# Agrium Material Safety Data Sheet

| NFPA Classification | DOT / TDG Pictograms | WHMIS Classification | PROTECTIVE CLOTHING |
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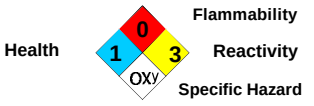
|   |   |  |  |

## *Section I. Chemical Product and Company Identification*

**PRODUCT NAME/ TRADE NAME** **Ammonium Nitrate, Granular Fertilizer Grade 34-0-0**

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| **SYNONYM** | 34-0-0 Ammonium Nitrate Fertilizer | **MSDS NUMBER:** | **14072** |
| **CHEMICAL NAME** | Ammonium nitrate. | **REVISION NUMBER** | 4.5 |
| **CHEMICAL FAMILY** | Nitrate salt. (Oxidizing agent) | **MSDS prepared by the Environment, Health and Safety Department on:** | March 5, 2001 |
| **CHEMICAL FORMULA** | $NH_4NO_3$ | **24 HR EMERGENCY TELEPHONE NUMBER:** | **Transportation: 1-800-792-8311**<br>**Medical: 1-888-670-8123** |
| **MATERIAL USES** | Agricultural industry: Fertilizer.<br>Industrial applications: Manufacture of chemicals. Manufacture of specialty fertilizers. | | |

**MANUFACTURER**

Agrium U.S. Inc.
Suite 1700, 4582 South Ulster St.
Denver, Colorado, U.S.A., 80237

**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*

| | | Exposure Limits (ACGIH) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **NAME** | **CAS #** | **TLV-TWA mg/m³** | **TLV-TWA ppm** | **STEL mg/m³** | **STEL ppm** | **CEIL mg/m³** | **CEIL ppm** | **% by Weight** |
| Ammonium nitrate | 6484-52-2 | 10 | | | | | | 99.8 |

**TOXICOLOGICAL DATA ON INGREDIENTS**

**Ammonium Nitrate**:
Non-Human Toxicity Values:
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)]
TFI Product Testing Results, OECD Guideline 402, October 2000: > 5,000 mg/kg acute dermal LD 50, rat,
OECD SIDS (Screening Information Data Set): acute oral $LD_{50}$, 1479 - 1772 mg/kg, rat.
Not teratogenic to rats at 57 mg/kg

Ecotoxicity Values:
LD50 Aspergillus niger (fungus) 15 mg/l/40 hr (36 deg C). [Peer Reviewed] [Environment Canada; Tech Info]
OECD SIDS: 48 hr $LC_{50}$, 1.15-1.72 mg un-ionized $NH_3$/L, Rainbow Trout; 48 hr $LC_{50}$, 95-102 mg total $NH_3$/L, Rainbow Trout; $EC_{50}$, 125 mg/L, Daphnia; $EC_{50}$, 18.7 mg/L, Phytoplankton

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## *Section III. Hazards Identification.*

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| **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.<br><br>Symptoms of overexposure may include:<br>Cardiovascular: methemoglobinemia, low blood pressure (hypotension), irregular heart beat (arrhythmia), shock (vasodilation)<br>CNS: headache, dizziness, generalized tingling sensation (parasthesia)<br>Gastrointestinal: nausea, vomiting, diarrhea, abdominal pain<br>Eye: redness and inflammation (conjunctivitis)<br>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.<br><br>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*

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| **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*

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| **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 ($NO$, $NO_2$, $NH_3$). |

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| **FIRE HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES** | Not applicable. |
| **EXPLOSION HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES** | Oxidizer: Material is an oxidizer which may react readily with other materials, especially upon heating. Studies conducted by the Canadian Center for Mineral and Energy Technology Explosives Research Laboratory indicate that Agrium Ammonium Nitrate Fertilizer meets The Fertilizer Institute Detonation Resistance and Burn Test for classification of the material as "fertilizer".<br><br>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.<br><br>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). |
| **FIRE FIGHTING MEDIA AND INSTRUCTIONS** | 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. |
| **SPECIAL REMARKS ON FIRE HAZARDS** | 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 under confinement. 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. |
| **SPECIAL REMARKS ON EXPLOSION HAZARDS** | Industry studies have proposed the following rules for blends of ammonium nitrate with phosphate and potassium containing fertilizers:<br><br>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.<br>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.<br>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 combustable material such as sulfur which can cause thermal decomposition of nearby ammonium nitrate. |

## *Section VI. Accidental Release Measures*

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| **SMALL SPILL** | Use appropriate tools to put the spilled solid in a convenient container for reuse or disposal. |
| **LARGE SPILL** | 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*

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| **PRECAUTIONS** | 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. |
| **STORAGE** | 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*

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| **ENGINEERING CONTROLS** | 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. |
| **PERSONAL PROTECTION** | 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. |
| **PERSONAL PROTECTION IN CASE OF LARGE RELEASE** | No additional information. |
| **EXPOSURE LIMITS** | ACGIH TLV-TWA: 10 $mg/m^3$ as particulate not otherwise classified.<br>U.S. OSHA PEL: 15$mg/m^3$ as particulate not otherwise classified.<br><br>Permissible exposures may vary from juresdiction to juresdiction. Consult local authorities for acceptable exposure limits in your area. |

## *Section IX. Physical and Chemical Properties*

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| **PHYSICAL STATE AND APPEARANCE** | Solid granules. | | |
| **MOLECULAR WEIGHT** | Not applicable. | **COLOR** | White. |
| **pH (10% SOLN/WATER)** | 4.5 - 6.0 | **ODOR** | Odorless. |
| **BOILING POINT** | Decomposes. | **ODOR THRESHOLD** | Not applicable. |
| **MELTING POINT** | 170°C (338°F) | **TASTE** | Disagreeable. Acrid. (Strong.) |
| **CRITICAL TEMPERATURE** | Not applicable. | **VOLATILITY** | Not applicable. |
| **SPECIFIC GRAVITY g/cc** | 0.93 (Water = 1) | **SOLUBILITY** | Easily soluble in cold water, hot water. |
| **BULK DENSITY $kg/m^3$ ; $lbs/ft^3$** | Loose: 875 $kg/m^3$; 54.6 $lbs/ft^3$; Tapped: 914 $kg/m^3$; 57.1 lbs/ft 3; | **DISPERSION PROPERTIES** | See solubility in water, methanol, acetone. |
| **VAPOR PRESSURE** | 0 mm of Hg (@ 20°C) | **WATER/OIL DIST. COEFF.** | Not available. |
| **VAPOR DENSITY** | Not applicable. | | |

## *Section X. Stability and Reactivity Data*

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| **STABILITY** | The product is stable. |
| **INSTABILITY TEMPERATURE** | Not available. |
| **CONDITIONS OF INSTABILITY** | No additional remark. |
| **INCOMPATABILITY WITH VARIOUS SUBSTANCES** | 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. |
| **CORROSIVITY** | Slightly corrosive to aluminum, zinc, and copper. Non-corrosive to steel and stainless steel (304 or 316). |
| **SPECIAL REMARKS ON REACTIVITY** | Absorbs moisture from the air. Incompatible with magnesium, zinc, sodium, potassium, and other finely powdered metals. May explode by detonation, heat or shock. |
| **SPECIAL REMARKS ON CORROSIVITY** | Avoid contact with moisture. Slow hydrolysis may produce acids corrosive to metals. Contact your sales representative or a metallurgical specialist to ensure compatability with system equipment. |

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## *Section XI. Toxicological Information*

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| **SIGNIFICANT ROUTES OF EXPOSURE** | Ingestion. Inhalation. |
| **TOXICITY TO ANIMALS** | See Section II. |
| **SPECIAL REMARKS ON TOXICITY TO ANIMALS** | 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. |
| **OTHER EFFECTS ON HUMANS** | 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. |
| **SPECIAL REMARKS ON CHRONIC EFFECTS ON HUMANS** | 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. |
| **SPECIAL REMARKS ON OTHER EFFECTS ON HUMANS** | ACGIH TLV is based on "Particulates Not Otherwise Classified". |

## *Section XII. Ecological Information*

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| **ECOTOXICITY** | 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.<br><br>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. |
| **BOD and COD** | Not available. |
| **PRODUCTS OF DEGRADATION** | Not applicable. |
| **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*

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| **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*

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| **DOT / TDG CLASSIFICATION** | DOT/TDG CLASS 5.1: Oxidizing substance. |
| **PIN** | Proper Shipping Name: Ammonium Nitrate PIN: UN1942 PG: III |
| **SPECIAL PROVISIONS FOR TRANSPORT** | |

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Exemption under 49 CFR Part §173.5 for Agricultural operations:
(a) The transportation of an agricultural product other than a Class 2 material, over local roads between fields of the same farm, is excepted from the requirements of this subchapter when:
(a)(1) It is transported by a farmer who is an intrastate private motor carrier; and
(a)(2) The movement of the agricultural product conforms to requirements of the State in which it is transported and is specifically authorized by a State statute or regulation in effect before October 1, 1998.
(b) The transportation of an agricultural product to or from a farm, within 150 miles of the farm, is excepted from the requirements in subparts G and H of part 172 of this subchapter and from the specific packaging requirements of this subchapter when:
(b)(1) It is transported by a farmer who is an intrastate private motor carrier;
(b)(2) The total amount of agricultural product being transported on a single vehicle does not exceed:
(b)(2)(i) 7,300 kg (16,094 lbs.) of ammonium nitrate fertilizer properly classed as Division 5.1, PG III, in a bulk packaging, or
(b)(2)(ii) 1900 L (502 gallons) for liquids or gases, or 2,300 kg (5,070 lbs.) for solids, of any other agricultural product;
(b)(3) The movement and packaging of the agricultural product conform to the requirements of the State in which it is transported and are specifically authorized by a State statute or regulation in effect before October 1, 1998; and
(b)(4) Each person having any responsibility for transporting the agricultural product or preparing the agricultural product for shipment has been instructed in the applicable requirements of this subchapter.

Where an agricultural product is defined under 49FR §171.8 as:
Agricultural product means a hazardous material, other than a hazardous waste, whose end use directly supports the production of an agricultural commodity including, but not limited to a fertilizer, pesticide, soil amendment or fuel. An agricultural product is limited to a material in Class 3, 8 or 9, Division 2.1, 2.2, 5.1, or 6.1, or an ORM–D material.

Exempt under Canadian TDGR Sec 2.32.4 2(a)(b)(c)and (d):
Retail deliveries of less than 13.6 tonnes of ammonium nitrate fertilizers (PIN #s: 1942, 2067, 2069, 2070, or 2072) are exempt from Sections IV, V, and 9.2 to 9.7 of the TDGR if carrying a record sheet identifying the Proper Shipping Name, PIN #, and quantity of fertilizer transported.

**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

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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 category(ies):
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).

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).

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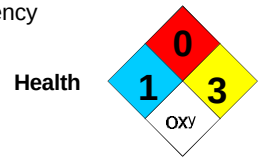
| **OTHER CLASSIFICATIONS** | **HCS (U.S.A.)** | HCS CLASS: Oxidizer. |
| | **DSCL (EEC)** | R2- Risk of explosion by shock, friction, fire or other sources of ignition.<br>R8- Contact with combustible material may cause fire.<br>R9- Explosive when mixed with combustible material. |

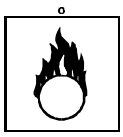
**National Fire Protection Association (U.S.A.)**

Hazards presented under acute emergency conditions only:




**TDG (Pictograms - Canada)**

**DSCL (Europe) (Pictograms)**



**ADR (Europe) (Pictograms)**

## Section XVI. Other Information

**REFERENCES**

-Transportation of Dangerous Goods Act (1992) and 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.
-29 CFR Part 1910
-40 CFR Parts 1-799
-49 CFR Parts 1-199
-American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Chemical Substances, 2000.
-Corrosion Data Survey, Sixth Edition, 1985, National Association of Corrosion Engineers.

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-Fire Protection Guide to Hazardous Materials, (NFPA49, 325M, 491M, and 704), National Fire Protection Association, 10th Ed, 1991.
-TOMES Plus®, Vol 43, Jan 2000, Micromedex Inc.
- The Fertilizer Institute Product Testing Plan Results, March 2001

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| **OTHER SPECIAL CONSIDERATIONS** | Not applicable. |

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| **FOR FURTHER SAFETY, HEALTH, OR ENVIRONMENTAL INFORMATION ON THIS PRODUCT, CONTACT** | **AGRIUM**<br>**Environment, Health and Safety Department**<br>**Telephone (780) 998-6134 or Fax (780) 998-6143** |

**NOTICE TO READER**