





NFPA Classification 	DOT / TDG Pictograms 	WHMIS Classification 	PROTECTIVE CLOTHING 
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Section I. Chemical Product and Company Identification

PRODUCT NAME/ TRADE NAME		Urea, Fertilizer Grade, Granular 46-0-0	
SYNONYM	This Material Safety Data Sheet applies to the following Agrium products: Granular Urea - Borger Production Granular Urea - Carseland Production Granular Urea - Fort Saskatchewan Production Granular Urea - Redwater Production Please refer to the appropriate Product Specification Sheet for technical information on each product.	MSDS NUMBER:	14027
CHEMICAL NAME	Carbamide	REVISION NUMBER	4.0
CHEMICAL FAMILY	Aliphatic amide	MSDS prepared by the Environment, Health and Safety Department on: February 25, 2000	
CHEMICAL FORMULA	CO(NH ₂) ₂	24 HR EMERGENCY TELEPHONE NUMBER: Transportation: 1-800-792-8311 Medical: 1-888-670-8123	
MATERIAL USES	Agricultural use: Fertilizer. Industrial applications: Manufacture of specialty fertilizers.		
MANUFACTURER		SUPPLIER	
Agrium North American Wholesale 13131 Lake Fraser Drive, S.E. Calgary, Alberta, Canada, T2J 7E8 Agrium U.S. Inc. Suite 1400, 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 1400, 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	
Urea	57-13-6	10						100
TOXICOLOGICAL DATA ON INGREDIENTS	Granular Urea 46-0-0: ORAL (LD50): Acute: 14300 mg/kg (Rat.) This product and its above listed ingredient(s) is (are) not considered hazardous according to WHMIS (Canada), HSC (United States) and DSCL (Europe).							

Section III. Hazards Identification.

POTENTIAL ACUTE HEALTH EFFECTS	This product may irritate eyes and skin upon contact. Not considered to be toxic for humans. However, in keeping with good industrial hygiene practises, exposure to any chemical should be kept to a minimum.
POTENTIAL CHRONIC HEALTH EFFECTS	CARCINOGENIC EFFECTS: NONE by ACGIH, EPA, IARC, OSHA. MUTAGENIC EFFECTS: NONE by ACGIH, EPA, IARC, OSHA. TERATOGENIC EFFECTS: NONE by ACGIH, EPA, IARC, OSHA. The substance is not toxic to blood, kidneys, lungs, the nervous system, the reproductive system, liver, mucous membranes. There is no known effect from chronic exposure to this product. Urea is approved as a food and cosmetic additive, is an ingredient in clinical preparations, and is a normal human metabolite found in urine.

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 if irritation persists.
MINOR SKIN CONTACT	Wash with soap and water. Get medical attention if irritation develops or persists.
EXTENSIVE SKIN CONTACT	No additional information.
MINOR INHALATION	Repeated or prolonged inhalation of dust may lead to respiratory irritation. Allow the victim to rest in a well ventilated area. Obtain medical attention if irritation persists.
SEVERE INHALATION	No additional information.
SLIGHT INGESTION	Remove dentures if any. If conscious, have person drink several glasses of water or milk and induce vomiting. Never give anything by mouth to an unconscious person. Lower the head so that the vomit will not reenter the mouth and throat. 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. Undergoes thermal decomposition at elevated temperatures to produce solid cyanuric acid and release toxic and combustible gases (ammonia, carbon dioxide, and oxides of nitrogen).
FIRE HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	Not applicable.
EXPLOSION HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	Highly explosive in presence of certain strong reducing agents. Non-explosive in presence of open flames and sparks, shocks, heat, oxidizing materials, combustible materials, organic materials, metals, acids, alkalis, or moisture.
FIRE FIGHTING MEDIA AND INSTRUCTIONS	Non-flammable. 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. Use extinguishing media suitable for surrounding materials.
SPECIAL REMARKS ON FIRE HAZARDS	Flammable/toxic gases will form at elevated temperatures by thermal decomposition. When exposed to heat, ammonia is released.
SPECIAL REMARKS ON EXPLOSION HAZARDS	Explosive when mixed with hypochlorites. Forms nitrogen trichloride which explodes spontaneously in air.

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Section VI. Accidental Release Measures

SMALL SPILL	Use appropriate tools to put the spilled solid in a suitable container for intended use or disposal.
LARGE 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. Recover and place material in suitable containers for recycle, reuse, or disposal.

Section VII. Handling and Storage

PRECAUTIONS	If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Keep out of reach of children.
STORAGE	Store in a dry, cool and well ventilated area. Keep away from incompatible materials such as reducing agents. Do not blend or store in contact with ammonium nitrate. Dry urea and dry ammonium nitrate will react together to produce a slurry.

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 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. 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 recommendations.
EXPOSURE LIMITS	10 mg/m ³ TWA from AIHA WEEL's as inhalable dust. Consult local authorities for acceptable exposure limits.

Section IX. Physical and Chemical Properties

PHYSICAL STATE AND APPEARANCE	Solid. (Granular solid.)		
MOLECULAR WEIGHT	60.06	COLOR	White.
pH (10% SOLN/WATER)	8	ODOR	Odorless to slightly ammoniacal.
BOILING POINT	Decomposes.	ODOR THRESHOLD	17 PPM as ammonia.
MELTING POINT	132.7°C (270.9°F)	TASTE	Saline.
CRITICAL TEMPERATURE	Not applicable.	VOLATILITY	Not available.
SPECIFIC GRAVITY g/cc	0.74 (Water = 1)	SOLUBILITY	Easily soluble in hot water. Soluble in cold water. Partially soluble in methanol, diethyl ether. Insoluble in n-octanol.
BULK DENSITY kg/m³ ; lbs/ft³	Loose: 737 kg/m ³ ; 46 lbs/ft ³ ; Packed: 801 kg/m ³ ; 50 lbs/ft ³ ;	DISPERSION PROPERTIES	See solubility in water, methanol, diethyl ether.
VAPOR PRESSURE	Not available.	WATER/OIL DIST. COEFF.	Soluble in water.
VAPOR DENSITY	Not available.		

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Section X. Stability and Reactivity Data

STABILITY	The product is stable.
INSTABILITY TEMPERATURE	Not available.
CONDITIONS OF INSTABILITY	No additional remark.
INCOMPATIBILITY WITH VARIOUS SUBSTANCES	Very slightly to slightly reactive with oxidizing agents, reducing agents, acids, alkalis, moisture. Non-reactive with combustible materials, organic materials, metals.
CORROSIVITY	Highly corrosive in presence of steel. Very slightly to slightly corrosive in presence of aluminum, zinc, or copper. Non-corrosive in the presence of glass, 304 stainless steel, or 316 stainless steel.
SPECIAL REMARKS ON REACTIVITY	Absorbs moisture from the air. Hygroscopic; keep container tightly closed.
SPECIAL REMARKS ON CORROSIVITY	Avoid contact with moisture. Slow hydrolysis will produce corrosive acids.

Section XI. Toxicological Information

SIGNIFICANT ROUTES OF EXPOSURE	Ingestion. Inhalation.
TOXICITY TO ANIMALS	<p>Acute oral toxicity (LD50): 14300 mg/kg (Rat.).</p> <p>Under controlled feeding conditions, urea is used as a nutritional supplement in cattle and other animals. The toxic dose in cattle given urea for the first time is considered to be 0.45 g/kg or a total of 100-200 g. Mature bullocks can digest as much as 400 g a day without ill effect. As little as 50 g may cause adverse effects in cattle not accustomed to it.</p> <p>Animal Antidote and Emergency Treatment:</p> <p>In animals, the cold water - acetic acid treatment may work. The adult cow is given 19-38 liters cold water and 3.8 liters of 5% acetic acid (vinegar) orally. This treatment limits absorption of ammonia from the rumen by diluting the rumen contents and slowing the rate of hydrolysis of urea by decreasing rumen pH and temperature. The treatment also promotes urine flow that, if maintained by fluid therapy, may assure recovery from urea toxicity. Gaseous or fluid bloat should be relieved before pumping water into the rumen. Consult your veterinarian immediately.</p>
SPECIAL REMARKS ON TOXICITY TO ANIMALS	Very low toxicity for humans or animals under normal conditions of careful, responsible use. Urea is used in small quantities as a feed supplement for livestock. Urea ingestion may be harmful to wildlife, livestock and birds at body burdens of several thousands of mg/kg if ingested without adequate mixing. Clean up all spilled material, especially where bulk fertilizer loading of equipment occurs to prevent animal overexposure. If used for the manufacture of feeds, mix thoroughly by making a preblend with one of the ingredients, then adding and mixing the preblend with all other ingredients. Equivalent protein from Urea should not exceed one-third of the protein in the mixture.
OTHER EFFECTS ON HUMANS	Our data base contains no additional remark on the toxicity of this product
SPECIAL REMARKS ON CHRONIC EFFECTS ON HUMANS	No effects.
SPECIAL REMARKS ON OTHER EFFECTS ON HUMANS	May cause irritation of the mucous membranes and upper respiratory tract.

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Section XII. Ecological Information

ECOTOXICITY	Will slowly release ammonia and degrade to nitrate. Ammonia is a toxic hazard to fish. However, ammonia release is slow making urea much less toxic than ammonium salts. Aquatic toxicity tests indicate 24 Hr exposure at 16,000 mg/L of urea did not kill Creek Chubs. Urea is added in small quantities as a feed supplement for cattle. Urea ingestion may be harmful to mammals and birds at body burdens of several thousands of mg/kg. Ensure that livestock and wildlife do not ingest urea unless adequately mixed with feed rations. Non-persistent. Non-cumulative when applied using normal agricultural practices. The product itself and its products of degradation are not harmful under normal conditions of careful and responsible use. U.S. D.O.T.: This material is NOT listed as a Marine pollutant.
BOD and COD	Not available.
PRODUCTS OF DEGRADATION	Ammonia, carbon dioxide and water.
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	Urea will promote algae growth which may degrade water quality and taste. Notify downstream water users. Will dissolve and disperse in water. Reclaiming material may not be viable.

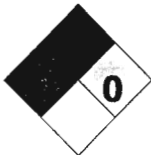

Section XIII. Disposal Considerations

WASTE DISPOSAL OR RECYCLING	Recover and place material in a suitable container for intended use or disposal. Ensure disposal is in compliance with government requirements and local regulations.
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Section XIV. Transport Information

DOT / TDG CLASSIFICATION	Not controlled under DOT (US) or TDG (Canada).	
PIN	Not applicable (PIN and PG).	
SPECIAL PROVISIONS FOR TRANSPORT	Not applicable.	
DOT (U.S.A) (Pictograms)		

Section XV. Other Regulatory Information and Pictograms

OTHER REGULATIONS	Our data base contains no special consideration on the product.		
OTHER CLASSIFICATIONS	HCS (U.S.A.)	Not controlled under the HCS (United States).	
	DSCL (EEC)	Not controlled under DSCL (Europe).	
National Fire Protection Association (U.S.A.)	Hazards presented under acute emergency conditions only:		Fire Hazard Reactivity Specific Hazard
TDG (Pictograms - Canada)			

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DSCL (Europe)
(Pictograms)



ADR (Europe)
(Pictograms)



Section XVI. Other Information

REFERENCES

- AIHA WEEL's
- Canadian Centre for Occupational Health and Safety CCInfo Disk.
- Domestic Substances List, Canadian Environmental Protection Act, Environment Canada.
- 29 CFR Part 1910
- 40 CFR Parts 1-799
- 49 CFR Parts 1-199
- Corrosion Data Survey, Sixth Edition, 1985, National Association of Corrosion Engineers
- 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.

OTHER SPECIAL CONSIDERATIONS

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.
 EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.
 This product does not contain Section 313 reportable ingredients.
 This product is not considered as a priority pollutant as regulated under the Clean Water Act.
 TSCA (Toxic Substance Control Act): This product is listed on the TSCA Inventory.

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

AGRIUM
 Environment, Health and Safety Department
 Telephone (780) 998-6134 or Fax (780) 998-6143

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