

**** COMPLETE THIS FORM TO INITIATE SUPPLIER SCOUTING ****

MEPNN Supplier Scouting Opportunity Synopsis

(To view in larger text, press Ctrl + Simultaneously)

The submitting entity agrees to notify NIST MEP of the status of actions taken as a result of this scouting instance within 30 days after receiving a results report.

I agree

Number of days to be posted if other than 30

60

Item to be Scouted

Urea Liquor Formula

Please describe the item application/the end use of the item

Used in the production of fertilizers, animal feed, SCR for Nox control systems and adhesives.

Supplier Customer/Product NAICS Code, if known

TECHNICAL INFORMATION

1. Supplier Information

1a. Type of supplier being sought

Manufacturer

If other, please specify type of supplier

1b. Reason for scouting submission

2nd Supplier

If other, please specify reason

2. Summary of Technical Specifications and Performance Requirements

2a. Describe the manufacturing process

see attachments

2b. Provide dimensions, size, tolerances, and performance specifications for the item

see attachments

2c. List required materials needed to make the product, including materials of product components

see attachments

2d. Are there applicable certification requirements?

No

If yes, please explain applicable certification requirements

2e. Are there applicable regulations?

No

If yes, please explain applicable regulations

2f. Are there any other standards, requirements, etc.?

No

If yes, please explain other standards, requirements, etc.

2g. Additional Comments

BUSINESS INFORMATION

3. Volume and Pricing

3a. Estimated potential business volume (i.e. # Units per day/month/year)

tractor trailer truck loads

3b. Estimated target price/unit cost information (flexible and negotiable not accepted)

CNY1500-2500

4. Delivery Requirements

4a. When is it needed by? (immediate, 30 days, 6 months, etc.)

immediate

4b. Describe packaging requirements (i.e. individually/group packaging)

tractor trailer load

4c. Where will this item be shipped?

Insinger Performance 11278 ROUTE 220 Dushore, PA 18614

5. Additional Comments

5a. Is there other information you would like to include?

6. Requesting Scout

6a. Scout Name

Dale Parmenteri

6b. Center Name

NEPIRC (PA MEP)

If an organization other than a Center, please enter

6c. Scout Email

dale@nepirc.com or marla@nepirc.com

Supplier Scouting Number (NIST MEP use only)

2022-033

Attachments

Insinger TMN-50-Urea-Solution-SDS-2020.pdf

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General Information

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SAFETY DATA SHEET

50% UREA SOLUTION

Section 1 – Identification

Product 50% Urea Solution

Recommended Use:

Used in the production of fertilizers, animal feed, SCR for Nox control systems and adhesives.

Manufacturer TradeMark Nitrogen Corp.
Address 1216 Old Hopewell Road, Tampa, FL 33619
Phone (813) 626-1181 (800) 452-3107
24 Hour Emergency Chemtrec
Contact (800) 424-9300

Section 2 – Hazard Identification



GHS07

Signal Word: **WARNING**

Hazard Statements

H302 Harmful if swallowed
H320 Causes serious eye irritation
H335 May cause respiratory irritation
H402 Harmful to aquatic life

Precautionary
Statements:

P101: If medical advice is needed, have product container or label at hand.
P102: Keep out of reach of children.
P103 Read label before use
P210 Keep away from open flames. - No Smoking
P260 Do not breathe fume, mist, spray, vapours
P264 Wash hands thoroughly after handling
P270 Do not eat, drink or smoke when using this product
P271 Use only outdoors or in a well-ventilated area
P280 Wear eye protection, protective clothing, protective gloves
P331 Do NOT induce vomiting
P301+P330 IF SWALLOWED: Call a POISON CENTER or doctor / physician if you feel unwell
P302+P352 IF ON SKIN: Wash with plenty of water
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P332+P313 If skin irritation occurs: Get medical advice / attention
P337+P313 If eye irritation persists: Get medical advice / attention
P362 Take off contaminated clothing
P501 Dispose of contents / container according to local, regional, national, and international regulations

Section 3 – Composition

Ingredients	Component	CAS. No.	Percent by
	Urea (CO(NH ₂) ₂)	57-13-6	50.0%

Ammonia (NH ₃)	7664-41-7	0.03%
Biuret (H ₂ NC(O)NHC(O)NH ₂)	108-19-0	< 0.25%
Water (H ₂ O)	7732-18-5	Balance

Section 4 – First Aid Measures

Inhalation	If inhaled: Remove person to fresh air and keep comfortable for breathing. Provide artificial respiration if necessary. Seek medical attention if necessary.
Skin Contact	If on skin (or hair): Take off all contaminated clothing. Rinse skin with soap and water for at least 15 minutes. Seek medical attention if irritation persists. Wash contaminated clothing before reuse.
Eye Contact	If in eyes: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing for at least 15 minutes. Seek medical attention if irritation persists.
Ingestion	If swallowed: Do NOT induce vomiting. If vomiting occurs, attempt to keep head lower than chest so that vomit does not enter into the lungs. Drink large amounts of water. Never give anything by mouth to an unconscious person. Seek medical attention. If affected person requires CPR, avoid mouth to mouth contact. Call for emergency transportation to a hospital if the exposed person feels sick or has breathing difficulties.

Acute Health Hazards High levels of nitrates may reduce the blood's ability to transport oxygen causing headache, fatigue, dizziness and blue lips and skin (methemoglobinemia). Moderate irritant of eyes, skin, mucous membranes, and contaminated tissue. Ingestion can be harmful or fatal.

Chronic Health Hazards None expected under normal conditions. However, methemoglobinemia is the primary health effect. Prolonged skin contact may result in dermatitis (inflammation and redness of skin). Repeated ingestion of small amounts may cause weakness, headaches, neurological effects and mental impairment. Possible excessive action of the kidneys and perhaps the bowels can occur.

Section 5 – Fire Fighting Measures

Suitable Extinguishing Techniques & Equipment	Not combustible or reactive, use extinguishing media suitable for surrounding material. Wear self-contained breathing apparatus and full protective gear.
Chemical Hazards From Fire	In a fire this material may decompose and produce carbon oxides, oxides of nitrogen and ammonia.
Special Fire Fighting Procedures	Use extinguishing agent most appropriate to surrounding materials.
NFPA Rating	Health - 1 (Slight) Fire - 0 (Least) Reactivity - 0 (Least)
Other	Do not allow run-off from fire fighting to enter drains or water courses.



Section 6 – Accidental Release Measure

Personal Precautions	Avoid splashing. Prevent exposure to spilled material with the use of proper PPE.
Protective Equipment	PPE should include gloves, goggles and protective clothing.
Containment	Avoid release to environment. Control the flow of product using dikes of soil, sand bags or other commercially available inert sorbent socks or boom.
In Case of Spill	Absorb product with inert absorbent. Avoid splashing or spraying. Contain and pick up spill in diked area. Prevent discharge to sewers or water ways. If uncontaminated, recover and re-use.

Section 7 – Safe Handling & Storage

Precautions for Safe Handling & Storage	Store in a well ventilated cool dry place. Containers should be kept closed and properly labeled. Keep away from open flames, hot surfaces and sources of ignition. No smoking, eating or drinking while using this product. Avoid all unnecessary exposure. Do not breathe mist, vapor or spray. Avoid contact with flammable and combustible materials, strong reducing agents, strong acids, strong bases and oxidizing materials. Avoid contact with Sodium nitrate, phosphorus pentachloride, and nitrosyl or gallium perchlorate. Urea will form Urea Nitrate when mixed with nitric acid at a low pH.
Incompatibility	
Additional Hazards when Processed	If this product is intended to be used in an elevated temperature or high temperature process, a thorough hazard assessment review should be performed to assure that safe operating conditions are established, met and maintained. When heated, urea releases ammonia and when heated to decomposition it emits toxic fumes of nitrogen oxides (NOx), ammonia, and cyanuric acid.

Section 8 – Exposure Controls / Personal Protection

Exposure Limits	Component	Permissible Exposure Limit	Threshold Limit Value	Short Term Exposure Limit	Immediately Dangerous to Life or Health
	Urea (CO(NH ₂) ₂)	Not Established	Not Established	Not Established	Not Established
	Ammonia (NH ₃)	50 ppm TWA	25 ppm	35 ppm	500 ppm
	Biuret (H ₂ NC(O)NHC(O)NH ₂)	Not Established	Not Established	Not Established	Not Established
	Water (H ₂ O)	Not Established	Not Established	Not Established	Not Established
Engineering Controls	Local or general exhaust. Eyewash and emergency shower facilities should be available.				
Personal Protective Equipment	Eyes	Chemical safety goggles or safety glasses.			
	Hands	Impervious chemical protective gloves.			
	Respiratory	None required under normal conditions. NIOSH approved respirator if there is a mist of the product.			
	Protective Clothing				
					
	Gloves	Protective Clothing	Goggles	Respiratory Protection	

Section 9 – Physical & Chemical Properties

Appearance and Odor	Colorless liquid may have a slight ammonia	Relative Density	1.140 @ 68°F (20°C)
Boiling Point	220°F at 1 atmosphere (104.4°C)	Molecular Weight	No Data Available
Freezing Point	No Data Available	Solubility in Water	Miscible in water
Vapor Pressure	< 1 @ 100°F	Flash Point	Not flammable
Weight per Gallon	9.51 lbs/gal @ 60°F	pH	6.5 - 8.5
Gallons per Ton	210.3 gal / ton	Salt-Out Temp	62°F (18°C)
Flammability Limits	No Data Available	Auto Ignition Temp	Not Flammable
UEL	No Data Available	LEL	No Data Available

Section 10 – Stability & Reactivity

Reactivity	Product is not reactive under normal conditions. Avoid interaction with heat (flames), oxidizers, acids or alkalis.
Stability	Product is stable under normal conditions. May emit ammonia vapors.
Hazardous Reactions	None known. Hazardous polymerization will not occur.
Conditions to Avoid	Do not allow product to evaporate to dryness. Keep away from direct heat sources. Avoid heating within a confined space. Avoid incompatibilities and contamination. Elevated temperatures may cause container to rupture. Avoid extreme high temperatures and extreme low temperatures.

Incompatible Materials	Avoid contact with flammable and combustible materials, strong reducing agents, strong acids, strong bases and oxidizing materials. Avoid contact with Sodium nitrate, phosphorus pentachloride, and nitrosyl or gallium perchlorate. Urea will form Urea Nitrate when mixed with nitric acid at a low pH.
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Hazardous Decomposition Products	Extreme heat may cause decomposing to carbon oxides, ammonia and nitrogen oxides, and cyanuric acid.
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Section 11 – Toxicology Information

Routes of Exposure	Inhalation, ingestion or skin/eye absorption	
Symptoms and Signs of Exposure	Eyes	Mild eye irritation.
	Skin	Mild irritant.
	Inhalation	May irritate respiratory tract and mucous membranes.
	Ingestion	Can cause abdominal pain, vomiting, diarrhea and methemoglobinemia.
Long Term Effects	Methemoglobinemia is the primary long-term health effect of over-exposure.	
Toxicity	No limits have been set for this material.	

Acute Toxicity	Product	Criteria	Species	Dose
	Urea	LD50 Oral	Rat - Male, Female	2,950 mg / kg
	Water	LD50 Oral	Rat	>90 g / kg

Conclusion: Very low toxicity to humans

Specific Target Organ Toxicity (Single Exposure)
No Data Available

Specific Target Organ Toxicity (Repeated Exposure)
No Data Available

Exposure Symptoms

Eye contact: Irritation, watering

Inhalation: May cause respiratory irritation

Skin Contact: May cause mild skin irritation

Ingestion: Over exposure by ingestion is unlikely under normal working conditions. Adverse symptoms may include nausea or vomiting, stomach pains, diarrhea, Mthemoglobinemia.

Potential Chronic Health Effects

General: No known significant effects or critical hazards

Carcinogenicity: Not classified

Mutagenicity: Not classified

Teratogenicity: Not classified

Developmental Effects: Not classified

Fertility Effects: Not classified

Carcinogen The International Agency for Research on Cancer has not classified Urea Ammonium Nitrate for its carcinogenic potential (IARC 1987).

California Prop 65 Components of this product are not listed on the active California Prop 65 database.

Section 12 – Ecological Information

Water High concentrations may be harmful to fish and other aquatic organisms.

Ecotoxicity

Product	Criteria	Result	Species	Exposure
Urea	Acute EC50	3910000 µg/l fresh water	Daphnia - Daphnia Magna -	48 hours
	Acute LC50	1,000 mg/l Marine Water	Neonate Crustaceans - Chaetogammaru s marinus -	48 hours
	Acute LC50	5,000 µg/l fresh water	vouna Fish - Colisa Fasciata -	96 Hours
	Chronic NOEC	2 g/L Fresh water	Fingerling Fish - Heteropneustes fossils	30 days
Ammonia	LC50	0.44 mg/l	Cyprinus Carpio	96 hours
	EC50	25.4 mg/l	Daphnia Magna	48 Hours
	LC50	.026 - 4.6 mg/l	Lepmis Macrochirus	96 hours

Persistence and Degradability No Data Available

Bioaccumulative potential No Data Available

Mobility in soil No Data Available

Other adverse effects Harmful to the environment if released in large quantities. Excessive nutrient runoff to a body of water may result in eutrophication.

Section 13 – Disposal Considerations

Waste	This material is hazardous to the aquatic environment. Keep out of sewers and waterways. Disposal must be done in accordance with local, state and federal environmental regulations. Place waste in an appropriate container with correct labeling.
Additional Information	Dispose of used containers at an approved waste handling facility. Empty containers may contain residue of the product, follow label warnings even after container is emptied.

Section 14 – Transport Information

DOT	Not regulated as dangerous goods
IMDG	Not regulated as dangerous goods
IATA	Not regulated as dangerous goods
TDG	Not regulated as dangerous goods
Mexico Classification	Not regulated as dangerous goods

Section 15 – Regulatory Information

United States - SARA Hazard Category	This product has been reviewed according to the EPA Hazard Categories promulgated under Sections 311 and 312 of Title III of the Superfund Amendments and Reauthorization Act (SARA) and is considered, under applicable definitions, to meet the following categories:				
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	Fire - No	Pressure - No	Reactive - No	Acute - No	Chronic - No
SARA Title III Information	This product contains the following substances subject to the reporting requirements of Title III (EPCRA) of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:				
	Chemical	CAS No.	CERCLA RQ (lbs.)	SARA Reporting	
				302	304 313
	Urea	57-13-6	N/A	N/A	N/A

CERCLA / Superfund, 40 CFR Part 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 DC (800-424-8802) is required.
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TSCA	Urea solution is a hydrated form of urea which is listed on the Active TSCA inventory.
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Section 16 – Other Information

Issue Date	8/6/2020
Date of Revision	August 2020 SDS section 12 updated. June 2018 SDS format updated. August 2014 TSCA statement revised. February 2013 revision prepared in accordance with 29 CFR 1910.1200 Appendix D to meet Global Harmonization Standards.

Disclaimer	The information contained in this SDS refers only to the specific material designated and does not relate to any process or use with any other materials. This information is furnished free of charge and is based on data believed to be accurate and reliable as of the date hereof. It is intended for use by persons possessing technical knowledge at their own discretion and risk. Since actual use is beyond our control, no warranty, expressed or implied, and no liability is assumed by TradeMark Nitrogen Corp. in conjunction with the use of this information. Nothing herein is to be construed as a recommendation to infringe any patents. TradeMark Nitrogen Corp. assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.
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SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Name: Urea Liquor

Formula: CH₄N₂O + H₂O

Synonyms: Urea Solution; Urea Cattle Feed

STCC: 2818146

1.2. Intended Use of the Product

Fertilizer; Animal Feed; Nitrogen Solution for SCR NO_x Control Systems.

1.3. Name, Address, and Telephone of the Responsible Party

Company

CF Industries Sales, LLC

4 Parkway North, Suite 400

Deerfield, Illinois 60015-2590

847-405-2400

www.cfindustries.com

1.4. Emergency Telephone Number

Emergency Number : 800-424-9300

For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, call CHEMTREC – Day or Night

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

Classification (GHS-US)

Aquatic Acute 3 H402

Full text of H-phrases: see section 16

2.2. Label Elements

GHS-US Labeling

Hazard Statements (GHS-US) : H402 - Harmful to aquatic life.

Precautionary Statements (GHS-US) : P273 - Avoid release to the environment.

P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations.

2.3. Other Hazards

Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions.

2.4. Unknown Acute Toxicity (GHS-US) No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Not applicable

3.2. Mixture

Name	Product Identifier	% (w/w)	Classification (GHS-US)
Urea	(CAS No) 57-13-6	40 - 70	Not classified
Water	(CAS No) 7732-18-5	28 - 58.8	Not classified
Imidodicarbonic diamide (Biruet)	(CAS No) 108-19-0	≤ 0.7	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335
Ammonia	(CAS No) 7664-41-7	≤ 0.5	Flam. Gas 2, H221 Liquefied gas, H280 Acute Tox. 3 (Inhalation:gas), H331 Skin Corr. 1B, H314 Eye Dam. 1, H318 STOT SE 3, H335 Aquatic Acute 1, H400

Urea Liquor

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

			Aquatic Chronic 2, H411
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Full text of H-phrases: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

Inhalation: When symptoms occur: go into open air and ventilate suspected area. Call a POISON CENTER/doctor/physician if you feel unwell.

Skin Contact: Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical attention if irritation develops or persists. Wash contaminated clothing before reuse.

Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if pain, blinking or redness persist.

Ingestion: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician.

4.2. Most Important Symptoms and Effects Both Acute and Delayed

General: None expected under normal conditions of use.

Inhalation: May cause irritation to the respiratory tract.

Skin Contact: May cause mild skin irritation.

Eye Contact: May cause slight irritation to eyes.

Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: None expected under normal conditions of use.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: Use water to extinguish a fire, if water is compatible with the burning material.

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: Product is not flammable.

Explosion Hazard: Product is not explosive.

Reactivity: Hazardous reactions are unlikely to occur under normal circumstances.

5.3. Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire. Under fire conditions, hazardous fumes will be present.

Firefighting Instructions: Stop leak if safe to do so. Avoid inhalation of material or combustion by-products.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products: Nitrogen oxides. Ammonia. Carbon oxides (CO, CO₂).

Reference to Other Sections

Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Keep away from open flames, hot surfaces and sources of ignition. No smoking. Avoid all unnecessary exposure. Do not breathe vapor, mist or spray.

6.1.1. For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel. Eliminate ignition sources.

6.1.2. For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Stop leak if safe to do so. Ventilate area.

6.2. Environmental Precautions

Prevent entry to sewers and public waters.

Urea Liquor

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

6.3. Methods and Material for Containment and Cleaning Up

For Containment: Absorb and/or contain spill with inert material, then place in suitable container. Beware of slippery floors during spills.

Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. Notify authorities if liquid enters sewers or public waters.

6.4. Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Additional Hazards When Processed: Any proposed use of this product in elevated-temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. When heated, urea releases ammonia and when heated to decomposition it emits toxic fumes of nitrogen oxides (NOx), ammonia, and cyanuric acid.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Wash contaminated clothing before reuse.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Comply with applicable regulations.

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep/Store away from Extremely high or low temperatures.

Incompatible Materials: Strong acids. Strong bases. Strong oxidizers. Sodium nitrite, phosphorus pentachloride, and nitrosyl or gallium perchlorate. Urea will form urea nitrate when mixed with nitric acid at low pH.

7.3. Specific End Use(s)

Fertilizer. Animal feed. SCR NOx Control.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control 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), Canadian provincial governments, or the Mexican government.

Ammonia (7664-41-7)		
Mexico	OEL TWA (mg/m ³)	18 mg/m ³
Mexico	OEL TWA (ppm)	25 ppm
Mexico	OEL STEL (mg/m ³)	27 mg/m ³
Mexico	OEL STEL (ppm)	35 ppm
USA ACGIH	ACGIH TWA (ppm)	25 ppm
USA ACGIH	ACGIH STEL (ppm)	35 ppm
USA OSHA	OSHA PEL (TWA) (mg/m ³)	35 mg/m ³
USA OSHA	OSHA PEL (TWA) (ppm)	50 ppm
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	18 mg/m ³
USA NIOSH	NIOSH REL (TWA) (ppm)	25 ppm
USA NIOSH	NIOSH REL (STEL) (mg/m ³)	27 mg/m ³
USA NIOSH	NIOSH REL (STEL) (ppm)	35 ppm
USA IDLH	US IDLH (ppm)	300 ppm
Alberta	OEL STEL (mg/m ³)	24 mg/m ³
Alberta	OEL STEL (ppm)	35 ppm
Alberta	OEL TWA (mg/m ³)	17 mg/m ³
Alberta	OEL TWA (ppm)	25 ppm
British Columbia	OEL STEL (ppm)	35 ppm
British Columbia	OEL TWA (ppm)	25 ppm
Manitoba	OEL STEL (ppm)	35 ppm
Manitoba	OEL TWA (ppm)	25 ppm
New Brunswick	OEL STEL (mg/m ³)	24 mg/m ³
New Brunswick	OEL STEL (ppm)	35 ppm

Urea Liquor

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

New Brunswick	OEL TWA (mg/m ³)	17 mg/m ³
New Brunswick	OEL TWA (ppm)	25 ppm
Newfoundland & Labrador	OEL STEL (ppm)	35 ppm
Newfoundland & Labrador	OEL TWA (ppm)	25 ppm
Nova Scotia	OEL STEL (ppm)	35 ppm
Nova Scotia	OEL TWA (ppm)	25 ppm
Nunavut	OEL STEL (mg/m ³)	24 mg/m ³
Nunavut	OEL STEL (ppm)	35 ppm
Nunavut	OEL TWA (mg/m ³)	17 mg/m ³
Nunavut	OEL TWA (ppm)	25 ppm
Northwest Territories	OEL STEL (mg/m ³)	24 mg/m ³
Northwest Territories	OEL STEL (ppm)	35 ppm
Northwest Territories	OEL TWA (mg/m ³)	17 mg/m ³
Northwest Territories	OEL TWA (ppm)	25 ppm
Ontario	OEL STEL (ppm)	35 ppm
Ontario	OEL TWA (ppm)	25 ppm
Prince Edward Island	OEL STEL (ppm)	35 ppm
Prince Edward Island	OEL TWA (ppm)	25 ppm
Québec	VECD (mg/m ³)	24 mg/m ³
Québec	VECD (ppm)	35 ppm
Québec	VEMP (mg/m ³)	17 mg/m ³
Québec	VEMP (ppm)	25 ppm
Saskatchewan	OEL STEL (ppm)	35 ppm
Saskatchewan	OEL TWA (ppm)	25 ppm
Yukon	OEL STEL (mg/m ³)	30 mg/m ³
Yukon	OEL STEL (ppm)	40 ppm
Yukon	OEL TWA (mg/m ³)	18 mg/m ³
Yukon	OEL TWA (ppm)	25 ppm

8.2. Exposure Controls

Appropriate Engineering Controls: Gas detectors should be used when toxic gases may be released. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor or mists below the applicable workplace exposure limits indicated above. All electrical equipment should comply with the National Electric Code. Ensure all national/local regulations are observed.

Personal Protective Equipment: In case of splash hazard: safety glasses.



Materials for Protective Clothing: Not applicable.

Hand Protection: Wear chemically resistant protective gloves.

Eye Protection: In case of splash hazard: chemical goggles or safety glasses.

Skin and Body Protection: Wear suitable protective clothing.

Thermal Hazard Protection: This material is shipped as a hot liquid (temperatures up to 160°F or 71°C), it is recommended that personal protective equipment which protects the whole body be used when there is a potential for contact. This could include the above hand and eye protection plus an apron and boots, which are compatible.

Environmental Exposure Controls: Avoid release to the environment.

Other Information: When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State : Liquid

Appearance : Colorless

Urea Liquor

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

Odor	: Slight ammonia odor (pungent)
Odor Threshold	: Not available
pH	: 7 - 10 (depending upon free ammonia)
Evaporation Rate	: Not available
Melting Point	: 33 - 135 °F (0.56 - 57 °C) (50% urea solution salts out at 62 °F; 70% urea solution salts out 135 °F)
Freezing Point	: Not available
Boiling Point	: 223 °F (106 °C) (50% urea solution boiling point)
Flash Point	: Not available
Auto-ignition Temperature	: Not available
Decomposition Temperature	: Not available
Flammability (solid, gas)	: Not available
Lower Flammable Limit	: Not available
Upper Flammable Limit	: Not available
Vapor Pressure	: Not available
Relative Vapor Density at 20 °C	: Not available
Relative Density	: Not available
Specific gravity / density	: 9.28lb/gal (50% urea solution); 9.80lb/gal (70% urea solution)
Specific Gravity	: 1.11 (40% urea solution); 1.175 (70% urea solution)
Solubility	: Water: 100%
Partition Coefficient: N-Octanol/Water	: Not available
Viscosity	: Not available
Explosion Data – Sensitivity to Mechanical Impact	: Not expected to present an explosion hazard due to mechanical impact.
Explosion Data – Sensitivity to Static Discharge	: Not expected to present an explosion hazard due to static discharge.

SECTION 10: STABILITY AND REACTIVITY

- 10.1. Reactivity:** Hazardous reactions are unlikely to occur under normal circumstances.
- 10.2. Chemical Stability:** Emits ammonia vapors. Stable under normal conditions.
- 10.3. Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.
- 10.4. Conditions to Avoid:** Extremely high or low temperatures. Open flame. Heat. Sparks.
- 10.5. Incompatible Materials:** Strong acids. Strong bases. Strong oxidizers. Sodium nitrite, phosphorus pentachloride, and nitrosyl or gallium perchlorate. Urea will form urea nitrate when mixed with nitric acid at low pH.
- 10.6. Hazardous Decomposition Products:** Nitrogen oxides. Ammonia. Carbon oxides (CO, CO₂). Cyanuric acid. Biuret.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on Toxicological Effects - Product

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: Not classified

pH: 7 - 10 (depending upon free ammonia)

Serious Eye Damage/Irritation: Not classified

pH: 7 - 10 (depending upon free ammonia)

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not classified

Carcinogenicity: Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: May cause irritation to the respiratory tract.

Urea Liquor

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

Symptoms/Injuries After Skin Contact: May cause mild skin irritation.

Symptoms/Injuries After Eye Contact: May cause slight irritation to eyes.

Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: None expected under normal conditions of use.

11.2. Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Water (7732-18-5)	
LD50 Oral Rat	> 90000 mg/kg
Urea (57-13-6)	
LD50 Oral Rat	8471 mg/kg
Ammonia (7664-41-7)	
LC50 Inhalation Rat	5.1 mg/l (Exposure time: 1 h)
LC50 Inhalation Rat	2000 ppm/4h (Exposure time: 4 h)

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecology - General: Harmful to aquatic life.

Urea (57-13-6)	
LC50 Fish 1	16200 - 18300 mg/l (Exposure time: 96 h - Species: Poecilia reticulata)
EC50 Daphnia 1	3910 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
Ammonia (7664-41-7)	
LC50 Fish 1	0.44 mg/l (Exposure time: 96 h - Species: Cyprinus carpio)
EC50 Daphnia 1	25.4 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC 50 Fish 2	0.26 - 4.6 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus)

12.2. Persistence and Degradability

Urea Liquor	
Persistence and Degradability	Not established.

12.3. Bioaccumulative Potential

Urea Liquor	
Bioaccumulative Potential	Not established.
Urea (57-13-6)	
BCF Fish 1	< 10
Log Pow	-1.59 (at 25 °C)
Ammonia (7664-41-7)	
Log Pow	-1.14 (at 25 °C)

12.4. Mobility in Soil Not available

12.5. Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Sewage Disposal Recommendations: This material is hazardous to the aquatic environment. Keep out of sewers and waterways.

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

SECTION 14: TRANSPORT INFORMATION

- | | |
|-------------------------------|-----------------------------|
| 14.1. In Accordance with DOT | Not regulated for transport |
| 14.2. In Accordance with IMDG | Not regulated for transport |
| 14.3. In Accordance with IATA | Not regulated for transport |
| 14.4. In Accordance with TDG | Not regulated for transport |

Urea Liquor

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

SECTION 15: REGULATORY INFORMATION

15.1. US Federal Regulations

Water (7732-18-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Urea (57-13-6)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Imidodicarbonic diamide (108-19-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
EPA TSCA Regulatory Flag	T - T - indicates a substance that is the subject of a Section 4 test rule under TSCA.
Ammonia (7664-41-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on the United States SARA Section 302	
Listed on United States SARA Section 313	
SARA Section 302 Threshold Planning Quantity (TPQ)	500
SARA Section 311/312 Hazard Classes	Fire hazard Immediate (acute) health hazard Sudden release of pressure hazard
SARA Section 313 - Emission Reporting	1.0 % (includes anhydrous Ammonia and aqueous Ammonia from water dissociable Ammonium salts and other sources, 10% of total aqueous Ammonia is reportable under this listing)

15.2. US State Regulations

Urea (57-13-6)	
U.S. - Minnesota - Hazardous Substance List	
U.S. - Texas - Effects Screening Levels - Long Term	
U.S. - Texas - Effects Screening Levels - Short Term	
Ammonia (7664-41-7)	
U.S. - California - SCAQMD - Toxic Air Contaminants - Non-Cancer Acute	
U.S. - California - SCAQMD - Toxic Air Contaminants - Non-Cancer Chronic	
U.S. - California - Toxic Air Contaminant List (AB 1807, AB 2728)	
U.S. - Connecticut - Hazardous Air Pollutants - HLVs (30 min)	
U.S. - Connecticut - Hazardous Air Pollutants - HLVs (8 hr)	
U.S. - Connecticut - Water Quality Standards - Acute Freshwater Aquatic Life Criteria	
U.S. - Connecticut - Water Quality Standards - Acute Saltwater Aquatic Life Criteria	
U.S. - Connecticut - Water Quality Standards - Chronic Freshwater Aquatic Life Criteria	
U.S. - Connecticut - Water Quality Standards - Chronic Saltwater Aquatic Life Criteria	
U.S. - Delaware - Accidental Release Prevention Regulations - Sufficient Quantities	
U.S. - Delaware - Accidental Release Prevention Regulations - Threshold Quantities	
U.S. - Delaware - Accidental Release Prevention Regulations - Toxic Endpoints	
U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities	
U.S. - Florida - Essential Chemicals List	
U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Acceptable Ambient Concentrations	
U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Emission Levels (ELs)	
U.S. - Idaho - Occupational Exposure Limits - TWAs	
U.S. - Louisiana - Reportable Quantity List for Pollutants	
U.S. - Maine - Air Pollutants - Criteria Pollutants	
U.S. - Massachusetts - Allowable Ambient Limits (AALs)	
U.S. - Massachusetts - Allowable Threshold Concentrations (ATCs)	
U.S. - Massachusetts - Oil & Hazardous Material List - Groundwater Reportable Concentration - Reporting Category 1	
U.S. - Massachusetts - Oil & Hazardous Material List - Groundwater Reportable Concentration - Reporting Category 2	
U.S. - Massachusetts - Oil & Hazardous Material List - Reportable Quantity	

Urea Liquor

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

U.S. - Massachusetts - Oil & Hazardous Material List - Soil Reportable Concentration - Reporting Category 1
U.S. - Massachusetts - Oil & Hazardous Material List - Soil Reportable Concentration - Reporting Category 2
RTK - U.S. - Massachusetts - Right To Know List
U.S. - Massachusetts - Threshold Effects Exposure Limits (TEELs)
U.S. - Massachusetts - Toxics Use Reduction Act
U.S. - Michigan - Occupational Exposure Limits - STELs
U.S. - Michigan - Polluting Materials List
U.S. - Michigan - Process Safety Management Highly Hazardous Chemicals
U.S. - Minnesota - Chemicals of High Concern
U.S. - Minnesota - Hazardous Substance List
U.S. - Minnesota - Permissible Exposure Limits - STELs
U.S. - New Hampshire - Regulated Toxic Air Pollutants - Ambient Air Levels (AALs) - 24-Hour
U.S. - New Hampshire - Regulated Toxic Air Pollutants - Ambient Air Levels (AALs) - Annual
U.S. - New Jersey - Discharge Prevention - List of Hazardous Substances
U.S. - New Jersey - Environmental Hazardous Substances List
RTK - U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New Jersey - Special Health Hazards Substances List
U.S. - New Jersey - TCEPA - Extraordinarily Hazardous Substances (EHS)
U.S. - New Jersey - Water Quality - Ground Water Quality Criteria
U.S. - New Jersey - Water Quality - Practical Quantitation Levels (PQLs)
U.S. - New Mexico - Precursor Chemicals
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances
U.S. - North Carolina - Control of Toxic Air Pollutants
U.S. - North Dakota - Air Pollutants - Guideline Concentrations - 1-Hour
U.S. - North Dakota - Air Pollutants - Guideline Concentrations - 8-Hour
U.S. - Ohio - Accidental Release Prevention - Threshold Quantities
U.S. - Ohio - Extremely Hazardous Substances - Threshold Quantities
U.S. - Oregon - Permissible Exposure Limits - TWAs
U.S. - Oregon - Precursor Chemicals
RTK - U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
RTK - U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Rhode Island - Air Toxics - Acceptable Ambient Levels - 1-Hour
U.S. - Rhode Island - Air Toxics - Acceptable Ambient Levels - 24-Hour
U.S. - Rhode Island - Air Toxics - Acceptable Ambient Levels - Annual
U.S. - Rhode Island - Water Quality Standards - Acute Freshwater Aquatic Life Criteria
U.S. - Rhode Island - Water Quality Standards - Acute Saltwater Aquatic Life Criteria
U.S. - Rhode Island - Water Quality Standards - Chronic Freshwater Aquatic Life Criteria
U.S. - Rhode Island - Water Quality Standards - Chronic Saltwater Aquatic Life Criteria
U.S. - Tennessee - Occupational Exposure Limits - STELs
U.S. - Texas - Effects Screening Levels - Long Term
U.S. - Texas - Effects Screening Levels - Short Term
U.S. - Vermont - Permissible Exposure Limits - STELs
U.S. - Virginia - Water Quality Standards - Acute Freshwater Aquatic Life
U.S. - Virginia - Water Quality Standards - Acute Saltwater Aquatic Life
U.S. - Virginia - Water Quality Standards - Chronic Freshwater Aquatic Life
U.S. - Virginia - Water Quality Standards - Chronic Saltwater Aquatic Life
U.S. - Virginia - Water Quality Standards - Public Water Supply Effluent Limits
U.S. - Virginia - Water Quality Standards - Surface Waters Not Used for the Public Water Supply Effluent Limits
U.S. - Washington - Permissible Exposure Limits - STELs
U.S. - Washington - Permissible Exposure Limits - TWAs
U.S. - Wisconsin - Hazardous Air Contaminants - All Sources - Emissions From Stack Heights 25 Feet to Less Than 40 Feet
U.S. - Wisconsin - Hazardous Air Contaminants - All Sources - Emissions From Stack Heights 40 Feet to Less Than 75 Feet
U.S. - Wisconsin - Hazardous Air Contaminants - All Sources - Emissions From Stack Heights 75 Feet or Greater
U.S. - Wisconsin - Hazardous Air Contaminants - All Sources - Emissions From Stack Heights Less Than 25 Feet

Urea Liquor

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

U.S. - Wyoming - Process Safety Management - Highly Hazardous Chemicals
 U.S. - Alaska - Water Quality Standards - Acute Aquatic Life Criteria for Fresh Water
 U.S. - Alaska - Water Quality Standards - Chronic Aquatic Life Criteria for Fresh Water
 U.S. - Alaska - Water Quality Standards - Acute Aquatic Life Criteria for Marine Water
 U.S. - Alaska - Water Quality Standards - Chronic Aquatic Life Criteria for Marine Water
 U.S. - Alaska - Ambient Air Quality Standards

15.3. Canadian Regulations

Urea Liquor	
Uncontrolled product according to WHMIS classification criteria	
Water (7732-18-5)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
Urea (57-13-6)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
Imidodicarbonic diamide (108-19-0)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class D Division 2 Subdivision B - Toxic material causing other toxic effects
Ammonia (7664-41-7)	
Listed on the Canadian DSL (Domestic Substances List)	
Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 1 %	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas Class D Division 1 Subdivision A - Very toxic material causing immediate and serious toxic effects Class E - Corrosive Material

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision Date : 1 September 2015
Revision Comments : Section 1.1 updated
GHS Full Text Phrases:

Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Acute 3	Hazardous to the aquatic environment - Acute Hazard Category 3
Aquatic Chronic 2	Hazardous to the aquatic environment - Chronic Hazard Category 2
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Flam. Gas 2	Flammable gases Category 2
Liquefied gas	Gases under pressure Liquefied gas
Skin Corr. 1B	Skin corrosion/irritation Category 1B
Skin Irrit. 2	Skin corrosion/irritation Category 2
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H221	Flammable gas
H280	Contains gas under pressure; may explode if heated
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H318	Causes serious eye damage

Urea Liquor

Safety Data Sheet

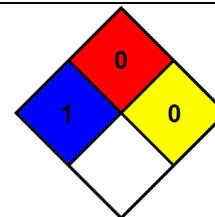
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H319	Causes serious eye irritation
H331	Toxic if inhaled
H335	May cause respiratory irritation
H400	Very toxic to aquatic life
H402	Harmful to aquatic life
H411	Toxic to aquatic life with long lasting effects

NFPA Health Hazard : 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.

NFPA Fire Hazard : 0 - Materials that will not burn.

NFPA Reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : 0 Minimal Hazard - No significant risk to health

Flammability : 0 Minimal Hazard

Physical : 0 Minimal Hazard

Party Responsible for the Preparation of This Document

CF Industries, Corporate EHS Department, 847-405-2400

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

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North America GHS US 2012 & WHMIS 2