

NFPA Classification	DOT / TDG Pictograms	WHMIS Classification	HMIS		PROTECTIVE CLOTHING
			Health	1	
			Flammability	0	
			Reactivity	0	
			PPE	A	

Section I. Chemical Product and Company Identification

PRODUCT NAME/ TRADE NAME Urea Ammonium Nitrate Polyphosphate Potassium Thiosulfate Liquid Fertilizers

SYNONYM This MSDS applies to liquid fertilizer solutions consisting of blended urea ammonium nitrate, ammonium polyphosphate, and potassium thiosulfate formulations.
N-P-K-S Liquid Fertilizers

MSDS NUMBER: 14255

CHEMICAL NAME Not applicable.

REVISION NUMBER 5.H

CHEMICAL FAMILY Aliphatic amide, polyphosphate nitrate potash salt solution.

MSDS prepared by September 23, 200-
the Environment,
Health and Safety
Department on:

CHEMICAL FORMULA Not applicable. A liquid blend of urea, the ammonium salt of nitric acid, ammonium polyphosphate solution and potash.

24 HR EMERGENCY TELEPHONE NUMBER:

MATERIAL USES Fertilizer. Manufacture of specialty fertilizers. Nutrient for biological water treatment systems.

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

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

SUPPLIER

Agrium
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13131 Lake Fraser Drive, S.E.
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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 ³	TLV-TWA ppm	STEL mg/m ³	STEL ppm	CEIL mg/m ³	CEIL ppm	
Ammonium nitrate	6484-52-2	---						5-10

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

Urea Ammonium Nitrate Solution TFI Product Testing Program Results:

Acute Oral Toxicity, LD₅₀, OECD 425 protocol: >2,000mg/kg, rat

Eotoxicity:

Acute fish toxicity, 96hr LC₅₀, OECD 203 protocol, rainbow trout: >103mg/L

Ammonium Polyphosphate Solution TFI Product Testing Program:

Acute oral LD₅₀, OECD 425 protocol: >2,000 mg/kg, rat

Acute dermal LD₅₀, OECD 402 protocol: >5,000 mg/kg, rat

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Ecotoxicity:
Acute fish toxicity, 96hr LC₅₀, OECD 203 protocol, rainbow trout: >101 mg/L

Potash TFI Product Testing Program Results:
Acute oral toxicity: 2,600 mg/kg rat; 1,500 mg/kg mouse
Ecotoxicity:
Acute toxicity to fish, species unspecified, LC₅₀, 96hr: 2,010 mg/L
Acute toxicity to invertebrates, Daphnia, 48hr TLm 337mg/L

Ammonium Thiosulfate Solution TFI Product Testing Program Results:
Acute oral toxicity, LD₅₀: 1,950-2,890 mg/kg (rat, mouse)
Acute inhalation toxicity, LC₅₀: >1,800, >2,260 mg/m³ (rat, mouse)
Ecotoxicity:
Acute toxicity to fish, species not specified, 48 hr LC₅₀: >48.6 mg total NH₃/L

Section III. Hazards Identification.

POTENTIAL ACUTE HEALTH EFFECTS

Dangerous in case of ingestion. May interfere with oxygen carrying capacity of the blood (Methemoglobinemia). Over-exposure by inhalation may cause respiratory irritation. This product may irritate eyes and skin upon contact but is unlikely to injure tissue. Symptoms of ingestion 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 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

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

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

Repeated or prolonged inhalation of vapors or spray mist may produce irritation of respiratory tract. Loosen tight clothing. Allow 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

Do not induce vomiting. Quickly transport the person to an emergency care facility. Removal of the substance from the stomach must be done by medical personnel. If tolerated, give no more than 1 cup of milk or water (or 1/2 cup for children) to rinse the mouth and throat and dilute the stomach contents.

If spontaneous vomiting does occur, lower the head so that the vomit will not reenter the mouth and throat. Rinse mouth with water.

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 after material evaporates to dryness. These products are nitrogen oxides and ammonia (NO, NO ₂ , NH ₃).
FIRE HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	Dangerous if evaporated to dryness, or if heated under confinement. Dry residue may form explosive mixtures with organic materials. Avoid temperatures above 93°C (200°F), cavitation in blocked in pumps, or flame heating of frozen lines or equipment which may result in evaporation, thermal decomposition or explosion.
EXPLOSION HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	Incompatible with strong reducing agents, or other oxidizers. Possible incompatibility with finely powdered metals (cadmium, copper, lead, cobalt, nickel, bismuth, chromium, magnesium, zinc, sodium, potassium and aluminum). May explode by detonation, heat or shock when evaporated to near dryness. Solution may detonate if subjected to heat and pressure.
FIRE FIGHTING MEDIA AND INSTRUCTIONS	If evaporated to dryness, acts as an 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. When heated to decomposition it emits toxic fumes (NH ₃ , NO, NO ₂).
SPECIAL REMARKS ON FIRE HAZARDS	Residue may be dangerous in contact with flammable organic materials. Evolves toxic fumes when heated to the decomposition state. Avoid temperatures above 100°C (212°F). On evaporation to dryness thermal decomposition or explosion may result.
SPECIAL REMARKS ON EXPLOSION HAZARDS	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 due to the formation of urea nitrate.

Section VI. Accidental Release Measures

SMALL SPILL	<p>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. Product will promote algae growth which may degrade water quality and taste.</p> <p>Notify downstream water users. Nitrate in potable drinking water should be maintained below the U.S. National Primary Drinking Water Regulations MCL of 10mg/L as nitrogen, or the Canadian Guidelines for Drinking Water Quality MAC of 45mg/L (equivalent to 10mg/L nitrate-nitrogen). Will disperse in water. Where possible, pump up spilled material and place in suitable containers for reuse or disposal. Ensure disposal complies with local regulations. Reclaiming material may not be viable.</p>
LARGE SPILL	No additional information in case of a spill and/or a leak of the product.

Section VII. Handling and Storage

PRECAUTIONS	Keep away from incompatible materials such as strong reducing agents or flammable materials. Avoid contact with skin and eyes. Do not breathe mists. Keep out of reach of children.
STORAGE	Keep at temperatures not exceeding 93°C. Keep away from incompatible materials.

Section VIII. Exposure Controls/Personal Protection

ENGINEERING CONTROLS	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate fume or mist, 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	NIOSH approved ammonia cartridge 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 splashes wear long sleeved clothing, coveralls or splash apron, 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.
EXPOSURE LIMITS	OSHA PEL: 15 mg/m ³ for Particulates Not Otherwise Classified (nuisance particulates). 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

PHYSICAL STATE AND APPEARANCE	Liquid. (Clear to slightly hazy liquid.)		
MOLECULAR WEIGHT	Not applicable.	COLOR	Clear green.
pH (10% SOLN/WATER)	6 - 8	ODOR	Mild ammonia odor.
BOILING POINT	Decomposes.	ODOR THRESHOLD	17 PPM as ammonia.
MELTING POINT	Salt out temp: Variable depending on formulation +1 to < -25°C; (34 to -13°F).	TASTE	Acrid. Burning. Disagreeable.
CRITICAL TEMPERATURE	Not applicable.	VOLATILITY	Not available.
SPECIFIC GRAVITY g/cc	1.2-1.3	SOLUBILITY	Easily soluble in cold water, hot water.
BULK DENSITY kg/m³ ; lbs/ft³	1200-1300 kg/m ³ ; 75-80 lbs/ft ³ 10-11 lbs/U.S. Gal	DISPERSION PROPERTIES	See solubility in water.
VAPOR PRESSURE	Not applicable.	WATER/OIL DIST. COEFF.	Completely soluble in water.
VAPOR DENSITY	Not applicable.		

Section X. Stability and Reactivity Data

STABILITY	The product is stable.
INSTABILITY TEMPERATURE	Not available.
CONDITIONS OF INSTABILITY	No additional remark.
INCOMPATABILITY WITH VARIOUS SUBSTANCES	Slightly reactive with reducing agents, combustible materials, organic materials, metals, acids or alkalis.
CORROSIVITY	Slightly corrosive to zinc, copper, and aluminum. Non-corrosive to mild steel, or stainless steel (304 or 316).
SPECIAL REMARKS ON REACTIVITY	Incompatible with sulfur, chlorides, or other oxidizers. May be incompatible with finely powdered metals (cadmium, copper, lead, cobalt, nickel, bismuth, chromium, magnesium, zinc, sodium, potassium and aluminum). May explode by detonation, heat or shock when evaporated to near dryness.
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 your equipment.

Section XI. Toxicological Information

SIGNIFICANT ROUTES OF EXPOSURE	Ingestion. Inhalation.
TOXICITY TO ANIMALS	See Section II.
SPECIAL REMARKS ON TOXICITY TO ANIMALS	Will slowly release ammonia and degrade to nitrate. Ammonia is a toxic hazard to fish. 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.
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. 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	Will release ammonium ions. Ammonia is a toxic hazard to fish. May be harmful to animals on direct ingestion. Non-persistent. Non-cumulative when applied using normal agricultural practises. U.S. D.O.T.: This material is NOT listed as a Marine pollutant.
BOD and COD	Not available.
PRODUCTS OF DEGRADATION	Ammonia, nitrogen oxides (NO, NO ₂ ...)
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	

Continued on Next Page

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 the U.S. National Primary Drinking Water Regulations MCL of 10mg/L, or the Canadian Guidelines for Drinking Water Quality MAC of 45mg/L or 10mg/L as nitrate-nitrogen. Will dissolve and disperse in water. Reclaiming material may not be viable.

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.

Section XIV. Transport Information

DOT / TDG CLASSIFICATION Not controlled under DOT (US) or TDG (Canada).

PIN and Shipping Name Not applicable.

SPECIAL PROVISIONS FOR TRANSPORT No additional remark.

DOT (U.S.A) (Pictograms)



Section XV. Other Regulatory Information and Pictograms

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

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

The following products are listed in SARA Section 313:
Ammonia 7664-41-7
Water dissociable nitrate, -----
Refer to the specific product analysis for your product to determine your reporting requirements under this regulation.

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

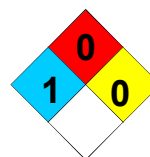
TSCA (Toxic Substance Control Act): This product is listed on the TSCA Inventory.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and is not subject to control under WHMIS (Canada), or the Hazcom Standard (US).

OTHER CLASSIFICATIONS **HCS (U.S.A.)** No hazardous components identified per 29 CFR 1910.1200

DSCL (EEC) 44- Risk of explosion if heated under confinement.

National Fire Protection Association (U.S.A.) Dried product residue can act as an oxidizer. Hazards presented under acute emergency conditions only:

Health



Fire Hazard

Reactivity

Specific Hazard

TDG (Pictograms - Canada)



DSCL (Europe)
(Pictograms) Not Available
 No Disponible
 Pas Disponible

ADR (Europe)
(Pictograms) Not Available
 No Disponible
 Pas Disponible

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, 200J.
- 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
- ERG2008 Emergency Response Guidebook
- CHRIS Hazardous Chemical Data: U.S. Coast Guard, Washington, D.C.;
- HSDB: Hazardous Substances Data Bank. National Library of Medicine, Bethesda, Maryland;
- IRIS: Integrated Risk Information System. U.S. Environmental Protection Agency, Washington, D.C.;
- NIOSH: Pocket Guide to Chemical Hazards. National Institute for Occupational Safety and Health, Cincinnati, Ohio;
- OHM/TADS: Oil and Hazardous Materials Technical Assistance Data System. U.S. Environmental Protection Agency, Washington, D.C.;
- RTECS®: Registry of Toxic Effects of Chemical Substances. National Institute for Occupational Safety and Health, Cincinnati, Ohio;
- The Fertilizer Institute Product Testing Program Results, March 2003

OTHER SPECIAL CONSIDERATIONS Three year review and reference update 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

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