





<b>NFPA Classification</b>	<b>DOT / TDG Pictograms</b>	<b>WHMIS Classification</b>	<b>PROTECTIVE CLOTHING</b>
Health  Flammability Reactivity Specific Hazard			

## Section I. Chemical Product and Company Identification

<b>PRODUCT NAME/ TRADE NAME</b>		ESN Polymer Coated Urea 44-0-0	
<b>SYNONYM</b>	Agricultural Grade Controlled Release Urea	<b>MSDS NUMBER:</b>	14250
<b>CHEMICAL NAME</b>	Carbamide	<b>REVISION NUMBER</b>	1.1
<b>CHEMICAL FAMILY</b>	Aliphatic amide	<b>MSDS prepared by the Environment, Health and Safety Department on:</b>	October 21, 2004
<b>CHEMICAL FORMULA</b>	Urea: CO(NH <sub>2</sub> ) <sub>2</sub> , with an insoluble polymer time release coating and protective overcoat.	<b>24 HR EMERGENCY TELEPHONE NUMBER:</b>  Transportation: 1-800-792-8311 Medical: 1-888-670-8123	
<b>MATERIAL USES</b>	Agricultural industry: Controlled release specialty fertilizer.		
<b>MANUFACTURER</b>		<b>SUPPLIER</b>	
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		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	
Urea	57-13-6	---	---	---	---	---	---	~ 94
polyurethane	68400-67-9	---	---	---	---	---	---	1-5
Imidodicarbonic diamide (biuret)	108-19-0	---	---	---	---	---	---	0.5-1.5
Urea reaction products with formaldehyde (methylene diurea)	68611-64-3	---	---	---	---	---	---	0.5-1.5
<b>TOXICOLOGICAL DATA ON INGREDIENTS</b>	<b>TFI Product Testing Program Results - Urea 46-0-0 :^</b>							
	Acute oral toxicity: 14,300 mg/kg rat; 11,500 mg/kg mouse; 510 mg/kg cattle Chronic oral toxicity, NOAEL: 6,750 mg/kg mouse; 2,250 mg/kg rat  Ecotoxicity: Acute toxicity to fish, Barillius barna, LC <sub>50</sub> , 96hr: >9,100 mg/L Acute toxicity to invertebrates, Daphnia, EC <sub>50</sub> (24kr) >10,000 mg/L Acute toxicity to birds, pigeon, LDLo = 16,000 mg/kg subcutaneous Toxicity to algae, Scenedesmus quadricauda, cell multiplication inhibition, TT(192 hr) > 10,000 mg/L							

**Section III. Hazards Identification.**

<b>POTENTIAL ACUTE HEALTH EFFECTS</b>	This product may irritate eyes and skin upon contact due to mechanical action. Urea granules are encapsulated within a polymeric shell coating which slows the release of contents over the growing season. Not considered to be toxic for humans. On ingestion, the material will pass through the digestive tract unchanged and with no effect. However, in keeping with good industrial hygiene practises, exposure to any chemical should be kept to a minimum.
<b>POTENTIAL CHRONIC HEALTH EFFECTS</b>	<p><b>CARCINOGENIC EFFECTS:</b> NONE by ACGIH, EPA, IARC, OSHA.  <b>MUTAGENIC EFFECTS:</b> NONE by ACGIH, EPA, IARC, OSHA.  <b>TERATOGENIC EFFECTS:</b> NONE by ACGIH, EPA, IARC, OSHA.</p> <p>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. The polymeric shell and coating is found in many manufactured products and is not considered hazardous by WHMIS (Canada) or HAZCOM (U.S.) definition.</p>

**Section IV. First Aid Measures**

<b>EYE CONTACT</b>	May cause eye irritation due to mechanical action. Flush eyes with running water for at least 15 minutes, keeping eyelids open. Obtain medical attention if irritation persists.
<b>MINOR SKIN CONTACT</b>	Wash contaminated skin with soap and water.
<b>EXTENSIVE SKIN CONTACT</b>	No additional information.
<b>MINOR INHALATION</b>	Repeated or prolonged inhalation of dust may lead to respiratory irritation. Allow the affected individual to rest in a well ventilated area. Watch for airway obstruction. If breathing is labored, give oxygen if available. Seek medical attention if not feeling well.
<b>SEVERE INHALATION</b>	No additional information.
<b>SLIGHT INGESTION</b>	The material is non-toxic on ingestion. Due to its slow release coating, the product will pass through the digestive tract unchanged and with no effect.
<b>EXTENSIVE INGESTION</b>	No additional information.

**Section V. Fire and Explosion Data**

<b>THE PRODUCT IS</b>	Non-flammable.
<b>AUTO-IGNITION TEMPERATURE</b>	Not applicable.
<b>FLASH POINT</b>	Not applicable.
<b>FLAMMABILITY LIMITS</b>	Not applicable.
<b>PRODUCTS OF COMBUSTION</b>	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). The quantity of controlled release coating present on the product is insufficient to support combustion.
<b>FIRE HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES</b>	Not applicable.
<b>EXPLOSION HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES</b>	Does not present any risk of explosion.
<b>FIRE FIGHTING MEDIA AND INSTRUCTIONS</b>	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 suspected to be present, fire fighters should wear self-contained breathing apparatus. Use extinguishing media suitable for surrounding materials.

Continued on Next Page

**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**

No additional remark.

**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. Product will dissolve slowly over a period of months. Recover and place material in suitable containers for recycle, reuse, or disposal. Ensure disposal complies with local regulations.

**Section VII. Handling and Storage**

**PRECAUTIONS**

If user operations generate dust, 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.

**Section VIII. Exposure Controls/Personal Protection**

**ENGINEERING CONTROLS**

If user operations generate dust, use ventilation to keep exposure to airborne contaminants below the exposure limit. Good general ventilation should be sufficient to control airborne levels.

**PERSONAL PROTECTION**

The selection of personal protective equipment varies, depending upon conditions of use. Where skin and eye contact may occur as a result of brief periodic exposures, wear long sleeved clothing, coveralls, leather gloves, and safety glasses with side shields. A filtering facepiece dust mask is recommended for most applications if respiratory protection is needed.

**PERSONAL PROTECTION IN CASE OF LARGE RELEASE**

No additional information.

**EXPOSURE LIMITS**

AIHA Workplace Environmental Exposure Limits: 10 mg/m<sup>3</sup> TWA for Urea as inhalable dust. U.S. OSHA PEL: 15 mg/m<sup>3</sup> for Particulates Not Otherwise Regulated.

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**

Solid. (A white urea granule with a light green time release coating.)

**MOLECULAR WEIGHT**

Not applicable.

**COLOR**

Off-white

**pH (10% SOLN/WATER)**

7

**ODOR**

Odorless.

**BOILING POINT**

Decomposes.

**ODOR THRESHOLD**

Not available.

**MELTING POINT**

133°C (271.4°F)

**TASTE**

Saline.

**CRITICAL TEMPERATURE**

Not applicable.

**VOLATILITY**

Not applicable.

**SPECIFIC GRAVITY g/cc**

Not applicable

**SOLUBILITY**

Very slightly soluble in cold water, hot water due to the slow release coating.

**BULK DENSITY kg/m<sup>3</sup> ; lbs/ft<sup>3</sup>**

769 kg/m<sup>3</sup>;  
48 lbs/ft<sup>3</sup>

**DISPERSION PROPERTIES**

Will slowly dissolve, releasing nutrients over a period of several months.

**VAPOR PRESSURE**

Not applicable.

**Continued on Next Page**

	<b>WATER/OIL DIST. COEFF.</b>	Soluble in water.
<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>INCOMPATABILITY WITH VARIOUS SUBSTANCES</b>	Non-reactive with oxidizing agents, reducing agents, combustible materials, organic materials, metals, acids, alkalis.
<b>CORROSIVITY</b>	Slightly corrosive to steel. Very slightly corrosive to aluminum, zinc, and copper. Non-corrosive to 304 or 316 stainless steel.
<b>SPECIAL REMARKS ON REACTIVITY</b>	No additional remark.
<b>SPECIAL REMARKS ON CORROSIVITY</b>	Avoid contact with moisture. Slow hydrolysis will produce acids which may slowly corrode metals. Contact your sales representative or a metallurgical specialist to ensure compatability with system equipment.

**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>	The product itself and its products of degradation are not harmful under normal conditions of use.
<b>OTHER EFFECTS ON HUMANS</b>	Our data base contains no additional remark on the toxicity of this product
<b>SPECIAL REMARKS ON CHRONIC EFFECTS ON HUMANS</b>	No effects.
<b>SPECIAL REMARKS ON OTHER EFFECTS ON HUMANS</b>	No additional remark.

**Section XII. Ecological Information**

<b>ECOTOXICITY</b>	Will very slowly release ammonia. Ammonia is a toxic hazard to fish, however, ammonia release is very slow making urea considerably 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 ingestion may be toxic to mammals and birds at body burdens of several thousands of mg/kg. Urea is used in small quantities as as a feed suppliment for livestock. Very low toxicity to fish and other water organisms. This product has limited solubility. Recovery of spilled material from bodies of water should be considered. U.S. D.O.T.: This material is NOT listed as a Marine pollutant.
<b>BOD and COD</b>	Not available.
<b>PRODUCTS OF DEGRADATION</b>	Ammonia, carbon dioxide and water.
<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.

Continued on Next Page

**SPECIAL REMARKS ON THE PRODUCTS OF DEGRADATION**

The product itself and its products of degradation are not harmful under normal conditions of use if proper precautions are followed. Urea will promote algae growth which may degrade water quality and taste.

**Section XIII. Disposal Considerations**

**WASTE DISPOSAL OR RECYCLING**

Recover and place material in a suitable container for intended use or disposal. Ensure that disposal complies with government requirements and local regulations.

**Section XIV. Transport Information**

**DOT / TDG CLASSIFICATION**

Not controlled under TDG (Canada) or DOT (U.S.A.).

**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**

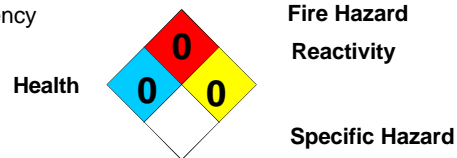
CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): This product and all its components are on the Domestic Substances List (DSL) and acceptable for use under the provisions of CEPA.  
 EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.  
 CERCLA/SUPERFUND, 40 CFR 117,302: This product contains no Reportable Quantity (RQ) 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 and all its components are listed on the TSCA Inventory.  
 CALIFORNIA PROPOSITION 65: This product contains no chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.  
 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**

<b>HCS (U.S.A.)</b>	Not controlled under the HCS (United States).
<b>DSCL (EEC)</b>	Not controlled under DSCL (Europe).

**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**

-AIHA WEELs, American Industrial Hygiene Association, 2004  
 -ACGIH TLVs, American Conference of Governmental Industrial Hygienists, 2004  
 -Canadian Centre for Occupational Health and Safety Database Systems.  
 -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  
 -The Fertilizer Institute Product Testing Plan Results, March 2003  
 -TOMES® System: Heitland G & Hurlbut KM (Eds) (electronic version): MICROMEDEX, Greenwood Village, Colorado, USA. Available at: <http://csi.micromedex.com> (2004). 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. (2004); HSDB: Hazardous Substances Data Bank. National Library of Medicine, Bethesda, Maryland (2004); IRIS: Integrated Risk Information System. U.S. Environmental Protection Agency, Washington, D.C. (2004); NIOSH: Pocket Guide to Chemical Hazards. National Institute for Occupational Safety and Health, Cincinnati, Ohio (2004); OHM/TADS: Oil and Hazardous Materials Technical Assistance Data System. U.S. Environmental Protection Agency, Washington, D.C. (2004); REPROTOX®: Scialli A.R. Georgetown University Medical Center and Reproductive Toxicology Center, Columbia Hospital for Women Medical Center, Washington, D.C. (2004); RTECS®: Registry of Toxic Effects of Chemical Substances. National Institute for Occupational Safety and Health, Cincinnati, Ohio (2004); and SHEPARDS: Shepard T.H.: Shepard's Catalog of Teratogenic Agents (2004).  
 -Veterinary Pharmacology and Therapeutics. 5th ed. Ames, Iowa: Iowa State University Press, 1982.

**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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