

# CATALYTIC INNOVATIONS



## SAFETY DATA SHEET

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### 1. PRODUCT IDENTIFICATION

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**Product Name:** *Urea Ammonium Nitrate Solution (28%-32%)*

**CAS #:** 15978-77-5

**Trade Names/Synonyms:** UAN (28, 30, and 32%), Liquid Nitrogen Fertilizer

**EPA Reg. No.:** Not applicable

**Use of substance/mixture:** For laboratory and manufacturing use only.

**Restricted Use:** Not for food, drug, or household use.

**Manufacturer:** Catalytic Innovations, LLC  
10027 County Road 2020  
Rolla, MO 65401

Emergency Contact Number: **573-578-1368**

**SDS CREATION DATE:** April 14<sup>th</sup>, 2023

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### 2. HAZARD IDENTIFICATION

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Avoid contact with eyes, skin and clothing. Avoid breathing vapors. Use with adequate ventilation. Eye protection and gloves are suggested when handling product. Wash thoroughly after handling. Primary routes of entry are eye contact and skin contact.

**GHS CLASSIFICATIONS:**

**SIGNAL WORD:** Warning!

**HAZARD STATEMENTS**

H319 - Causes serious eye irritation

**PRECAUTIONARY STATEMENTS**

**Prevention Measures:**

P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.

P280 - Wear protective gloves, protective clothing, and eye protection.

**Response Measures:**

P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313 - If eye irritation persists: Get medical advice/attention.

**HEALTH COMMENTS:** Read all precautions of products being handled and follow the most restrictive language for all products to provide the safest work environment.

**COMMENTS: KEEP OUT OF REACH OF CHILDREN**

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### 3. COMPOSITION

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<u>Chemical Ingredients:</u>	<u>Percentage by Weight</u>	<u>CAS No.</u>	<u>GHS-US</u>
Water	19.4-31.1%	7732-18-5	Not Classified
Urea	28.5-38%	57-13-6	Not Classified
Ammonium Nitrate	35.7%-48%	6484-52-2	Ox. Sol. 3, H272 Eye Irrit. 2A, H319

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#### 4. FIRST AID MEASURES

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**EYES:** Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first minutes then continue rinsing eyes. Call a poison control center or doctor for treatment advice if pain, blinking, or redness persists.

**SKIN:** Take off contaminated clothing. Rinse skin immediately with plenty of water and mild soap for 15-20 minutes followed by a rinse with warm water. Call a poison control center or doctor for treatment advice.

**INGESTION:** Immediately call a poison control center or doctor. Rinse the mouth. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

**INHALATION:** Move person to fresh air. Allow the victim to rest. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

**NOTES TO PHYSICIAN:** All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

**Symptoms:** Irritation to the eyes, respiratory track, and skin. Redness, pain, swelling, itching, burning, tearing, and blurred vision can occur.

**Chronic Symptoms:** Ingestion may cause methemoglobinemia which is characterized by cyanosis, headaches, weakness, dizziness, dyspnea, and anoxia. Nitrite poisoning is also possible which is characterized by the above and including increased heart rate, hypotension, fainting, and possibly shock.

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#### 5. FIRE FIGHTING MEASURES

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**Flash Point (°F/Test Method):** Data unavailable.  
**Flammable Limits (LFL & UFL):** Not flammable.

**Extinguishing Media:** Foam. Dry Powder. Carbon Dioxide. Water spray. Sand. **DO NOT** use heavy water stream.

**Specific Hazards Arising from Chemical:** Contains substances that are oxidizers when in solid form. May cause fire or explosion if allowed to dry. May be explosive in contact with flammable or organize substances and confinement during fire.

**Hazardous Combustion Products:** Nitrogen oxides. Ammonia. Toxic Vapors. Carbon Oxides.

**Precautionary Measures for Fire-Fighters:** Do not allow the product to evaporate to dryness. Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Move undamaged containers from immediate hazard area if it can be done with minimal risk. Water spray may be useful in minimizing or dispersing vapors. Cool equipment exposed to fire with water, if it can be done with minimal risk. Prevent fire-fighting water that may be contaminated by the chemical from entering the environment. Do not enter without personal protective equipment, including respiratory protection (full breathing apparatus).

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## 6. ACCIDENTAL RELEASE MEASURES

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**Steps to be taken in case material is released or spilled:** Soak up the spills with inactive solids, such as clay or diatomaceous earth as soon as possible. Collect the spillage and store away from other materials and chemicals. DO NOT soak up with combustible material such as saw dust or cellulosic material.

**Environmental Caution:** Keep spills and cleaning runoff out of municipal sewers and open bodies of water. Notify the authorities if liquid enters the sewers or public waters.

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## 7. HANDLING/STORAGE INFORMATION

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**Precautions for Handling:** Use only outdoors or in a well-ventilated area. Avoid eye and skin contact and do not breathe in vapor or mist.

**Precautions for Storage:** Store in a dry, cool, and well-ventilated places. Keep in a fireproof place. Keep the container tightly closed when in use. Keep the materials away from other incompatible materials (see section 10).

**Other Comments:** When the water in UAN evaporates, residue may include solid ammonium nitrate and urea. When sensitized or during decomposition, solid ammonium nitrate may become unstable and/or explosive. Smothering the substance, contact with organic material, or contact with combustible material may cause an explosive situation. Thoroughly wash out pipes, tanks, or valves before any hot work. Residual solidified ammonium nitrate may explode under high temperatures and confinement. Heating above 140°F will promote hydrolysis. Extreme cold (< 32 °F) may cause crystallization of the product. ***Do not allow liquid to evaporate, as solid ammonium nitrate residue can explode.***

Observe all federal, state and local regulations when storing this product. It is recommended that storage and transfers of this product be done on an impervious surface to prevent contamination of waterways.

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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**Exposure Parameters:** For substances listed in section 3 that are not listed here, there are no established Exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), OSHA (PEL)

**Engineering Controls:** Emergency eye wash fountains and showers should be made available in the immediate vicinity of the chemical or where exposure can occur. Ensure adequate ventilation. Gas detectors should also be available when toxic gases may be released.

**Hygiene Measures:** Wash hands and other exposed areas with mild soap and water before eating, drinking, smoking, or when leaving work. Keep away from food and drink.

**Respiratory Protection:** If exposure limits are exceeded or irritation is experienced, wear approved respiratory protection.

**Skin/Body Protection:** Wear chemically protective gloves. Wear chemically protective boots, aprons, and gauntlets to prevent prolonged or repeated contact with skin.

**Eye/Face Protection:** Wear safety goggles when handling this product. Use a face shield for additional protection. Contact lenses are not eye protective devices.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**Physical State:** Liquid

**Appearance** Colorless

**Odor:** Little to no ammonia odor

**pH:** 6.5-7.8

**Evaporation Rate:** No established.

**Melting Point:** 0°F (-18°C) for 28%N; 16°F (-9°C) for 30%N; 32°F (0°C) for 32%N (salt out temperature)

**Freezing Point:** No information available.

**Boiling Point:** > 100 °C (> 212 °F)

**Flash Point:** No information available.

**Relative Density:** 10.67 lbs/gal (28%N); 10.86 lbs/gal (30%N); 11.08 lbs/gal (32% N)

**Water Solubility:** Miscible

**Specific Gravity (water = 1.0):** 1.281 (28%N); 1.304 (30%N); 1.330 (32%N) @60°F (16°C)

**Percent Volatile (by volume):** No information available.

**Vapor Pressure:** 0.11 - 0.06 psia (28%, 32% respectively) @60°F (15.6°C) due to water component

**Vapor Density:** No information available.

**Viscosity:** 3.6 cP (28%N); 6.1 cP (32%N) @40°F (4.4°C)

**Partition Coefficient: N-Octanol/Water :** Urea: -1.59, Ammonium Nitrate: -3.1

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## 10. STABILITY AND REACTIVITY

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**Reactivity:** Accelerates the rate of burning materials. Becomes an oxidizer if allowed to evaporate to dryness.

**Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Extremely high or low temperatures. Open flame. Heat. Sparks. High pressures- explodes if heated under confinement. Do not allow product to dry out. When the water in UAN evaporates, residue may include solid ammonium nitrate and urea. When sensitized or during decomposition, solid ammonium nitrate may become unstable and/or explosive.

**Incompatible Materials:** Strong acids. Strong bases. Strong oxidizers. Chlorine. Hypochlorite. Metallic powders. Combustible materials. Chromates. Zinc. Copper and its alloys. Chlorates. Nitric acid.

**Hazardous Decomposition Products:** Nitrogen oxides. Ammonia. Carbon oxides (CO, CO<sub>2</sub>). When the water in UAN evaporates, residue may include solid ammonium nitrate and urea. When sensitized or during decomposition, solid ammonium nitrate may become unstable and/or explosive. UAN pumps operated with blocked discharge have been known to detonate.

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## 11. TOXICOLOGICAL INFORMATION

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**Likely Routes of Exposure:** Inhalation, ingestion, or skin/eye contact.

**Acute Toxicity Effects:**

Component: Urea	
Test	Results
LD50 Oral Rat	8471 mg/kg

Component: Ammonium Nitrate	
Test	Result
LD50 Oral Rat	2217 mg/kg
LD50 Inhalation Rat	>88.8 mg/1/4hr

**Sensitization:** No information available.

**Eye Irritation:** Causes serious eye irritation.

**Skin Irritation:** No information available.

**Respiratory Irritation:** May cause irritation to the respiratory tract.

**Reproductive Toxicity:** No information available.

**Developmental Toxicity:** No information available.

**STOT Single Exposure:** No information available.

**STOT Repeated Exposure:** No information available

**Carcinogenicity:** No information available.

**Chronic Effects:** No information available.

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## 12. ECOLOGICAL INFORMATION

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### ACUTE AQUATIC TOXICITY EFFECTS:

Component: Urea	
Test	Result
LC50 Fish 1	1620 -18300 mg/l/96 hrs (Poecilia reticulata)
EC50 Daphnia 1	3910 mg/l/48 hrs (Daphnia Magna)

**PERSISTENCE AND DEGRADABILITY:** Not established.

### BIOACCUMULATIVE POTENTIAL:

Product: Urea Ammonium Nitrate Solution	
Test	Result
Log Pow	-1.14

Component: Urea	
Test	Result
BCF Fish 1	<10
Log Pow	-1.59 (at 25 0c)

Component: Ammonium Nitrate	
Test	Result
BCF Fish 1	(No bioaccumulation expected)
Log Pow	-3.1 (at 25 0c)

Do not contaminate water supplies. Avoid release to the environment.

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## 13. DISPOSAL CONSIDERATIONS

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Evaluation is required by the user at the time of disposal. In all cases, disposal should be in accordance with all local, state, and federal laws and regulations. For recycling options please contact product manufacturer.

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## 14. TRANSPORTATION INFORMATION

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Not Regulated under DOT - 49 CFR 172.101

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## 15. REGULATORY INFORMATION

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### US FEDERAL REGULATIONS

Product: Urea Ammonium Nitrate	
Statute	Status
SARA Section 311/312 Hazard Classes	Immediate (Acute) Health Hazard

Component: Urea	
Statute	Status
TSCA	YES

Component: Ammonium Nitrate	
Statute	Status
TSCA	YES

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## 16. OTHER INFORMATION

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Prepared by: ESH Department  
SDS Preparation Date: April 14<sup>th</sup>, 2023  
Last Revision Date: April 14<sup>th</sup>, 2023

### NFPA CODES



### FOR ADDITIONAL NON-EMERGENCY INFORMATION CONTACT:

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10027 County Road 2020  
Rolla, MO 65401  
573-578-1368

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