





NFPA Classification	DOT / TDG Pictograms	WHMIS Classification	HMIS		PROTECTIVE CLOTHING
 <p>Health: 1, Flammability: 0, Reactivity: 1, Specific Hazard</p>			Health: 1 Flammability: 0 Reactivity: 0 PPE: A		

Section I. Chemical Product and Company Identification

PRODUCT NAME/ TRADE NAME Urea Ammonium Nitrate Liquid - UAN (28 - 32%)

SYNONYM This Material Safety Data Sheet applies to the following Agrium products:
UAN 32-0-0
UAN 30-0-0
UAN 28-0-0

MSDS NUMBER: 16007

CHEMICAL NAME Not applicable.

REVISION NUMBER 1.1

CHEMICAL FAMILY Carbamide and nitrate salt solution.

MSDS prepared by September 16, 200-
the Environment,
Health and Safety
Department on:

CHEMICAL FORMULA Not applicable.

MATERIAL USES Agricultural industry: Fertilizer.

24 HR EMERGENCY TELEPHONE NUMBER:

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
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 ³	TLV-TWA ppm	STEL mg/m ³	STEL ppm	CEIL mg/m ³	CEIL ppm	
nitric acid ammonium salt	6484-52-2	---						30-60

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

Ecotoxicity:

Acute fish toxicity:

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

96hr LC₅₀, OECD 203 protocol, fathead minnow: 100 - 500mg/L

Section III. Hazards Identification.

POTENTIAL ACUTE HEALTH EFFECTS	<p>May be dangerous in case of ingestion by infants, reducing the oxygen carrying capacity of the blood (methemoglobinemia). As with any salt solution, over-exposure to spray mists may cause minor respiratory, eye or skin irritation.</p> <p>Symptoms of overexposure among infants 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</p>
POTENTIAL CHRONIC HEALTH EFFECTS	<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 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>

Section IV. First Aid Measures

EYE CONTACT	May cause eye irritation. Flush eyes with water for at least 15 minutes. Use warm water if available. Get medical attention if irritation persists.
MINOR SKIN CONTACT	May cause skin irritation. Wash contaminated skin with soap and water. Moisturize irritated skin with a good quality skin cream. If irritation persists, obtain medical attention.
EXTENSIVE SKIN CONTACT	No additional information.
MINOR INHALATION	Repeated or prolonged inhalation of spray mists may produce irritation of the respiratory tract. Loosen tight clothing and allow 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	Do not induce vomiting. Careful removal of the substance from the stomach by medical personnel is required. Call a physician or poison control center immediately. Get immediate medical attention. If tolerated, give no more than 1 cup of milk or water to rinse the mouth and throat and dilute the stomach contents. No more than 8 ounces (1 cup) in adults and 4 ounces (1/2 cup) in children is recommended to minimize the risk of vomiting. 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).

Continued on Next Page

FIRE HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	Dangerous if evaporated to near dryness. Dry residue may form explosive mixtures with organic materials. Avoid temperatures above 100°C (212°F) 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). Fire fighters should wear self-contained breathing apparatus (SCBA) and full turnout gear.
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.

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. Will dissolve and 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.

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 100 °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, impervious apron or 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 brief, periodic exposures, 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 program meeting 29 CFR 1910.134 is in place.

Continued on Next Page

EXPOSURE LIMITS	Federal OSHA PEL: 15 mg/m ³ for Particulates Not Otherwise Regulated (nuisance particulates) as total dust for suspended solids produced by the evaporation of spray mists. 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
pH (10% SOLN/WATER)	6.7 - 7.5	ODOR	Odorless.
BOILING POINT	Decomposes.	ODOR THRESHOLD	Not applicable.
MELTING POINT	Salt out temp = 32°F / 0°C	TASTE	Disagreeable. Saline.
CRITICAL TEMPERATURE	Not applicable.	VOLATILITY	20% (w/w).
SPECIFIC GRAVITY g/cc	~1.30 - 1.35 (Water = 1)	SOLUBILITY	Easily soluble in cold water, hot water.
BULK DENSITY kg/m³ ; lbs/ft³	~1320 kg/m ³ ; 82.4 lbs/ft ³ ; ~11.0 lbs/gal (US) ~182 gal/ton	DISPERSION PROPERTIES	See solubility in water.
VAPOR PRESSURE	17.2 mm of Hg (@ 20°C) based on water	WATER/OIL DIST. COEFF.	Only soluble or dispersed 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. Very slightly reactive with acids, alkalis.
CORROSIVITY	Slightly corrosive to zinc, copper, and aluminum. Non-corrosive to mild steel or stainless steel (304 or 316). Consult your sales representative for further information on storage and handling system requirements.
SPECIAL REMARKS ON REACTIVITY	Incompatible with strong oxidizers or reducing agents. 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 of spray mists.
TOXICITY TO ANIMALS	See Section II.
SPECIAL REMARKS ON TOXICITY TO ANIMALS	See Section XII - Ecotoxicity.
OTHER EFFECTS ON HUMANS	

Continued on Next Page

SPECIAL REMARKS ON CHRONIC EFFECTS ON HUMANS	Recent studies undertaken by the U.S. Government using Canadian and American databases have determined that ammonium nitrate containing fertilizer does not demonstrate any risk of gastrointestinal cancer.
SPECIAL REMARKS ON OTHER 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. Susceptible individuals may include persons with existing blood or circulatory conditions.
	No additional remark.


Section XII. Ecological Information

ECOTOXICITY	<p>May be harmful to fish, livestock, and wildlife. Dissolved mineral salts may cause irritation of the digestive tract. Non-persistent. Non-cumulative when applied using normal agricultural practises. The product itself and its products of degradation are not harmful under normal conditions of careful and responsible use.</p> <p>UAN Aquatic/Marine Toxicity: Will release ammonium ions. Ammonia is a toxic hazard to fish. Toxicity testing data on UAN solutions has indicated that UAN is of low acute toxicity to fish.</p> <p>Avoid spills or release to watercourses. Highly soluble. 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.</p>
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	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 as nitrogen, or the Canadian Guidelines for Drinking Water Quality MAC of 45mg/L. 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	Not applicable.
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 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 are listed in SARA Section 313:
 Ammonia 766-41-7 10%
 Water dissociable nitrate, ----- 35%
 This product is not considered a priority pollutant as regulated under the Clean Water Act. Exempt under Table 2, 46 CFR 153 from classification category "D" NLS requirements under 33 CFR 151, 154 or 156 for barges or vessels not subject to the requirements of MARPOL 73/78.
 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.)	HCS CLASS: May be toxic for the blood.
	DSCL (EEC)	44- Risk of explosion if heated under confinement.

National Fire Protection Association (U.S.A.)	Hazards presented under acute emergency conditions only:		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, 2009.
- 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. Department of Transportation, 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 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

The buyer assumes all risk in connection with the use of this material. The buyer assumes all responsibility for ensuring this material is used in a safe manner in compliance with applicable environmental, health and safety laws, policies and guidelines. Agrium assumes no responsibility or liability for the information supplied on this sheet, including any damages or injury caused thereby. Agrium does not warrant the fitness of this material for any particular use and assumes no responsibility for injury or damage caused directly or indirectly by or related to the use of the material. The information contained in this sheet is developed from what Agrium believes to be accurate and reliable sources, and is based on the opinions and facts available on the date of preparation.