

Material Safety Data Sheet

Revision Issued: 03/01/10

Supersedes: 2/28/07

First Issued: 7/1/1989

Section I - Product and Company Identification

Product Name: Urea, Dry

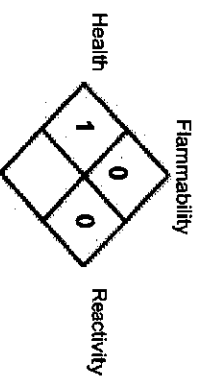
PotashCorp MSDS No.: 13
ERG No.: None

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Emergencies (800) 424-9300 (CHEMTREC)
Web Site www.potashcorp.com
Health Emergencies, Contact Your Local Poison Center



Common Name:	Urea, Dry	Formula:	CO(NH ₂) ₂	Synonym:	Urea Prills, Urea Granular	Uses:	Industrial, Agricultural, Feed
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Section II - Composition / Information On Ingredients

Chemical Name	CAS No.	Exposure Limits				% by Weight
		OSHA PEL mg/m ³ ppm	TLV - TWA mg/m ³ ppm	STEL mg/m ³ ppm	CEIL mg/m ³ ppm	
Urea, Carbamide, Carbonyldiamide, Carbamidic Acid ⁽¹⁾	57-13-6	5 ⁽²⁾	10 ⁽³⁾			97.5 - 99.7
Alkalinity as Ammonia						150 PPM (Max)
Urea						97.5 - 99.7
Biuret						0.00 - 1.50
Methylenediurea ⁽⁴⁾						0.00 - 2.42

⁽¹⁾ Nuisance dust 15 Mg/M³ (Total)
⁽²⁾ 5 Mg/M³ - Respirable (particulate) Fraction Urea.
⁽³⁾ 10 Mg/M³ inhalable particulate
⁽⁴⁾ Reagent and Chemical Grade Urea does not contain formaldehyde

Section III - Hazard Identification

Potential Acute Health Effects:	Skin: Repeated or prolonged contact may cause reddening, itching and inflammation. Ingestion: A single dose of 100 grams has reportedly caused mild symptoms of Central Nervous System depression (e. g. drowsiness and slow reflexes).
Eyes and Skin:	Eyes: Severe irritant. Contact with heated material may cause thermal burns. Skin: Slightly irritating. Repeated or prolonged contact may cause reddening, itching and inflammation. Contact with heated material may cause thermal burns.
Inhalation:	May cause respiratory tract irritation although no incidents of dust inhalation health effects have been reported
Ingestion:	May cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting and diarrhea.
Potential Chronic Health Effects:	None known. Urea is a naturally occurring chemical in the body. It is an end product of protein metabolism and is excreted in the urine.
CARCINOGENICITY LISTS	IARC Monograph: No NTP: No OSHA: No

Section IV – First Aid Measures	
Eyes:	Promptly flush with water, continuing for 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. If irritation persists, consult a physician immediately.
Skin:	Wash area of contact thoroughly with soap and water. For contact with molten product do not remove clothing. Flush skin immediately with cold water. Launder clothing before reuse.
Ingestion:	Do not induce vomiting. Keep affected person warm and treat for shock. Get medical attention. A single dose of 100 grams has reportedly caused mild symptoms of Central Nervous System depression (drowsiness, etc.).
Inhalation:	Remove affected person from source of exposure. If not breathing, ensure open airway and initiate CPR. If breathing is difficult, administer oxygen; if available get medical attention.

Section V – Fire Fighting Measures			
Flash Point:	Not Applicable	Autolignition Temperature:	Not Applicable
Lower Explosive Limit:	Not Applicable	Upper Explosive Limit:	Not Applicable
Unusual Fire and Explosion Hazards:	Heating above 270° F decomposes to Biuret, Ammonia, and Nitrogen Oxides. Short-term exposures to smoke and gases may lead to irreversible lung injury without early signs and symptoms.		
Extinguishing Media:	All standard agents are acceptable. Use extinguishing agent suitable for the surrounding fire. Material itself burns with difficulty. Urea becomes slippery when wet. – Guard against slips and falls		
Special Firefighting Procedures and Equipment:	Irritating toxic substances may be emitted upon thermal decomposition. Exposed firefighters should wear NIOSH approved self contained breathing apparatus with full face piece and full protective clothing. May form explosive mixtures if mixed with strong acid (Nitric/Perchloric). Ventilation: Provide local or general ventilation to keep below nuisance dust limit of 15 mg/m ³ .		

Section VI – Accidental Release Measures	
Small Spill:	If uncontaminated, recover and reuse as product.
Large Spill:	Prevent large quantities from contacting vegetation or waterways. Keep animals away from large spills.
Release Notes:	If spill could potentially enter any waterway, including intermittent dry creeks, contact the local authorities. If in the U.S., contact the US COAST GUARD NATIONAL RESPONSE CENTER toll free number 800-424-8802. In case of accident or road spill notify: CHEMTREC IN USA at 800-424-9300; CANUTEC in Canada at 613-996-6666 CHEMTREC in other countries at (International code)+1-703-527-3887.
Comments:	See Section XIII for disposal information and Section XV for regulatory requirements. Large and small spills may have a broad definition depending on the user's handling system. Therefore, the spill category must be defined at the point of release by technically qualified personnel.

Section VII – Handling and Storage	
Ventilation:	Provide local or general ventilation to keep below nuisance dust limit of 15mg/m ³ .
Handling:	Avoid contact with the eyes. Avoid repeated or prolonged contact with the skin or clothing. Avoid dust inhalation. Contact lenses should not be worn.
Storage:	Store in closed containers in cool, dry, isolated, well ventilated area away from heat, sources of ignition, and incompatibles. Avoid contamination with other "look alike" materials that may produce a fire or explosion. Special precautions/ Procedures/ Label Instructions: Avoid containers, piping or fittings made of brass, bronze or other copper bearing alloys or galvanized metals.

Section VIII – Exposure Controls/ Personal Protection	
Engineering Controls:	Provide local or general ventilation to keep below nuisance dust limit of 15mg/m ³ .
Personal Protection:	
Eye Protection:	Use tight-fitting safety goggles in areas of high dust concentration.
Protective Clothing:	Wear safety glasses or chemical goggles to prevent eye contact. Do not wear contact lenses when working with this substance. Have eye wash facilities available where eye contact could occur.
Respiratory Protection:	Normally none needed. Use NIOSH approved equipment when airborne dust exposure limits are exceeded. NIOSH approved breathing equipment must be available for non-routine and emergency use.
Other Protective Clothing or Equipment:	Normally not required

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Section IX – Physical and Chemical Properties			
Appearance/Color/Odor:	White solid, spherical or granular shape with slight ammonia odor.	Boiling Point:	135°C (decomposes)
Melting Point/Range:	271°F or 133°C	Boiling Point Range:	Not Applicable
Solubility in Water:	1,193 g/L at 25°C	Vapor Pressure (mmHg):	80 Pa at 20°C (calculated)
Specific Gravity:	Not Applicable	Molecular Weight:	60.07
Vapor Density:	Not Applicable	% Volatiles:	Not Applicable
Bulk Density:	44 - 49 lbs/cu ft	Evaporation Rate:	Not Applicable
pH:	7.2 at 100 g/L	Freezing Point:	Not Applicable
Viscosity:	Not Applicable	Density:	750 kg/m ³

Section X – Stability and Reactivity	
Stability:	Stable
Hazardous Polymerization:	Will not occur
Conditions to Avoid:	May slowly hydrolyze to Ammonium Carbamate after a long period of time which decomposes to Ammonia and Carbon Dioxide.
Materials to Avoid (Incompatibles):	Avoid contact with strong oxidizers, acids or bases. Avoid contact with Nitrates. Reacts with Sodium or Calcium Hypochlorite to form explosive Nitrogen Trichloride. Avoid contact with hypochlorites
Hazardous Decomposition Products:	Decomposes to Ammonia, Biuret, Nitrogen Oxides, Carbon Oxides. May react with hypochlorites to form the explosive nitrogen trichloride.

Section XI – Toxicological Information	
Significant Routes of Exposure:	Eyes, Digestive Tract, Respiratory Tract, Skin
Acute Oral Toxicity:	(rat) LD ₅₀ =14,300-15,000 mg/kg; (mouse) LD ₅₀ = 11,500-13,00 mg/kg; (cattle) LD ₅₀ = 510 mg/kg.
Acute Inhalation Toxicity:	No data available
Acute Toxicity: Other Routes:	No data available
Acute Dermal Toxicity:	No data available
Repeated Dose Toxicity:	(rat) 24 weeks: dermal – NOAEL = 40% in ointment
Eye & Skin Irritation/Corrosion:	Skin Irritation/Corrosion: Mouse – Not Irritating (10% solution) Eye Irritation/Corrosion: Rabbit – Not Irritating (50% solution) Not found to be toxic by oral exposure as defined by OSHA. Based on toxicity data for another compound (i.e., ammonium nitrate), not expected to be toxic by dermal and inhalation exposure as defined by OSHA.
Toxicity to Animals:	Bacterial Genetic Toxicity In-Vitro: Gene Mutation: (<i>Salmonella typhimurium</i>) – Bacterial reverse mutation assay- Negative ; Chinese Hamster – Chromosomal aberration test – Positive (very high dose); Mouse – Positive (very high dose). Non-Bacterial Genetic Toxicity In-Vitro: Chromosomal Aberration: Mouse – Bone marrow cytogenetic test – Positive (extremely high dose)
	Toxicity to Reproduction: No toxic effects on mouse gonads up to 6,750-mg/kg day. No toxic effects on rat gonads up to 2,250-mg/kg day.
	Developmental Toxicity / Teratogenicity: Not teratogenic.
Other Effects on Humans:	Despite extensive medical use, no significant side effects on humans have been noted.
Special Remarks on Chronic Effects on Humans	No chronic effects known.
Special Remarks on Other Effects on Humans:	May be irritating at > 10% concentration; not a skin sensitizer. Despite extensive medical uses no significant side effects on humans has been noted.

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Section XII - Ecological Information		
Ecotoxicity:	EPA Ecological Toxicity rating :	96-h:(<i>Banilius barna</i>) LC_{50} = > 9,100 mg/L.
	Acute Toxicity to Fish:	No data available
	Chronic Toxicity to Fish:	No data available
	Acute Toxicity to Aquatic Invertebrates:	(<i>Daphnia magna</i>): 24 - h EC_{50} : > 10,000 mg/L.
	Toxicity to Aquatic Plants:	(<i>Scenedesmus quadricauda</i>) 192-hr cell multiplication inhibition test-TT>10,000 mg/L.
	Toxicity to Bacteria: (activated sludge):	No data available
	Toxicity to Soil Dwelling Organisms:	Applications of nitrogenous fertilizers to grassland for long period may have deleterious effects on earthworms in the absence of liming.
	Toxicity to Other Non-Mammalian Terrestrial Species:	(Pigeon)- Subcutaneous-LDLO=16,000 mg/kg. Since Urea is a fertilizer, it may promote eutrophication in waterways. Non-toxic to aquatic organisms as defined by USEPA.
	Toxicity to Terrestrial Plants:	7 days exposure to 0 mg urea / leaf - leaf-tip necrosis
	Stability in Water:	$T_{1/2}$ > 1 year.
Stability in Soil:	No data available	
Transport and Distribution:	0.16% in air; 99.84% in water (calculated (Fugacity Level I))	
Toxicity:	Non-toxic to aquatic organisms as defined by USEPA. No known toxicity	
Degradation Products:	Biodegradation:	Ultimately biodegradable (OECDTG 302B) 93-98% (SCAS 24 hr)
	Photodegradation:	No data available

Section XIII - Disposal Considerations	
Product Disposal:	Disposal of Urea may be subject to federal, state or local regulations.
General Comments:	Users of this product should review their operations in terms of applicable federal, state and local laws and regulations, then consult with appropriate regulatory agencies before discharging or disposing of waste material.

Section XIV - Transportation Information		
Proper Shipping Name:	USDOT	TDG - Canada
Hazard Class:	Not Regulated	Not Regulated
Identification Number:		
Packing Group (Technical Name):		
Labeling / Placarding:		
Authorized Packaging:		
Notes:		
European Transportation:	If shipping internationally, notate Urea as Cabarnidic Acid.	

Section XV - Regulatory Information

This product has been reviewed according to the EPA Hazard Categories promulgated under Section 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 categories:

UNITED STATES:		Fire:		No	Pressure Generating:	No	Reactivity:	No	Acute:	Yes	Chronic:	No
SARA Hazard Category:		40 CFR Part 355 - Extremely Hazardous Substances:		None		40 CFR Part 370 - Hazardous Chemical Reporting:		Applicable				
All intentional ingredients listed on the TSCA inventory.												

SARA Title III Information: This product contains the following substances subject of the reporting requirements of Title III (EPCRA) of the Superfund amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

Chemical	CAS NO.	Percent by Weight	CERCLA RQ (lbs)*	SARA (1986) Reporting		
				311	312	313
Urea	57-13-6	97.5 - 99.7	NA	Yes	Yes	NA

CERCLA/Superfund, 40 CFR Parts 117, 302: If this product contains components subject to substances designated as CERCLA reportable Quantity (RQ) Substances, it will be designated in the above table with the RQ value in pounds. If there is a release of RQ Substance to the environment, notification to the National response Center, Washington D.C. (1-800-424-8802) is required.

CANADA: **WHMIS Hazard Symbol and classification:** This product is not WHMIS controlled
Ingredient Disclosure List This product does not contain ingredient(s) on this list.
Environmental Protection: All intentional ingredients are listed on the DSL (Domestic Substance List).

EINECS#: (Urea) 200-315-5
California: Prop 65: This is not a chemical known to cause cancer, nor is it listed.

Section XVI - Other Information

NFPA Hazard Ratings:	Health: 1	Fire: 0	Reactivity: 0	Special Hazards:
	0 = Insignificant	1 = Slight	2 = Moderate	3 = High
				4 = Extreme
COMMENTS:	This product is TSE/BSE (Transmissible Spongiform Encephalopathy/Bovine Spongiform Encephalopathy) free. There are no animal constituents used in the manufacture of Urea, Dry for PCS Sales (USA) Inc. Our product is created through a chemical process.			
Section(s) changed since last revision:	Changed date			

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