

Material Safety Data Sheet

Revision Issued: 10/23/09	Supercedes: 4/22/09	First Issued: 5/31/1978
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Section I - Product and Company Identification

<p>Product Name: Urea, liquor</p> <p>1101 Skokie Blvd., Northbrook, IL 60062 Phone (800) 241-6908 / (847) 849-4200</p> <p>Suite 500, 122 - 1st Avenue South Saskatoon, Saskatchewan Canada S7K7G3 Phone (800) 667-0403 from Canada (800) 667-3930 from USA</p> <p>Emergencies (800) 424-9300 (CHEMTREC) Web Site www.potashcorp.com Health Emergencies, Contact Your Local Poison Center</p>	<p>PotashCorp MSDS No.: 36 ERG No.: N/A</p> <div style="text-align: center;"> <p>Flammability</p> <p>Health Instability</p> <p>Specific Hazard</p> <p>NFPA Code</p> </div>
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Common Name: Aqueous solutions of Urea (30%-70%)	Formula: CO(NH ₂) ₂	Synonym: Urea Solution	Uses: Industrial, Animal Feed
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Section II - Composition / Information On Ingredients

Chemical Name	CAS No.	Exposure Limits								% by Weight
		OSHA PEL		TLV - TWA		STEL		CEIL		
		mg/m ³	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	ppm	
Urea	57-13-6	none established								31 - 70
Alkalinity (as ammonia)										0.02 - 0.7
Biuret										0.15 - 1.0
Total Nitrogen										23.6 - 36
Carbonate (as CO ₂)										0.2 - 0.3
Sulfur										Nil

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: Liquid contact may irritate mildly. Mist contact may also irritate mildly. Contact with heated material may cause thermal burns. Skin: Liquid contact may irritate mildly with repeated or prolonged exposure.
Inhalation:	In the unlikely event that mist is formed, respiratory tract irritation may occur.
Ingestion:	A single dose of 100 grams has reportedly caused mild symptoms of central nervous system depression (e.g. drowsiness, slow reflexes, and slurred speech). May cause gastrointestinal disturbances (symptoms may include irritation, nausea, vomiting and diarrhea).
Potential Chronic Health Effects:	No potential chronic effects 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	Autoignition Temperature:	Not Applicable
Lower Explosive Limit:	Not Applicable	Upper Explosive Limit:	Not Applicable
Unusual Fire and Explosion Hazards:	See Hazardous Decomposition Products, Section X.		
Extinguishing Media:	Water recommended. All standard agents are acceptable.		
Special Firefighting Procedures and Equipment:	Wear sufficient self-contained breathing apparatus approved by NIOSH. Use water spray to keep containers cool.		

Section VI – Accidental Release Measures	
Small Spill:	Promptly absorb with commercial or other absorbent and shovel into container.(e.g. metal.)
Large Spill:	Dike up with same absorbent and mop up or pump into same container. If some solid crystallizes due to cooling, wash with water. Cleanup should not be delayed.
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 eyes. Avoid prolonged or repeated contact with skin or clothing. Avoid breathing mist.
Storage:	Protect from physical damage. This material is vented in storage. Avoid containers, piping or fittings made of brass, bronze, or other copper-bearing alloys, or galvanized metal.

Section VIII – Exposure Controls/ Personal Protection	
Engineering Controls:	Ordinarily, natural ventilation is adequate. If misting, mechanical (general) ventilation is generally adequate.
Personal Protection:	
Eye Protection:	Wear chemical safety goggles or face shield. Do NOT wear contact lenses.
Protective Clothing:	Impervious gloves and full work clothing.
Respiratory Protection:	Not generally required. If misty condition prevails, wear a NIOSH approved mist respirator.
Other Protective Clothing or Equipment:	Not generally required

Section IX – Physical and Chemical Properties			
Appearance/Color/Odor:	This material at normal conditions is colorless liquid; mildly ammoniacal odor.	Boiling Point (50% urea solution):	106°C
Melting Point/Range:	Salt Out Temperature: 50% @ 63°F 17°C 65% @ 115°F 46°C 70% @ 135°F 57°C	Boiling Point Range:	Not Applicable
Solubility in Water:	100%	Vapor Pressure (mmHg):	220 mmHg at 20°C
Specific Gravity:	50%: 1.14 @ 75°F 65%: 1.165 @ 135°F 70%: 1.175 @ 155°F 32.5%: 1.090 @ 68°F 20°C	Molecular Weight:	60.07 (100% Urea)
Vapor Density:	Not Applicable	% Volatiles:	Not Applicable
(lb/gal): Density:	9.2 - 9.7 @ 100°F (40-70%) 32.78°C 9.5 @ 75°F (Foliar 50) 23.89°C 9.7 @ 115°F (65% Agricultural) 46.12°C 9.7 @ 145°F (70% Industrial) 62.78°C 9.09 @ 68°F 20°C (32.5%)	Evaporation Rate:	Not Applicable
pH:	Typically 10.0 [7.2 (100 g/L)]	Freezing Point:	See Melting Point
Viscosity:	Not Applicable		

*Foliar - pH 7-8, Density 9.7 lbs/gallon @ 75°F, Specific Gravity 1.16 @ 75°/60°F prepared by neutralizing alkalinity in Urea 50 using Sulfuric Acid.

Section X – Stability and Reactivity	
Stability:	This product is stable under normal ambient conditions of temperature and pressure.
Hazardous Polymerization:	Will not occur
Conditions to Avoid:	The evaporation residue should not be heated above its melting point, 133°C: Decomposes to hazardous products.
Materials to Avoid (Incompatibles):	Avoid contact with strong oxidizers (e.g. chlorine, peroxide, chromates, nitric acid, perchlorates, concentrated oxygen, and permanganates) which can generate heat, fire or explosions or release toxic fumes.
Hazardous Decomposition Products:	If the evaporation residue is heated to the melting point or above, Ammonia and Carbon Dioxide are formed. Some Ammonia and CO ₂ are given off on heating the aqueous product. Under some conditions of pressure and temperature, some Ammonium Cyanate has also been reported.

Section XI – Toxicological Information	
Significant Routes of Exposure:	Eyes, Digestive Tract, Respiratory Tract, Skin
Toxicity to Animals:	Acute Oral Toxicity: (rat): LD ₅₀ = 14,300 – 15,000 mg/kg; (mouse) 11,500 – 13,000 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 - NOEL = 40% in ointment
	Eye & Skin Irritation/Corrosion: Skin Irritation/Corrosion: Mouse – Not irritating (10% solution). Eye Irritation/Corrosion: Rabbit – Not irritating (50% solution)
Special Remarks on Toxicity to Animals:	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.
	Developmental Toxicity/Teratogenicity: Not teratogenic.
	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 – Mouse lymphoma TK locus assay - 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.
	Carcinogenicity: No data available
Other Effects on Humans:	May cause gastrointestinal disturbances (symptoms may include irritation,

	nausea, vomiting and diarrhea).
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 use, no significant side effects on humans have been noted.

Section XII – Ecological Information		
Ecotoxicity	EPA Ecological Toxicity rating :	
	Acute Toxicity to Fish:	96 -h : (<i>Barilius barna</i>) LC ₅₀ (96 hr) > 9,100 mg/L.
	Chronic Toxicity to Fish:	No data available
	Acute Toxicity to Aquatic Invertebrates:	(<i>Daphnia magna</i>): 24 - h EC ₅₀ = > 10,000 mg/L . [DIN 38412 Part II modified]
	Chronic Toxicity to Aquatic Invertebrates:	No data available
	Acute Toxicity to Aquatic Plants:	(<i>Scenedesmus quadricauda</i>) 192-hr cell-multiplication inhibition test-TT > 10,000 mg/L. [Call multiplication inhibitor test]
	Toxicity to Other Non-Mammalian Terrestrial Species:	(Pigeon)-Subcutaneous-LDL ₀₁ =16,000 mg/kg.
	Toxicity to Terrestrial Plants:	No data available
Environmental Fate:	Stability in Water:	T _{1/2} > 1 year. Since Urea is a fertilizer, it may promote eutrophication in waterways. Non-toxic to aquatic organisms as defined by USEPA.
	Stability in Soil:	(<i>Glycine max</i> (L.) Merr.: Leaf tip necrosis [7 day exposure to 9 mg urea/leaf]
	Transport and Distribution:	Transport: 0.16% in air; 99.84% in water [Calculated fugacity Level 1 type]
Toxicity:	No known toxicity	
Degradation Products:	Biodegradation:	Ultimately biodegradable. [OECD Guideline 302B]
	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. Consult with appropriate regulatory agencies before discharging or disposing of waste material.

Section XIV – Transportation Information		
	USDOT	TDG - Canada
Proper Shipping Name:	Not regulated	Not regulated
Hazard Class:		
Identification Number:		
Packing Group (Technical Name):		
Labeling / Placarding:		
Authorized Packaging:		
Notes:		
European Transportation:		

Section XV - Regulatory Information										
UNITED STATES: SARA Hazard Category:	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:									
	Fire:	No	Pressure Generating:	No	Reactivity:	No	Acute:	Yes	Chronic:	No
	40 CFR Part 355 - Extremely Hazardous Substances:						None Applicable			
	40 CFR Part 370 - Hazardous Chemical Reporting:						None 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 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	Flammability: 0	Instability:	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, liquor for PCS Sales (USA) Inc. Our product is created through a chemical process.			
Section(s) changed since last revision:	I, IX, XI, XII, XV, XVI			
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