






NFPA Classification	DOT / TDG Pictograms	WHMIS Classification	HMIS	PROTECTIVE CLOTHING
Health  Flammability 1 3 Reactivity <b>OXY</b> Specific Hazard		 	Health 1 Flammability 0 Reactivity 1 PPE J	

## Section I. Chemical Product and Company Identification

**PRODUCT NAME/ TRADE NAME** Ammonium Nitrate Liquor 84-86 Percent

**SYNONYM** A. N. Liquor - Redwater Production

**MSDS NUMBER:** 14226

**CHEMICAL NAME** Ammonium nitrate.

**REVISION NUMBER** 4.9

**CHEMICAL FAMILY** Nitrate salt. (Oxidizing agent)

**MSDS prepared by** January 15, 2007  
**the Environment,**  
**Health and Safety**  
**Department on:**

**CHEMICAL FORMULA** NH<sub>4</sub>NO<sub>3</sub>

**24 HR EMERGENCY TELEPHONE NUMBER:**

**MATERIAL USES** Industrial applications: Manufacture of chemical specialty compounds and fertilizer solutions.

**Transportation: 1-800-792-8311**  
**Medical: 1-888-670-8123**

### MANUFACTURER

Agrium  
 North American Wholesale  
 13131 Lake Fraser Drive, S.E.  
 Calgary, Alberta, Canada  
 T2J 7E8

### SUPPLIER

Agrium  
 North American Wholesale  
 13131 Lake Fraser Drive, S.E.  
 Calgary, Alberta, Canada, T2J 7E8  
  
 Agrium U.S. Inc.  
 Suite 1700, 4582 South Ulster St.  
 Denver, Colorado, U.S.A., 80237

## Section II. Hazardous Ingredients

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

### ACGIH TLV notations:

---- No assigned TLV

(C) - Ceiling - the concentration not to be exceeded at any time

(I) - measured as the Inhalable fraction of the aerosol

(R) - measured as the Respirable fraction of the aerosol

(T) - measured as the Thoracic fraction of the aerosol

### TOXICOLOGICAL DATA ON INGREDIENTS Ammonium Nitrate: ^

Rat oral LD50: 4500 mg/kg. [Peer Reviewed] [Environment Canada; Tech Info for Problem Spills: Ammonium Nitrate (Draft) p.59 (1981)]

Rat oral LD50: 2217 mg/kg (Rat) [Gigiena i Sanitariya. For English translation, see HYSAAV. (V/O Mezhdunarodnaya Kniga, 113095 Moscow, USSR) V.1- 1936- (52(8),25,1987)]

Huntingdon Research Center Testing Results (3 studies), OECD Guide 401: 2462- 2900 mg/kg (rat oral)

TFI Product Testing Results, OECD Guideline 402: > 5,000 mg/kg acute dermal LD<sub>50</sub>, rat, Bacterial reverse mutation assay: negative, with and without metabolic activation, (Salmonella) Developmental teratogenicity: Not teratogenic to rats. NOAEL >57 mg/kg

### Ecotoxicity Values:

Acute fish toxicity: Chinook salmon, rainbow trout, bluegill: 96hr LC<sub>50</sub> = 420-1360 mg NO<sub>3</sub>/L

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Acute toxicity to aquatic invertebrates: *Daphnia magna* EC<sub>50</sub> = 555mg/L  
 Acute toxicity to aquatic plants (algae): *Scenedesmus quadricauda* EC<sub>50</sub> = 83mg/L  
 LD50 *Aspergillus niger* (fungus) 15 mg/l/40 hr (36 deg C). [Peer Reviewed] [Environment Canada; Tech Info]

### Section III. Hazards Identification.

#### POTENTIAL ACUTE HEALTH EFFECTS

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. 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.

Symptoms of overexposure may include:

Cardiovascular: methemoglobinemia, low blood pressure (hypotension), irregular heart beat (arrhythmia), shock (vasodilation)

CNS: headache, dizziness, generalized tingling sensation (parasthesia)

Gastrointestinal: nausea, vomiting, diarrhea, abdominal pain

Eye: redness and inflammation (conjunctivitis)

Skin: bluish discoloration (cyanosis) with profuse sweating or flushed skin

#### POTENTIAL CHRONIC HEALTH EFFECTS

**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.

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.

### Section IV. First Aid Measures

#### EYE CONTACT

Hot! May cause eye burns. IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. OBTAIN IMMEDIATE MEDICAL ATTENTION.

#### MINOR SKIN CONTACT

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.

#### EXTENSIVE SKIN CONTACT

No additional information.

#### MINOR INHALATION

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.

#### SEVERE INHALATION

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.

#### SLIGHT INGESTION

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.

#### EXTENSIVE INGESTION

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>FLAMMABILITY LIMITS</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>	Dangerous in contact with organic materials. May form explosive mixtures. When contaminated, it is very sensitive. Explosive when exposed to heat or flame under confinement. Avoid temperatures above 210°C (410°F) in confined or poorly ventilated spaces. Thermal decomposition or explosion may result. Evacuate surrounding areas.
<b>EXPLOSION HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES</b>	Incompatible with sulfur, chlorides, reducing agents, 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>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>	Dangerous in contact with organic materials. Material supports combustion. Evolves toxic fumes when heated to the decomposition state. Avoid temperatures above 210°C (410°F) in confined or poorly ventilated spaces. Thermal decomposition or explosion may result.
<b>SPECIAL REMARKS ON EXPLOSION HAZARDS</b>	Unconfirmed industry reports indicate a possibility that ammonium nitrate containing solutions may detonate if subjected to extreme heat while under pressure or if allowed to evaporate to near dryness.

**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 information on disposal alternatives. 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 sources of ignition and incompatible materials such as reducing agents, or combustible materials. Take precautions against electrostatic discharges. Avoid contact with skin and eyes. Do not breathe fumes or vapors. Keep out of reach of children.
<b>STORAGE</b>	Keep at temperatures of between 85°C and 130°C. Keep away from incompatible materials.

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**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, fume, or mist, 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 respirator when ventilation is inadequate. Where skin and eye contact may occur as a result of brief periodic exposures, wear long sleeved clothing, coveralls, leather gloves, safety glasses with side shields and face shield.
<b>PERSONAL PROTECTION IN CASE OF LARGE RELEASE</b>	NIOSH approved respirators with dust, mist or fume prefilters 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.
<b>EXPOSURE LIMITS</b>	Alberta OEL-TWA for Particulate Not Otherwise Regulated: 10 mg/m <sup>3</sup> as Inhalable particulate, 3 mg/m <sup>3</sup> as Respirable particulate. Alberta OEL for ammonia: 25 PPM TWA, 35 PPM STEL.  Federal, State or Provincial exposure limits may vary by jurisdiction. Consult local authorities for acceptable exposure limits in your area.

**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>	5.5 - 6.5 (50 vol% aqueous soln)	<b>ODOR</b>	Odorless.
<b>BOILING POINT</b>	85%: Decomposes above 275 deg F (135 deg C).	<b>ODOR THRESHOLD</b>	Not available.
<b>MELTING POINT</b>	85%: 77°C (170°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>	85% product: 1370 kg/m <sup>3</sup> ; 11.5 lbs/gal (US).	<b>DISPERSION PROPERTIES</b>	See solubility in water.
<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>	Not available.
<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 corrosive in presence of zinc, copper, and aluminum. Non-corrosive to glass, steel, and stainless steel (304 or 316).
<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.

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**SPECIAL REMARKS ON CORROSIVITY**

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****SIGNIFICANT ROUTES OF EXPOSURE**

Ingestion. Inhalation.

**TOXICITY TO ANIMALS**

See Section II.

**SPECIAL REMARKS ON TOXICITY TO ANIMALS**

May be harmful to livestock and wildlife if ingested. Clean up all spilled material, especially where bulk material transfer occurs.

**OTHER EFFECTS ON HUMANS**

Recent studies undertaken by the U.S. Government using Canadian and American databases have determined that ammonium nitrate does not demonstrate any risk of gastrointestinal cancer.

**SPECIAL REMARKS ON CHRONIC EFFECTS ON HUMANS**

Exposure can cause headache, stomach pains, vomiting and diarrhea. Under prolonged or repeated overexposure, may produce methemoglobin which reduces oxygen supply in the circulating blood. Although predominantly affecting infants, nitrate induced methemoglobinemia has also been documented in adults.

**SPECIAL REMARKS ON OTHER EFFECTS ON HUMANS**

No additional remark.

**Section XII. Ecological Information****ECOTOXICITY**

May be harmful to fish, livestock, and wildlife. 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.

**BOD and COD**

Not available.

**PRODUCTS OF DEGRADATION**

Ammonia and nitrogen oxides (NH<sub>3</sub>, NO, NO<sub>2</sub>...)

**TOXICITY OF THE PRODUCTS OF DEGRADATION**

The product itself and its products of degradation are not harmful under normal conditions of use. Avoid spills or releases to watercourses.

**SPECIAL REMARKS ON THE PRODUCTS OF DEGRADATION**

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****WASTE DISPOSAL OR RECYCLING**

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.

**Section XIV. Transport Information****DOT / TDG CLASSIFICATION**

DOT/TDG CLASS 5.1: Oxidizing substance.

**PIN and Shipping Name**

Proper Shipping Name: Ammonium nitrate, liquid  
PIN #: UN2426

**SPECIAL PROVISIONS FOR TRANSPORT**

B5, T7

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DOT (U.S.A) (Pictograms)



**Section XV. Other Regulatory Information and Pictograms**

**OTHER REGULATIONS**

U.S. Allowable Tolerances (FIFRA Requirements):

1. Ammonium nitrate is exempted from the requirement of a tolerance when used as a desiccant or defoliant in the production of cottonseed, grain sorghum, peppers, potatoes, sweet potatoes. 40 CFR 180.1018 (7/1/91)
2. Ammonium nitrate is exempted from the requirement of a tolerance when used as an adjuvant/intensifier for herbicides in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops only. 40 CFR 180.1001(d) (7/1/91)

FDA Requirements:

1. Bottled water shall, when a composite of analytical units of equal volume from a sample is examined by the methods described in paragraph (d)(1)(ii) of this section, meet the standards of chemical quality and shall not contain nitrate, as nitrogen, in excess of 10.0 mg/l. /Nitrate, as nitrogen. 21 CFR 103.35 (4/1/91)

TSCA - Sect. 8(b) Inventory: XU

California - Air Bill 2588 (Air Toxics Hot Spots) Appendix A-I: 6/91; ADOA 100.0 lbs/yr  
California - Toxic Air Contaminant List Category III (AB 1807, AB 2728)

Massachusetts RTK List - Present

NJ Department of Health RTK List: sn 0106

NJ Special Hazardous Substances: (reactive - third degree)

Pennsylvania RTK List: environmental hazard

Rhode Island Hazardous Substance List - Present

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): This product or its ingredients is on the Domestic Substances List (DSL), and acceptable for use under the provisions of CEPA.

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).  
This product is not considered as a priority pollutants as regulated under the Clean Water Act.

CERCLA/SUPERFUND, 40 CFR 117,302: This product contains no Reportable Quantity (RQ) Substances.

This material contains the following chemicals subject to the reporting requirements of SARA Section 313 and 40 CFR 372:

Water dissociable nitrate compounds, CAS #: none, 63-65 wt%

Ammonia (includes anhydrous ammonia and aqueous ammonia from water dissociable ammonium salts and other sources; 10 percent of which is reportable under this listing), 7446-41-7, 18 wt%. Refer to EPA guidance document 745-R-00-006 for information on TRI reporting for nitrates.

TSCA (Toxic Substance Control Act): This product is listed on the TSCA Inventory.

CALIFORNIA PROPOSITION 65: The following statement is made in order to comply with the California Safe Drinking Water and Toxic Enforcement Act of 1986 (CA Health and Safety Code Sec 25249.5):

This product contains no chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations.

Canada - WHMIS Classification of Substances: C; D2B

**OTHER CLASSIFICATIONS**

**HCS (U.S.A.)** HCS CLASS: Oxidizer.

**DSCL (EEC)**  
2- Risk of explosion by shock, friction, fire or other sources of ignition.  
8- Contact with combustible material may cause fire.  
9- Explosive when mixed with combustible material.

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

Hazards presented under acute emergency conditions only:

Health



**Fire Hazard**

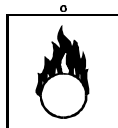
**Reactivity**

**Specific Hazard**

**TDG (Pictograms - Canada)**



**DSCL (Europe) (Pictograms)**



**ADR (Europe) (Pictograms)**



**Section XVI. Other Information**

**REFERENCES**

- Transportation of Dangerous Goods Act and Clear Language Regulations, current revision.
- Canada Gazette Part II, Vol. 122, No. 2 Registration SOR/88-64 31 December, 1987 Hazardous Products Act "Ingredient Disclosure List".
- Domestic Substances List, Canadian Environmental Protection Act.
- 29 CFR Part 1910
- 33 CFR Parts 151, 153, 154, 156
- 40 CFR Parts 1-799
- 46 CFR Part 153
- 49 CFR Parts 1-199
- American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Chemical Substances, 2006.
- NFPA 704, National Fire Codes Online, National Fire Protection Association, current edition at time of MSDS preparation.
- Corrosion Data Survey, Sixth Edition, 1985, National Association of Corrosion Engineers
- TOMES® System: Heitland G & Hurlbut KM (Eds) (electronic version): MICROMEDEX, Greenwood Village, Colorado, USA. Available at: <http://csi.micromedex.com> (2006). The TOMES® System includes MEDITEXT® Medical Management; HAZARDTEXT® Hazard Management; INFOTEXT® Documents; ERG2000 Emergency Response Guidebook Documents; REPROTEXT®: Heitland G & Hurlbut KM (Eds); CHRIS Hazardous Chemical Data: U.S. Department of Transportation, U.S. Coast Guard, Washington, D.C. (2006); HSDB: Hazardous Substances Data Bank. National Library of Medicine, Bethesda, Maryland (2006); IRIS: Integrated Risk Information System. U.S. Environmental Protection Agency, Washington, D.C. (2006); NIOSH: Pocket Guide to Chemical Hazards. National Institute for Occupational Safety and Health, Cincinnati, Ohio (2006); OHM/TADS: Oil and Hazardous Materials Technical Assistance Data System. U.S. Environmental Protection Agency, Washington, D.C. (2006); REPROTOX®: Scialli A.R. Georgetown University Medical Center and Reproductive Toxicology Center, Columbia Hospital for Women Medical Center, Washington, D.C. (2006); RTECS®: Registry of Toxic Effects of Chemical Substances. National Institute for Occupational Safety and Health, Cincinnati, Ohio (2006); and SHEPARDS: Shepard T.H.: Shepard's Catalog of Teratogenic Agents (2006).
- The Fertilizer Institute Product Testing Program Results, March 2003

**OTHER SPECIAL CONSIDERATIONS**

NFPA classification revised and HMIS information added in this revision.

**FOR FURTHER SAFETY, HEALTH, OR ENVIRONMENTAL INFORMATION ON THIS PRODUCT, CONTACT**

**AGRIUM  
Wholesale Environment, Health and Safety  
Telephone (780) 998-6906 or Fax (780) 998-6677**

**NOTICE TO READER**

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