

NFPA Classification	DOT / TDG Pictograms	WHMIS Classification	PROTECTIVE CLOTHING
Health Flammability: 0 Reactivity: 3 Specific Hazard: OXY			

## Section I. Chemical Product and Company Identification

<b>PRODUCT NAME/ TRADE NAME</b>		Ammonium Nitrate, Granular Fertilizer Grade 34-0-0	
<b>SYNONYM</b>	34-0-0 Ammonium Nitrate Fertilizer	<b>MSDS NUMBER:</b>	14072
<b>CHEMICAL NAME</b>	Ammonium nitrate.	<b>REVISION NUMBER</b>	4.6
<b>CHEMICAL FAMILY</b>	Nitrate salt. (Oxidizing agent)	<b>MSDS prepared by the Environment, Health and Safety Department on:</b>	March 25, 2003
<b>CHEMICAL FORMULA</b>	NH <sub>4</sub> NO <sub>3</sub>	<b>24 HR EMERGENCY TELEPHONE NUMBER:</b>  Transportation: 1-800-792-8311 Medical: 1-888-670-8123	
<b>MATERIAL USES</b>	Agricultural industry: Fertilizer. Industrial applications: Manufacture of chemicals. Manufacture of specialty fertilizers.		
<b>MANUFACTURER</b>		<b>SUPPLIER</b>	
Agrium U.S. Inc. Suite 1700, 4582 South Ulster St. Denver, Colorado, U.S.A., 80237		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	10						99.8
<b>TOXICOLOGICAL DATA ON INGREDIENTS</b>								
<b>Ammonium Nitrate:</b> <sup>^</sup>  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 Mezhunarodnaya 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 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]								

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**Section III. Hazards Identification.****POTENTIAL ACUTE HEALTH EFFECTS**

May interfere with the oxygen carrying capacity of the blood if ingested in large quantities or over a prolonged period of time. Persons with anemia, bowel diseases, or infants, are more likely to develop effects. Over-exposure by ingestion is unlikely under normal working conditions. Inhalation of dusts may cause respiratory irritation. 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 following ingestion or irritation and flushed skin following contact with moist skin surfaces.

**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. 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.

**Section IV. First Aid Measures****EYE CONTACT**

Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Obtain medical attention if irritation persists.

**MINOR SKIN CONTACT**

May cause skin irritation. Wash contaminated skin with soap and water. Cover dry or irritated skin with a good quality skin lotion. If irritation persists, seek medical attention.

**EXTENSIVE SKIN CONTACT**

No additional information.

**MINOR INHALATION**

Inhalation of dust may produce irritation, burning, sneezing and coughing. Long term exposure may cause headache, nausea or weakness. Loosen tight clothing. Allow affected persons to rest in a well ventilated area. Obtain medical attention if irritation persists.

**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****THE PRODUCT IS**

Non-flammable.

**AUTO-IGNITION TEMPERATURE**

Not applicable.

**FLASH POINT**

Not applicable.

**FLAMMABILITY LIMITS**

Not applicable.

**PRODUCTS OF COMBUSTION**

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>).

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<b>FIRE HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES</b>	Not applicable.
<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 °F) 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, magnesium, zinc, sodium, potassium and aluminum).</p>
<b>FIRE FIGHTING MEDIA AND INSTRUCTIONS</b>	Oxidizing material. Cool containing vessels, bins or buildings with water jets in order to prevent pressure build-up, or explosion. Establish unmanned monitors and apply flooding quantities of water. Withdraw to a safe location. Evacuate surrounding area. Material will not burn. Undergoes thermal decomposition at elevated temperatures to release toxic and combustible gases (ammonia, carbon dioxide, and oxides of nitrogen). If fumes or gases are present, fire fighters should wear self contained breathing apparatus.
<b>SPECIAL REMARKS ON FIRE HAZARDS</b>	Material supports combustion. Powerful oxidizing agent, supports combustion by liberating oxygen even if smothered. Avoid temperatures above 210°C (410°F) in confined or poorly ventilated spaces. Explosive when exposed to heat or flame <u>under confinement</u> . Avoid pressure build-up. Thermal decomposition or explosion may result. Ventilate to cool and flood with water to stop decomposition reaction. Contain and collect all runoff for treatment. Prevent fire water from reaching water courses or aquifers.
<b>SPECIAL REMARKS ON EXPLOSION HAZARDS</b>	<p>Industry studies have proposed the following rules for blends of ammonium nitrate with phosphate and potassium containing fertilizers:</p> <p>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.</p> <p>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 "cigar burn" fires.</p> <p>c) "Cigar burn" is considered to be a hazard primarily when the ammonium nitrate content of a blend is between 20-40%. Cigar burn is a rare phenomenon which requires the combustion of a separate combustible material such as sulfur which can cause thermal decomposition of nearby ammonium nitrate.</p>

### Section VI. Accidental Release Measures

<b>SMALL SPILL</b>	Use appropriate tools to put the spilled solid in a convenient container for reuse or disposal.
<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. 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. Will dissolve and disperse in water. Put the material into suitable container for reuse or disposal.

### Section VII. Handling and Storage

<b>PRECAUTIONS</b>	Keep away from heat, combustible materials, and reducing agents. Avoid contact with skin and eyes. Do not ingest or breathe dust. Take precautions against electrostatic discharges. Keep out of reach of children. Keep away from food, drink and animal feed.
<b>STORAGE</b>	Store in a dry, cool and well ventilated area. Keep away from food, drink and animal feeds. Keep away from combustible materials. Keep away from incompatible materials. Do not blend or store in contact with urea. Dry urea and dry ammonium nitrate will react together to produce a slurry.

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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, 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. A filtering facepiece dust mask is recommended for most applications if respiratory protection is needed. 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.
<b>PERSONAL PROTECTION IN CASE OF LARGE RELEASE</b>	No additional information.
<b>EXPOSURE LIMITS</b>	U.S. OSHA PEL: 15mg/m <sup>3</sup> as particulate not otherwise regulated.  Permissible exposures may vary from jurisdiction to jurisdiction. Consult local authorities for acceptable exposure limits in your area.

**Section IX. Physical and Chemical Properties**

<b>PHYSICAL STATE AND APPEARANCE</b>	Solid granules.		
<b>MOLECULAR WEIGHT</b>	Not applicable.	<b>COLOR</b>	White.
<b>pH (10% SOLN/WATER)</b>	4.5 - 6.0	<b>ODOR</b>	Odorless.
<b>BOILING POINT</b>	Decomposes.	<b>ODOR THRESHOLD</b>	Not applicable.
<b>MELTING POINT</b>	170°C (338°F)	<b>TASTE</b>	Disagreeable. Acrid. (Strong.)
<b>CRITICAL TEMPERATURE</b>	Not applicable.	<b>VOLATILITY</b>	Not applicable.
<b>SPECIFIC GRAVITY g/cc</b>	0.93 (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>	Loose: 875 kg/m <sup>3</sup> ; 54.6 lbs/ft <sup>3</sup> ; Tapped: 914 kg/m <sup>3</sup> ; 57.1 lbs/ft <sup>3</sup> ;	<b>DISPERSION PROPERTIES</b>	See solubility in water, methanol, acetone.
<b>VAPOR PRESSURE</b>	0 mm of Hg (@ 20°C)	<b>WATER/OIL DIST. COEFF.</b>	Not available.
<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 combustible materials. Slightly reactive to reactive with reducing agents, organic materials, metals, moisture. Very slightly to slightly reactive with alkalis. Non-reactive with acids.
<b>CORROSIVITY</b>	Slightly corrosive to aluminum, zinc, and copper. Non-corrosive to steel and stainless steel (304 or 316).
<b>SPECIAL REMARKS ON REACTIVITY</b>	Absorbs moisture from the air. Incompatible with magnesium, zinc, sodium, potassium, and other finely powdered metals. May explode by detonation, heat or shock.
<b>SPECIAL REMARKS ON CORROSIVITY</b>	Avoid contact with moisture. Slow hydrolysis may produce acids corrosive to metals. Contact your sales representative or a metallurgical specialist to ensure compatibility with system equipment.

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**Section XI. Toxicological Information**

<b>SIGNIFICANT ROUTES OF EXPOSURE</b>	Ingestion. Inhalation.
<b>TOXICITY TO ANIMALS</b>	See Section II.
<b>SPECIAL REMARKS ON TOXICITY TO ANIMALS</b>	Toxic to livestock, wildlife, and domestic animals if directly ingested. Ensure that all spillage is cleaned up and that top dressing on pasture lands is applied uniformly. Allow 2 - 4 days to pass after application before returning livestock to pasture. The product itself and its products of degradation are not harmful under normal conditions of careful and responsible use.
<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>	<p>Non-persistent. Non-cumulative when applied using normal agricultural practises. Low toxicity for humans or animals under normal conditions of use. May be harmful to livestock and wildlife if ingested. Clean up all spilled material, especially where bulk fertilizer loading of equipment occurs to prevent animal exposure.</p> <p>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 NOT listed as a Marine pollutant.</p>
<b>BOD and COD</b>	Not available.
<b>PRODUCTS OF DEGRADATION</b>	Not applicable.
<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 PIN #: UN1942
<b>SPECIAL PROVISIONS FOR TRANSPORT</b>	U.S. DOT: A1, A29, IB8, IP3

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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.

Canada - Domestic Substances List - Present

Canada - WHMIS Classification of Substances: C; D2B

EINECS Inventory: 229-347-8

Japan - Existing and New Chemical Substances Inventory: 1-395

Korea - Existing and Evaluated Chemical Substances Inventory: KE-01715

Taiwan - Dangerous and Toxic Materials List: Dangerous material - Oxidizer

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

SARA HAZARD CATEGORY: This product has been revised according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Immediate Health, Fire, Reactive

The following product is listed in SARA Section 313 (40 CFR Part 372):

Ammonium nitrate, CAS # 6484-52-2 (if in solution and dissociated). Refer to EPA guidance document 745-R-00-006 for information on TRI reporting for nitrates.

This product is not considered as a priority pollutant as regulated under the Clean Water Act.

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

**OTHER CLASSIFICATIONS**

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

**DSCL (EEC)** R2- Risk of explosion by shock, friction, fire or other sources of ignition.  
R8- Contact with combustible material may cause fire.  
R9- Explosive when mixed with combustible material.

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

Hazards presented under acute emergency conditions only:

Health



**Fire Hazard**

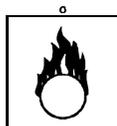
**Reactivity**

**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.
- 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.
- Canadian Centre for Occupational Health and Safety Infodisk Series
- 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, 2002.
- Fire Protection Guide to Hazardous Materials, (NFPA49, 325M, 491M, and 704), National Fire Protection Association, 10th Ed, 1991
- 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> (2002). 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. (2002); HSDB: Hazardous Substances Data Bank. National Library of Medicine, Bethesda, Maryland (2002); IRIS: Integrated Risk Information System. U.S. Environmental Protection Agency, Washington, D.C. (2002); NIOSH: Pocket Guide to Chemical Hazards. National Institute for Occupational Safety and Health, Cincinnati, Ohio (2002); OHM/TADS: Oil and Hazardous Materials Technical Assistance Data System. U.S. Environmental Protection Agency, Washington, D.C. (2002); REPROTOX®: Scialli A.R. Georgetown University Medical Center and Reproductive Toxicology Center, Columbia Hospital for Women Medical Center, Washington, D.C. (2002); RTECS®: Registry of Toxic Effects of Chemical Substances. National Institute for Occupational Safety and Health, Cincinnati, Ohio (2002); and SHEPARDS: Shepard T.H.: Shepard's Catalog of Teratogenic Agents (2002).
- The Fertilizer Institute Product Testing Program Results, March 2003

**OTHER SPECIAL CONSIDERATIONS**

Not applicable.

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

**AGRIUM  
Environment, Health and Safety Department  
Telephone (403) 225-7380 or Fax (403) 225-7608**

**NOTICE TO READER**

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