

## Specification and Chemical and Physical Properties of Urea

### 1. Product Overview

- **Product Name:** Urea
- **Chemical Formula:**  $\text{CO}(\text{NH}_2)_2$
- **CAS Number:** 57-13-6
- **HS Code:** 31021000
- **Molecular Weight:** 60.06 g/mol

### 2. Chemical Composition

Component	Specification
Urea ( $\text{CO}(\text{NH}_2)_2$ )	$\geq 99.5\%$
Moisture	$\leq 0.5\%$
Biuret	$\leq 0.9\%$
Free Ammonia	$\leq 0.02\%$
Insoluble Matter	$\leq 0.01\%$
Formaldehyde Content	$\leq 0.4\%$

### 3. Physical Properties

Property	Value
Appearance	White crystalline solid
Odor	Odorless
Density	1.32 g/cm <sup>3</sup>
Melting Point	132 - 135°C
Boiling Point	Decomposes before boiling

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Solubility in Water	Highly soluble (1080 g/L at 20°C)
pH (10% solution)	7.2 - 7.5
Hygroscopic	Yes

#### 4. Granular and Prilled Urea Specification

Property	Granular Urea	Prilled Urea
Particle Size	2 - 4 mm	1 - 2 mm
Crushing Strength	> 3 kg	> 1.3 kg
Free-flowing	Yes	Yes
Dust Level	Low	Moderate

#### 5. Urea Applications

- **Agriculture:** Used as a nitrogen fertilizer.
- **Resins & Adhesives:** Component in urea-formaldehyde resins.
- **MDF (Medium-Density Fiberboard):** Used as a bonding agent.
- **Chemical Industry:** Raw material for plastics, pharmaceuticals, and cosmetics.
- **Automotive Industry:** Used in diesel exhaust fluid (DEF) for emissions reduction.
- **Textile Industry:** Used in dyeing and printing processes.

#### 6. Packaging & Storage

- **Packaging:** Available in 50 kg bags, 500 kg jumbo bags, and 1000 kg bulk bags.
- **Storage Conditions:**
  - Store in a cool, dry place away from moisture.
  - Avoid direct sunlight and heat sources.
  - Keep away from strong oxidizers and acids.

#### 7. Safety and Handling

- **Handling Precautions:**
  - Avoid inhalation of dust.



- Use protective gloves and safety goggles.
- Ensure proper ventilation in storage and handling areas.
- **Environmental Impact:**
  - Non-toxic but may contribute to eutrophication in water bodies if released in large quantities.

## **8. Compliance and Regulatory Information**

- **REACH Registration:** Compliant
- **GHS Classification:** Not classified as hazardous
- **TSCA (USA):** Listed
- **ECHA (EU):** Approved for industrial use