contact with skin and eyes. Take precautions against electrostatic discharges. Keep out of reach of children. Keep away from food, drink and animal feed. Notify police and fire departments for assistance. Comply with all federal, state and/or local rules and regulations in the use of Ammonium Nitrate.
<b>STORAGE</b>	Keep at temperatures of between 75°C and 160°C. Keep away from incompatible materials.

**Section VIII. Exposure Controls / Personal Protection**

<b>ENGINEERING CONTROLS</b>	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, use ventilation to keep exposure to airborne contaminants below the exposure limit.
<b>PERSONAL PROTECTION</b>	The selection of personal protective equipment varies, depending upon conditions of use. Wear appropriate respiratory protection for dust/mist when ventilation is inadequate. Where skin and eye contact may occur as a result of brief periodic exposures, wear long sleeved clothing, coveralls, chemical resistant gloves, and safety glasses with side shields. Wash hands thoroughly after handling product. Do not contaminate food products. Equipment used in handling the material must be thoroughly cleaned before repair or maintenance. Maintain a high standard of housekeeping in storage and processing areas.
<b>PERSONAL PROTECTION IN CASE OF LARGE RELEASE</b>	NIOSH approved ammonia cartridge respirators with dust, mist or fume pre-filters may be necessary to prevent overexposure by inhalation. Where skin and eye contact may occur as a result of prolonged or repeated exposures, wear long sleeved clothing, coveralls, chemical-resistant gloves, and safety glasses with side shields. For U.S. work sites where respiratory protection is required, ensure that a respiratory protection meeting 29 CFR 1910.134 is in place.
<b>EXPOSURE LIMITS</b>	ACGIH TLV-TWA: 25 PPM for ammonia. OSHA PEL: Not listed OSHA List of Highly Hazardous Chemicals, Toxics and Reactives: Not listed NIOSH Values: REL: Not listed

**Section IX. Physical and Chemical Properties**

<b>PHYSICAL STATE AND APPEARANCE</b>	Liquid. Clear to slightly hazy liquid or paste-like solid when cooled.		
<b>MOLECULAR WEIGHT</b>	Not applicable.	<b>COLOR</b>	Colorless liquid at shipping temperature, white paste-like solid when cooled.
<b>pH (10% SOLN/WATER)</b>	4.0 – 5.0	<b>ODOR</b>	Odorless.
<b>BOILING POINT</b>	270° F	<b>ODOR THRESHOLD</b>	Not available
<b>MELTING POINT</b>	77°C (170°F) - 79°C (175°F)	<b>TASTE</b>	Disagreeable. Acrid. Burning.
<b>CRITICAL TEMPERATURE</b>	Not applicable.	<b>VOLATILITY</b>	10 – 20% (w/w).
<b>SPECIFIC GRAVITY g/cc</b>	1.34 (Water = 1)	<b>SOLUBILITY</b>	Easily soluble in cold water, hot water.
<b>BULK DENSITY kg/m<sup>3</sup> ; lbs/ft<sup>3</sup></b>	11.2lbs/gal (U.S.) 1340 kg/m <sup>3</sup> ; 83.7 lbs/ft <sup>3</sup>	<b>DISPERSION PROPERTIES</b>	See solubility in water.

**Section IX. Physical and Chemical Properties**

<b>VAPOR PRESSURE</b> 17.2 mm of Hg (@ 20°C)	Based on data for: Water	<b>WATER/OIL DIST. COEFF.</b>	Easily soluble or dispersed in water.
<b>VAPOR DENSITY</b>	Not applicable		

**Section X. Stability and Reactivity Data**

<b>STABILITY</b>	The product is stable.
<b>INSTABILITY TEMPERATURE</b>	Exposure above 400° F can cause decomposition which may be violent under confinement.
<b>CONDITIONS OF INSTABILITY</b>	No additional remark.
<b>INCOMPATIBILITY WITH VARIOUS SUBSTANCES</b>	Reactive with reducing agents, combustible materials, metals, acids, alkalis.
<b>CORROSIVITY</b>	Slightly corrosive to aluminum, zinc, and copper. Non-corrosive to steel and stainless steel (304 or 316) or glass.
<b>SPECIAL REMARKS ON REACTIVITY</b>	Incompatible with sulfur, chlorides, or other oxidizers. Incompatible with finely powdered metals (cadmium, titanium, copper, lead, cobalt, nickel, bismuth, chromium, magnesium, zinc, sodium, potassium and aluminum). May explode by detonation, heat or shock.
<b>SPECIAL REMARKS ON CORROSIVITY</b>	Incompatible with copper alloys. Corrosive to ferrous metals and alloys. Corrosive to brass. Contact your sales representative or a metallurgical specialist to ensure compatibility with system equipment.

**Section XI. Toxicological Information**

<b>SIGNIFICANT ROUTES OF EXPOSURE</b>	Ingestion. Inhalation.
<b>SPECIAL REMARKS ON TOXICITY TO ANIMALS</b>	Not applicable
<b>OTHER EFFECTS ON HUMANS</b>	Recent studies undertaken by the U.S. Government using Canadian and American databases have determined that ammonium nitrate fertilizer does not demonstrate any risk of gastrointestinal cancer.
<b>SPECIAL REMARKS ON CHRONIC EFFECTS ON HUMANS</b>	Exposure can cause headache, stomach pains, vomiting and diarrhea. Produces methemoglobin which reduces oxygen supply in the circulating blood. Although predominantly affecting infants, nitrate induced methemoglobinemia has also been documented in adults.
<b>SPECIAL REMARKS ON OTHER EFFECTS ON HUMANS</b>	No additional remark.

**Section XII. Ecological Information**

<b>ECOTOXICITY</b>	May be harmful to fish, livestock, and wildlife. stomach. May cause burns to mouth, throat and stomach. Aquatic/Marine Toxicity: Will release ammonium ions. Ammonia is a toxic hazard to fish. Avoid spills or release to watercourses. Will disperse with current. Release to watercourses may cause effects down stream from the point of release. U.S. D.O.T.: This material is NOT listed as a Marine pollutant.
<b>BOD and COD</b>	Not available.
<b>PRODUCTS OF DEGRADATION</b>	Ammonia and nitrogen oxides (NH <sub>3</sub> , NO, NO <sub>2</sub> ...)
<b>TOXICITY OF THE PRODUCTS OF DEGRADATION</b>	The product itself and its products of degradation are not harmful under normal conditions of use. Avoid spills or releases to watercourses.
<b>SPECIAL REMARKS ON THE PRODUCTS OF DEGRADATION</b>	Product will promote algae growth which may degrade water quality and taste. Notify downstream water users. Nitrate in potable drinking water should be maintained below 10mg/L. Will dissolve and disperse in water.

**Section XIII. Disposal Considerations**

<b>WASTE DISPOSAL OR RECYCLING</b>	Recycle to process, if possible. Recover and place material in a suitable container for intended use or disposal. Ensure disposal complies with government requirements and local regulations.
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**Section XIV. Transport Information**

<b>DOT / TDG CLASSIFICATION</b>	DOT/TDG CLASS 5.1: Oxidizing substance.
<b>PIN and Shipping Name</b>	Proper shipping name: Ammonium nitrate liquid PIN #: UN2426
<b>SPECIAL PROVISIONS FOR TRANSPORT</b>	B5, T7

DOT (U.S.A.) (Pictograms)



Continued on Next Page

**National Fire Protection Association (U.S.A.)**

Hazards presented under emergency conditions only.



**NOTICE TO READER**

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