



Section 1 - Chemical Product and Company Identification

Product/Chemical Name: Urea Solution
Chemical Formula: CH₄N₂O
CAS Number: 57-13-6
Other Designations: Carbamide, Carbonyl diamide
General Use: Fertilizer, Crop Nutrient
Manufacturer: Royster-Clark Inc., 999 Waterside Drive, Suite 800; Norfolk, VA 23510
 Phone (618)346-7300, FAX (618)346-7451, CHEMTREC (800)424-9300

Section 2 - Composition / Hazardous Ingredients

Ingredient Name	CAS Number	%
Urea	57-13-6	50-70
Biuret (Typical)	108-19-0	0.28
Ammonia (Typical)	7664-41-7	0.03
Water	7732-18-5	30-50

Section 3 - Hazards Identification

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Harmful if swallowed. May cause slight irritation to skin, eyes, and respiratory tract. Hazardous decomposition products may be formed under fire conditions. Avoid contamination with perchlorates, sodium nitrate, and phosphorus pentachloride. If spilled into a waterway, this product can be toxic to aquatic life and may contribute to eutrophication.

HMIS	
H	1
F	0
R	0
PPE†	
†Sec. 8	

Potential Health Effects

Primary Entry Routes: Inhalation(breathing), ingestion(swallowing), eye contact, skin contact.

Target Organs: No Target Organ data was found for these products.

Acute Effects

Inhalation: Inhalation of airborne mist may cause irritation of the respiratory.

Eye: Eye contact with material or mist may cause irritation.

Skin: Mild skin irritation can occur on exposure to material or mist.

Ingestion: Ingestion may cause irritation of the gastro-intestinal tract, resulting in cramps, vomiting, and diarrhea. Ingestion may also cause mild central nervous system depression such as drowsiness, slow reflexes, and slurred speech.

Carcinogenicity: IARC, NTP, and OSHA do not list this product as a carcinogen.

Medical Conditions Aggravated by Long-Term Exposure: Existing respiratory disorders such as asthma and skin disorders may be aggravated by long-term exposure.

Chronic Effects: No chronic effects are expected.

Note to the physician: In a fire, dangerous levels of nitrogen oxides may be generated. Short term exposure to smoke, fumes, and gases can lead to irreversible lung injury without early signs of symptoms.

Section 4 - First Aid Measures

Inhalation: Remove from area of exposure immediately. Seek medical attention, if irritation persists.

Eye Contact: Wash eyes IMMEDIATELY and thoroughly (at least 15 minutes). Hold eyelids apart to ensure complete irrigation of all eye and eyelid tissues. Seek medical attention, if irritation persists.

Skin Contact: Wash thoroughly with soap and water. Seek medical attention, if irritation persists.

Ingestion: Drink large amounts of water and INDUCE VOMITING. NEVER give anything by mouth to an unconscious person. GET MEDICAL ATTENTION IMMEDIATELY.

Section 5 - Fire-Fighting Measures

Flash Point: Not Applicable

Autoignition Temperature: Not Applicable

LEL: Not Applicable

UEL: Not Applicable

Flammability Classification: NFPA = 0, HMIS = 0, Nonflammable

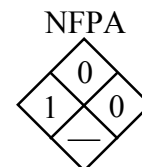
Extinguishing Media: Use extinguishing media appropriate for surrounding materials.

Unusual Fire or Explosion Hazards: Hazardous decomposition products may be formed under fire conditions. This product becomes slippery when wet. This product may form explosive compounds if mixed with strong acids such as nitric or perchloric and with nitrates or hypochlorites. See Section 10 for Chemical Incompatibilities.

Hazardous Decomposition Products: Ammonia, biuret, carbon dioxide, cyanic acid, cyanuric acid, nitrogen oxides.

Fire-Fighting Instructions: Do not release runoff from fire control methods to sewers or waterways.

Fire-Fighting Equipment: Because of the potential that the fire may produce toxic decomposition products wear chemical resistant suit, gloves, boots, and a self-contained breathing apparatus (SCBA) with a full facepiece operated in positive-pressure mode.



Section 6 - Accidental Release Measures

Spill Procedures: Wear chemical resistant gloves, and boots to prevent skin contact. Wear a mist respirator if exposure conditions warrant. See Section 8 for additional PPE information.

Small Spills: Contain, recover, and use, if uncontaminated, or absorb with inert material. Do not release into sewers or waterways.

Large Spills

Containment: Contain with dirt or other inert material, recover, and use, if uncontaminated. Do not release into sewers or waterways.

Cleanup: Clean if spill occurs on paved surface. Remove adequate topsoil to ensure recovery of all product if released directly onto the ground.

Regulatory Requirements: Follow applicable OSHA regulations to protect workers during cleanup. See Section 15 for additional regulatory requirements.

Section 7 - Handling and Storage

Handling Precautions: Avoid spillage and contamination of product. CAUTION: Urea solution is slippery.

Storage Requirements: Storage should be in compatible containers above the salt out temperature. See Section 10 for additional information.

Regulatory Requirements: See Section 8 for employee exposure controls and Section 15 for other regulatory requirements.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls:

Ventilation: If needed, provide general or local exhaust ventilation systems or other engineering controls to maintain airborne dust concentrations below regulatory levels (See Section 15).

Administrative Controls:

Respiratory Protection: If concentrations exceed recommended exposure levels, use a NIOSH-approved respirator for dust, suitable for the exposure conditions. Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134). Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are required, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Protective Clothing/Equipment: Wear gloves and appropriate clothing as needed to prevent prolonged or repeated skin contact. Wear protective eyeglasses or safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Safety Stations: Make emergency eyewash stations and washing facilities available in the work area.

Contaminated Equipment: Separate heavily contaminated work clothes from street clothes. Launder before reuse.

Comments: Practice good personal hygiene during and after use of this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Section 9 - Physical and Chemical Properties

<p>Physical State: Liquid</p> <p>Appearance and Odor: Clear liquid, with slight ammonia odor possible.</p> <p>Odor Threshold: 25 ppm (ammonia in air)</p> <p>Vapor Pressure: Not Applicable</p> <p>Vapor Density (Air=1): 0.596 (Ammonia)</p> <p>Evaporation Rate (Butyl Acetate=1): Not Applicable</p> <p>Salt Out Temps: 50%=64°F, 65%=115°F, 70%=135°F</p>	<p>Specific Gravity: 1.14 (@ 70°F) (9.4 lbs./gal.)</p> <p>Molecular Weight: CH₄N₂O = 60.07</p> <p>Water Solubility: Not Applicable</p> <p>Boiling Point: 223°F</p> <p>Melting Point: Not Applicable</p> <p>pH (10% solution): 8.5-10.6</p> <p>% Volatile: 30-50% (Water)</p>
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Section 10 - Stability and Reactivity

Stability: Stable, under normal storage and handling conditions.

Polymerization: Hazardous polymerization will not occur.

Chemical Incompatibilities: Urea reacts with perchlorates. It is incompatible with sodium nitrate and phosphorus pentachloride. May react with nitrates, alkalies, oxidizing agents, hypochlorites, aldehydes, inorganic acids, olefins, and polymerizable esters. Corrosive to copper and copper alloys.

Conditions to Avoid: Exposure to elevated temperatures, and fire.

Hazardous Decomposition Products: Ammonia, biuret, carbon dioxide, cyanic acid, cyanuric acid, nitrogen oxides.

Section 11- Toxicological Information*

<p>Eye Effects: Irritant</p> <p>Skin Effects: Urea: Standard Draize Test (human): 22 mg/3D (Intermittent) = Mild</p> <p>Acute Dermal Effects: No data</p>	<p>Acute Oral Effects: Urea LD₅₀(rat): 8471-14300 mg/kg Urea has been determined to be “not toxic” based on the criteria of OSHA 1910.1200, Appendix A, Oral(mammal) LD₅₀ > 500 mg/kg</p> <p>Acute Inhalation Effects: No data</p> <p>Chronic Effects: See Section 3.</p> <p>Carcinogenicity: No data</p> <p>Mutagenicity: No data</p>
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* See NIOSH, RTECS YR6250000(Urea) for additional information.

Section 12 - Ecological Information

Ecotoxicity: This product in elevated concentrations can cause vegetation kill and contribute to eutrophication. Urea has been determined to be “non-toxic to aquatic organisms” per USEPA criteria.

Environmental Fate: Urea is ultimately biodegradable. When released to soil, this product will hydrolyze to ammonium in a matter of days. Ammonia in soil can be rapidly transformed to nitrate by the microbial population through nitrification. The nitrate form will either leach through the soil or be taken up by plants or other organisms. In water ammonia can undergo sequential transformation by two processes in the nitrogen cycle, nitrification and denitrification, which would produce ionic nitrogen compounds, and from these, elemental nitrogen.

Section 13 - Disposal Considerations

Disposal: Contact federal or state regulatory agencies for acceptable disposal/use of the recovered materials. Recovered product may be suitable for use or may need to be sent to a waste treatment facility.

Disposal Regulatory Requirements: Follow applicable Federal, state, and local regulations.

Container Cleaning and Disposal: Containers should be thoroughly emptied before disposal.

Section 14 - Transportation Information

DOT Transportation Data (49 CFR 172.101):

This product is not regulated as a DOT Hazardous Material.

Proper Shipping Name: Urea Solution

Section 15 - Regulatory Information

EPA Regulations:

RCRA Hazardous Waste Number (40 CFR 261.33): Not listed
 CERCLA Hazardous Substance (40 CFR 302.4): No
 CERCLA Reportable Quantity (RQ): Not Applicable
 SARA 311/312 Codes: Yes-Acute (Irritant)
 SARA Toxic Chemical (40 CFR 372.65): No
 SARA EHS (Extremely Hazardous Substance) (40 CFR 355): No
 SARA EHS Threshold Planning Quantity (TPQ): Not Applicable
 CAA/RMP (Toxic Substances) (40 CFR 68.130): No
 CAA/RMP (TQ): Not Applicable

OSHA Regulations:

Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A): This product is not listed.
 Process Safety Management (29 CFR 1910.119): No
 PSM Threshold Quantity (TQ): Not Applicable

State Regulations: This product is regulated in commerce by state agricultural and/or consumer protection laws. This product may be listed in various state Right-to-know, worker protection, and/or environmental protection laws. If you are unable to determine the proper status of this product under your respective state laws contact the manufacturer.

Section 16 - Other Information

ACGIH - American Conference of Governmental Industrial Hygienists
 ANSI - American National Standards Institute
 ca - Approximately
 CAS - Chemical Abstracts Service
 CFR - Code of Federal Regulations
 CHEMTREC - Chemical Transportation Emergency Center
 DOT - U.S. Department of Transportation
 EHS - Extremely Hazardous Substance
 EPA - U.S. Environmental Protection Agency
 HMIS - Hazardous Material Identification System
 IARC - International Agency for Research on Cancer
 LEL/UEL - Lower and Upper Explosive Limit

mg/m³ - Milligrams per cubic meter
 MSDS - Material Safety Data Sheet
 NAERG - North American Emergency Response Guidebook
 NIOSH - National Institute of Occupational Safety and Health
 NFPA - National Fire Protection Association
 NTP - National Toxicology Program
 OSHA - Occupational Safety and Health Administration
 PEL - Permissible Exposure Limit (set by OSHA)
 PPE - Personal Protective Equipment
 SARA - Superfund Amendments and Reauthorization Act
 TLV - Threshold Limit Value (set by ACGIH)

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Prepared By: SAFENVIRONS, INC.

Revision Notes: This revision includes an update of Sections 11 & 12.

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