

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Name: Urea, granular

Formula: NH₂CONH₂

Synonyms: Carbamide, Carbonyldiamine, Carbonyl diamide

REACH Registration Number: 01-2119463277-33-0135

1.2. Intended Use of the Product

Fertilizer, manufacturing of specialty fertilizers. Production of specialty pollution control solutions.

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)

Not classified

2.2. Label Elements

GHS-US Labeling: No labeling applicable

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 | 95.4 - 97.6 | Not classified |
| Urea, reaction products with formaldehyde | (CAS No) 68611-64-3 | 1.3 - 2.7 | Aquatic Chronic 3, H412 |
| Imidodicarbonic diamide (Biuret) | (CAS No) 108-19-0 | 0.85 - 1.5 | Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335 |
| Water | (CAS No) 7732-18-5 | 0.1 - 0.4 | Not classified |

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.

Urea, granular

Safety Data Sheet

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

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: Explosive on contact with halogens such as chlorine.

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). Cyanuric acid.

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.

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 product enters sewers or public waters.

6.4. Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection. See Section 13, Disposal Considerations.

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 (NO_x), ammonia.

Urea, granular

Safety Data Sheet

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

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. Protect from moisture.

Incompatible Materials: Strong acids. Strong bases. Strong oxidizers. Hypochlorites. Nitric acid. Halogens. 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, manufacturing of specialty fertilizers. Production of specialty pollution control solutions.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

No additional information available.

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 adequate ventilation. Ensure all national/local regulations are observed.

Personal Protective Equipment: Not generally required. The use of personal protective equipment may be necessary as conditions warrant.

Materials for Protective Clothing: Chemically resistant fabrics and materials.

Hand Protection: Wear chemically resistant protective gloves.

Eye Protection: Chemical goggles or safety glasses.

Skin and Body Protection: Wear suitable protective clothing.

Respiratory Protection: If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. A respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2-1992 or MSHA 30 CFR 72.710 (where applicable) requirements must be followed whenever workplace conditions warrant respirator use.

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 | : Solid |
| Appearance | : White granules |
| Odor | : Odorless or slight ammonia odor |
| Odor Threshold | : Not available |
| pH | : 7.2 (10% water solution) |
| Evaporation Rate | : Not available |
| Molecular Weight | : 60.06 |
| Melting Point | : Decomposes at 270.8 °F (132.7 °C) |
| Freezing Point | : Not available |
| Boiling Point | : Not available |
| Flash Point | : Not available |
| Auto-ignition Temperature | : Not available |
| Decomposition Temperature | : 270.8 °F (132.7 °C) |
| 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 | : 48 to 52 lbs/ft ³ |

Urea, granular

Safety Data Sheet

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

| | |
|--|---|
| Specific Gravity | : Not available |
| Solubility | : Water: 119 g at 77°F (25°C) |
| Partition Coefficient: N-Octanol/Water | : 0.026 |
| Viscosity | : 1.78 mPas (46% solution) at 68°F (20°C) |
| 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:** Stable under normal conditions.
- 10.3. Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.
- 10.4. Conditions to Avoid:** Extremely high temperatures. Open flame. Heat. Sparks.
- 10.5. Incompatible Materials:** Strong acids. Strong bases. Strong oxidizers. Halogens. Hypochlorites. Nitric acid. 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.

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: 7.2 (10% water solution)

Serious Eye Damage/Irritation: Not classified

pH: 7.2 (10% water solution)

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.

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:

| | |
|-----------------------|------------|
| Urea (57-13-6) | |
| LD50 Oral Rat | 8471 mg/kg |

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecology - Water: As a readily available source of nitrogen, urea can also foster excessive growth of algae or microorganisms in water systems.

| | |
|-----------------------|---|
| 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]) |

12.2. Persistence and Degradability

| | |
|--------------------------------------|------------------|
| Urea, granular | |
| Persistence and Degradability | Not established. |

Urea, granular

Safety Data Sheet

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

12.3. Bioaccumulative Potential

| | |
|----------------------------------|------------------|
| Urea, granular | |
| Bioaccumulative Potential | Not established. |
| Urea (57-13-6) | |
| BCF Fish 1 | < 10 |
| Log Pow | -1.59 (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: Do not empty into drains; dispose of this material and its container in a safe way.

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

SECTION 15: REGULATORY INFORMATION

15.1. US Federal Regulations

| | |
|---|--|
| 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. |
| Urea, reaction products with formaldehyde (68611-64-3) | |
| 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. |
| Water (7732-18-5) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |

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 | |

15.3. Canadian Regulations

| | |
|---|---|
| Urea, granular | |
| 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 |

Urea, granular

Safety Data Sheet

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

| | |
|---|---|
| Urea, reaction products with formaldehyde (68611-64-3) | |
| Listed on the Canadian NDSL (Non-Domestic Substances List) | |
| Water (7732-18-5) | |
| Listed on the Canadian DSL (Domestic Substances List) | |
| WHMIS Classification | Uncontrolled product according to WHMIS classification criteria |

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.

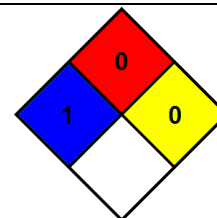
SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision Date : 15 May 2015
Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

| | |
|-------------------|--|
| Aquatic Chronic 3 | Hazardous to the aquatic environment - Chronic Hazard Category 3 |
| Eye Irrit. 2A | Serious eye damage/eye irritation Category 2A |
| Skin Irrit. 2 | Skin corrosion/irritation Category 2 |
| STOT SE 3 | Specific target organ toxicity (single exposure) Category 3 |
| H315 | Causes skin irritation |
| H319 | Causes serious eye irritation |
| H335 | May cause respiratory irritation |
| H412 | Harmful 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 : 1 Slight Hazard - Irritation or minor reversible injury possible
Flammability : 0 Minimal Hazard
Physical : 1 Slight 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