MATERIAL SAFETY DATA SHEET

21% Urea Solution

PRODUCT AND COMPANY IDENTIFICATION

SECTION 1

Chemical Product:
21% Urea Solution
Common Name: Urea Solution
Chemical Family: Aliphatic amide
Formula: \( \text{CO(NH}_2\text{)}_2 \)

Manufactured By:
Land View Fertilizer, Inc.
P. O. Box 86
Minidoka, ID 83343

Emergency Phone Numbers:
Emergency Telephone: DAYS: (208) 531-4100
24-Hour Emergency HAZMAT Response (800) 229-5252
EPA National Response Center: (800) 424-8802

INGREDIENTS

SECTION 2

<table>
<thead>
<tr>
<th>CHEMICAL</th>
<th>CAS NO.</th>
<th>%</th>
<th>TLV OR PEL</th>
<th>RQ (lbs)</th>
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<tr>
<td>Urea</td>
<td>57-13-6</td>
<td>46.6%</td>
<td>NA</td>
<td>NA</td>
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</tbody>
</table>

EMERGENCY/HAZARDS OVERVIEW

SECTION 3

Potential Acute Health Effects
This product may irritate eyes and skin upon contact. Not considered to be toxic for humans. However, in keeping with good industrial hygiene practices, exposure to any chemical should be kept at a minimum.
Potential Chronic Health Effects
Carcinogenic Effects: None found by ACGIH, EPA, IARC, OSHA.
Mutagenic Effects: None found by ACGIH, EPA, IARC, OSHA.
Teratogenic Effects: None found by ACGIH, EPA, IARC, OSHA.

FIRST AID
SECTION 4

Eyes: Immediately flush eyes with copious amounts of tepid water for at least 15 minutes. If irritation, pain, swelling, excessive tearing, or light sensitivity persists, the patient should be seen in a health care facility.
Skin: Immediately flush exposed area with copious amounts of tepid water for at least 15 minutes followed by washing area thoroughly with soap and water. The patient should be seen in a health care facility if irritation or pain persists.
Ingestion: If conscious, give the patient large quantities of milk or water to drink immediately. Do not induce vomiting. Seek medical attention.
Inhalation: Generally not considered an inhalation hazard. If irritation develops, move patient to fresh air and monitor. If cough or difficulty in breathing develops, evaluate for respiratory tract irritation. If needed, administer supplemental oxygen if trained to do so. If irritation, coughing, or difficulty breathing persists, the patient should be seen in a health care facility.

FIRE AND EXPLOSION HAZARDS
SECTION 5

Product: Non-flammable
Flash Point: Not applicable
Flammability Limits: Not applicable
Products of Combustions: Material will not burn, but thermal decomposition may result in flammable/toxic gases being formed after material evaporates to dryness. These products are ammonia, carbon dioxide, and oxides of nitrogen.

Fire Hazard in the presence of various substances: Not applicable
Explosion Hazard in the presence of various substances: Reacts violently with chlorine bleach. Resultant product may explode.
Fire Fighting Media: Non Flammable. Material will not burn. Undergoes thermal decomposition at elevated temperatures to release toxic and combustible gases (ammonia, carbon dioxide, and oxides from nitrogen). Fire fighters should wear a self-contained breathing apparatus. Use extinguishing media suitable for surrounding materials.

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: May be explosive
SPILLS AND LEAKS
SECTION 6
Containment: Keep unnecessary people away, isolate hazard area and deny entry. Clean Up: Small Spill: (Generally, a small spill is one that involves a single, small package (i.e. up to a 55 gallon drum), small cylinder, or a small (non-continuing) leak from a large container.) A.) Stop leak if you can do so with out risk. B.) Spilled area may become slippery. C.) Wash contaminated areas with large volumes of water if approved by local, state, and federal environmental agencies. D.) Runoff may cause pollution. Large Spill: A.) Dike ahead of liquid spill for later recovery of usable product and proper disposal of any residue. B.) Stop leak if you can do so without risk. C.) Spilled area may become slippery. D.) Wash contaminated areas with large volumes of water if approved by local, state, and federal environmental agencies. E.) Runoff may cause pollution.
Evacuation: Necessary

STORAGE AND HANDLING
SECTION 7
Precautions: If user operations generate mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Keep out of reach or children.
Storage: Ensure compatibility with storage vessel material of construction. Keep in an appropriate storage temperature to prevent freezing.
Transfer Equipment:
Work/Hygienic Practices: Use proper personal protective equipment when working with or around UAN (see section 8).

PERSONAL PROTECTIVE EQUIPMENT
SECTION 8
Eyes: If there is a potential for 21% Urea Solution to contact eyes, it is recommended that safety glasses or goggles be used.
Skin: It is recommended that if a person may be exposed to 21% Urea Solution for an extended length of time or if a person demonstrates sensitivity to 21% Urea Solution, skin protection should be used. Most liquid tight gloves and liquid resistant clothing is acceptable.
Respiratory: Wear Appropriate respiratory protection for dust/mist when ventilation is inadequate.
Other: Safety shower and eyewash fountain or at least 5 gallons of accessible clean water should be provided in a 21% Urea Solution handling area.

PHYSICAL AND CHEMICAL DATA
SECTION 9
Appearance: Colorless liquid
Odor: odorless to slightly ammoniacal.
\( \text{pH}: \) 7
Specific Gravity: Not available
Boiling Point: Not available
Melting Point: 17.8 °C 64 °F (Salt out temp, 50% soln)
Water Solubility: Easily soluble in hot or cold water.
Density: 9.63 lbs/gallon
Evaporation Rate: Not available.
Viscosity: Not available.
% Volatile: Not available.
Octanol/Water Partition Coefficient: Not available.
Saturated Vapor Concentration: 17 PPM recognition threshold as ammonia
Taste: Saline

STABILITY AND REACTIVITY
SECTION 10

Stability: Stable.
Incompatibility with Various Substances: Reactive with halogens. Slightly reactive with oxidizing agents, reducing agents, acids, alkalis, and moisture. Non-reactive with Combustible materials, organic materials, most metals.
Corrosivity: Slightly corrosive to mild steel, aluminum, zinc, copper.

TOXICOLOGICAL INFORMATION
SECTION 11

Significant Routes of Exposure: Ingestion. Inhalation.
Toxicity to Animals: Acute Oral Toxicity (LD50): 14300 mg/kg (Rat).
Under controlled feeding conditions, urea is used as a nutritional supplement in cattle and other animals. The toxic dose in cattle given urea for the first time is considered to be 0.45 g/kg or a total of 100-200 g. Mature bullocks can digest as much as 400g a day without ill effects. As little as 50g may cause adverse effects in cattle not accustomed to it.

Special Remarks on Other Effects on Humans: May cause irritation of the mucous membranes and upper respiratory tract.

ECOLOGICAL INFORMATION
SECTION 12

Notify local health and wildlife officials and operators of any nearby water intakes of contamination or discharge into or leading to waterways. Fertilizers containing urea can cause poisoning in livestock and poultry. Nitrogen solutions can be toxic to aquatic life and spills may cause algae blooms in static waters. The conversion of ammonia to nitrites/nitrates by bacteria in aquatic systems can reduce the concentration of dissolved oxygen (referred to as nitrogenous oxygen demand).
DISPOSAL
SECTION 13
Recover and place material in a suitable container for intended use or disposal. Ensure disposal complies with government requirements and local regulations.

TRANSPORTATION
SECTION 14
21% Urea Solution is not listed by any U.S. or Canadian transportation authority as a hazardous material and as such, no specific information is available.

REGULATORY INFORMATION
SECTION 15
CERCLA: Not Listed
PROPOSITION 65: None.
TSCA Inventory: Listed

OTHER
SECTION 16
All information appearing in this document was based on data provided by third party sources and was compiled to comply with the Federal Hazard Communication Standard and the California Hazardous Substances Information and Training Act. The information is believed to be accurate as of the preparation date, but is not warranted as being the final authority in the use of this product. This information does not purport to be legal or medical advice.