SAFETY DATA SHEET
Urea Solution (40-70%)

Section 1. IDENTIFICATION

Product Name: Urea Solution (40-70%)
Synonym(s): Urea Liquor

Recommended use: NOx control systems, nitrogen source for fermentation processes and fertilizer
Restrictions on use: Use only as directed

Manufacturer: Iowa Fertilizer Company, LLC
3550 180th St.
Wever, IA 52658
319-376-4500
319-376-4700 (24 hour)

Emergency phone number: 800-424-9300 (Chemtrec)

Section 2. HAZARD(S) IDENTIFICATION

Classification:

Physical	Health	Environmental
Not Hazardous	Not Hazardous	Hazardous to the Aquatic Environment – Acute Hazard Category 3

Label Elements:

Signal Word and Pictogram
None Required

Precautionary Phrases
Avoid release to the environment.
Dispose of contents and container in accordance with local and national regulations.

Section 3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical name	CAS No.	Concentration
Urea	57-13-6	40-70% wt
Water	7732-18-5	Balance
Biuret	108-19-0	$\leq$ 0.4 % wt
Free Ammonia	7664-41-7	$\leq$ 0.3 % wt
Carbon dioxide	124-38-9	$\leq$ 0.2 % wt

Section 4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If irritation occurs or breathing is difficult, get medical attention.
Skin contact: Wash with soap and water. If irritation develops and persists, get medical attention.
Eye contact: Flush eyes with water while lifting the upper and lower lids. Get medical attention if irritation develops or persists.
Ingestion: Rinse mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to a person who is unconscious or convulsing. Get medical attention.

Most important symptoms/effects, acute and delayed: May cause mild eye irritation. Prolonged skin contact irritation with redness and itching. Inhalation of mists may cause upper respiratory tract irritation. Swallowing large amounts may cause gastric upset.

Indication of immediate medical attention and special treatment, if necessary: Immediate medical attention is not required under normal use conditions.

Section 5. FIRE-FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media: Use media appropriate for the surrounding fire.

Specific hazards arising from the chemical: This product is shipped s a hot material with temperatures up to 160°F. Contact with hot material may cause second degree burns to the skin and eye damage. Urea may decompose at temperatures above 275°F producing ammonia, carbon dioxide and nitric acid.

Special protective equipment and precautions for fire-fighters: Firefighters should wear full emergency equipment and NIOSH approved positive pressure self-contained breathing apparatus. Cool fire exposure containers with water.

Section 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures: Wear appropriate protective clothing and equipment, see section 8 of the SDS for further information.

Environmental hazards: Report spill as required by local and federal regulations.

Methods and materials for containment and cleaning up: Collect spilled material with inert material and place into a closable, labeled container for disposal. Wash spill area with water.

Section 7. HANDLING AND STORAGE

Precautions for safe handling: Avoid eye contact and prolonged skin contact. Avoid breathing mists or spray. Use with adequate ventilation Wash thoroughly after handling.

This product is shipped as a hot liquid with temperatures up to 160°F. Contact with the solution may cause damage to eyes and second degree burns to the skin. Always wear protective gloves, clothing and eye protection when handling hot material.

Conditions for safe storage, including any incompatibilities: Store in a cool, well-ventilated area. Protect storage container from physical damage.

Section 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure guidelines:

Urea	10 mg/m^3 TWA AIHA WEEL
Water	None Established
Biuret	None Established
Ammonia	50 ppm TWA OSHA PEL 25 ppm TWA, 35 ppm STEL ACGIH TLV
Carbon dioxide	5000 ppm TWA OSHA PEL 5000 ppm TWA, 30,000 ppm STEL ACGIH TLV

Appropriate engineering controls: If use generates mists, use general ventilation or local exhaust as required to maintain exposures below the occupational exposure limits.

Individual protection measures, such as personal protective equipment:
Respiratory protection: In operations where the occupational exposure limits are exceeded, an approved respirator with dust/mist cartridges or supplied air respirator should be used. Respirator selection and use should be based on contaminant type, form and concentration. Follow applicable regulations and good Industrial Hygiene practice.
Skin protection: Nitrile, Viton or Butyl gloves are recommended for prolonged skin contact. If the product is hot, wear thermal-insulated gloves to protect from burning skin.
Eye/face protection: Safety glasses are recommended if splashing is possible. If product is hot, wear safety goggles and face shield.
Other: Appropriate protective clothing as needed to minimize skin contact, especially if the product is hot. Suitable washing facilities should be available in the work area.

Ambient Temperatures	Hot Liquid
	

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear, colorless liquid.
Odor: Slight ammonia odor.

Odor threshold: None	**pH:** 7 - 10 (depending upon free ammonia)
Melting point/freezing point: 33 - 135 °F (0.56 - 57 °C) (50% urea solution salts out at 62 °F; 70% urea solution salts out 135 °F)	**Boiling point:** 223 °F (106 °C) (50% urea solution boiling point)
Flash point: Not flammable	**Evaporation rate:** Not available
Flammability (solid, gas): Not applicable	

Flammable limits: LEL: Not applicable	**UEL:** Not applicable
Vapor pressure: Not available	**Vapor Density (air =1):** Not available
Relative density: 1.11 (40% urea solution); 1.175 (70% urea solution)	**Solubility in Water:** 100%
Partition coefficient: n-octanol/water: Not available	**Auto-ignition temperature:** Not applicable
Decomposition temperature: Not available	**Viscosity:** Not available

Section 10. STABILITY AND REACTIVITY

Reactivity: Not expected to be reactive.
Chemical stability: Stable.
Possibility of hazardous reactions: None known.
Conditions to avoid: Avoid extremely high or low temperatures.
Incompatible materials: Avoid strong acids, oxidizing agents, or alkalis.
Hazardous decomposition products: Thermal decomposition may produce oxides of carbon, nitrogen, and ammonia.

Section 11. TOXICOLOGICAL INFORMATION

Inhalation: High concentrations of mists may cause nose, throat, and upper respiratory tract irritation. Inhalation of mists from hot liquid may cause severe irritation or burns to the mucous membranes of the nose, mouth and throat.
Ingestion: Swallowing large amounts may cause gastrointestinal irritating and nausea. Swallowing hot liquid may cause burns to the mouth, throat and stomach.
Skin contact: Prolonged skin contact may cause irritation with redness and itching. Contact with hot liquid may cause second degree burns.
Eye contact: May cause eye irritation with redness, tearing and pain. Contact with hot liquid may cause eye damage including blindness.

Chronic effects: None known**.**

Reproductive Toxicity: None of the components have been shown to cause reproductive or developmental toxicity.

Mutagenicity: None of the components have been shown to cause mutagenic activity.

Carcinogenicity: None of the ingredients are listed as a carcinogen by IARC, NTP or OSHA.

Acute Toxicity Values:
Urea: Oral rat LD50 8471 mg/kg

Section 12. ECOLOGICAL INFORMATION

Ecotoxicity:
Urea: 96 hr LC50 Leuciscus idus >6810 mg/L, 24 hr EC50 daphnia magna >10000 mg/L

Persistence and degradability: Urea is rapidly hydrolyzed to ammonia and carbon dioxide in environmental systems.
Bioaccumulative potential: The potential for bioconcentration in aquatic organisms is expected to be low.
Mobility in soil: Urea is highly mobile in soil.
Other adverse effects: Harmful to aquatic life.

Section 13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all local, state and federal regulations.

Section 14. TRANSPORT INFORMATION

	UN Number	Proper shipping name	Hazard Class	Packing Group	Environmental Hazard
DOT	None	Not Regulated			
TDG	None	Not Regulated			
IMDG	None	Not Regulated			
IATA	None	Not Regulated			

Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code): Not applicable

Special precautions: None known.
STCC Code: 2818146

Section 15. REGULATORY INFORMATION

Safety, health, and environmental regulations specific for the product in question.

CERCLA: This product is not subject to CERCLA reporting requirements, however, many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.
SARA Hazard Category (311/312): Acute Health.
SARA 313 This product does not contain any Chemicals Subject to Annual Release Reporting Requirements Under SARA Title III, Section 313 (40 CFR 372).
EPA TSCA Inventory: All of the components of this product are listed on the Toxic Substances Control Act (TSCA) Chemical Substances Inventory.
Canadian CEPA: All of the ingredients are listed on the Canadian Domestic Substances List.

Section 16. OTHER INFORMATION

NFPA Rating: Health = 1 Flammability = 0 Instability = 0
HMIS Rating: Health = 1 Flammability = 0 Physical Hazard = 0

SDS Revision History: Added STCC Code in Section 14.
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