Urea 46% (Carbamide · $CO(NH_2)_2$)

Granular Urea 46% · Prilled Urea 46% · Uncoated Technical / Automotive DEF Feedstock Grade

Effective Date: 23 Nov 2026
CAS: 57-13-6 · **EC:** 200-315-5
Supplier Tel: +44 744 913 9023

NITROGEN ASSAY	GHS CLASSIFICATION	SIGNAL WORD	HAZARD STATEMENTS	TRANSPORT STATUS
46.0% Wt Min	Not Classified	None (Non-Haz)	None Required	Non-DG (All Modes)

NON-HAZARDOUS (GHS) **Not Classified as Dangerous Under GHS, EU CLP (EC) 1272/2008, or OSHA HazCom**

No GHS hazard pictograms required. Low acute oral, dermal, and inhalation toxicity. Fine urea dust or accidental eye contact may cause mild, transient mechanical irritation. Thermal decomposition (> 135 °C) releases ammonia gas (NH_3) and oxides of nitrogen.



NFPA 704
Health: 1 (Slight)
Flamm.: 0 (Non-Flamm.)
Reactivity: 0

SECTION 1 Identification of the Substance & of the Supplier

1.1 & 1.2 SUBSTANCE IDENTIFIER & RELEVANT USES

Product Name: Urea 46% (Granular, Prilled, and Uncoated Technical Feedstock)

Chemical Formula / Synonyms: $CO(NH_2)_2$ / CH_4N_2O · Carbamide, Carbonyldiamide

Identified Uses: Nitrogenous agricultural fertilizer, NPK blending, urea-formaldehyde resins, melamine production, and DEF/AdBlue (AUS 32) aqueous synthesis (uncoated grade).

Uses Advised Against: Uncontrolled mixing with strong oxidizing agents or hypochlorites.

1.3 & 1.4 SUPPLIER DETAILS & EMERGENCY CONTACT

Supplier Role: Global Commodity Supplier / Distributor (Commercial Desk)

Supplier Name: Beroil Energy Group

Office Address: 4-6 Middlesex St., E1 7JH, London, United Kingdom

Email / Phone: info@beroilenergy.com · +44 744 913 9023

Emergency Line: +44 744 913 9023 (Commercial) · Dial local emergency services (999 / 112 / 911) or Port Fire/Poison Center for major warehouse spills or fires.

SECTION 2 Hazards Identification

2.1 GHS / CLP Classification: Substance is **not classified as hazardous** under UN GHS, EU CLP Regulation (EC) 1272/2008, or OSHA 29 CFR 1910.1200.

2.3 Other Hazards: Hygroscopic above ~75% RH; slippery floor hazard when spilled with moisture. Heavy nutrient spills to surface waters can cause localized ammonia shock or eutrophication.

2.2 Label Elements & Prudent Precautions: Signal Word: **None** · Pictogram: **None**.

· **Avoid breathing dust** during bulk conveyor transfers or open silo dumping.

· **Avoid contact with skin and eyes;** wear safety glasses and basic work gloves.

· Wash hands thoroughly before eating, drinking, or smoking after handling.

SECTION 3 Composition / Information on Ingredients

3.1 SUBSTANCE CHEMICAL NAME	CAS NO.	EC NO.	CONC. (% W/W)	HAZARD CLASSIFICATION (CLP/GHS)
Urea (Carbamide · 46.0% Min N)	57-13-6	200-315-5	≥ 98.5 – 99.5%	Not classified (Non-hazardous substance)
Biuret (Thermal synthesis trace impurity)	108-19-0	203-559-0	≤ 0.90%	Not classified at ≤ 1.0% trace concentration
Moisture / Conditioning Anti-Caking Trace	50-00-0 (opt.)	—	≤ 0.30% H_2O · 0–0.45% UF	Uncoated Technical DEF grade contains Nil formaldehyde

SECTION 4 First-Aid Measures

INHALATION

Move exposed person to fresh air. Blow nose gently to clear dust; rinse throat and gargle with clean water. Seek medical help if breathing irritation or ammonia fumes persist (e.g., from fire).

SKIN CONTACT

Brush off dry granules/prills and wash affected skin gently with soap and plenty of water. Remove dusty clothing and launder before reuse.

EYE CONTACT

Flush eyes immediately with clean gentle running water for at least 15 minutes while holding eyelids open. Remove contact lenses if present and easy; consult a doctor if redness persists.

INGESTION

Rinse mouth thoroughly with water and drink 1–2 glasses of water if conscious. Do NOT induce vomiting. Urea has very low oral toxicity; contact a physician if large amounts were swallowed.

4.2 & 4.3 Symptoms & Treatment: Dust causes minor transient eye redness or dry throat. No specific antidote needed; treat symptomatically.

SECTION 5 Fire-Fighting Measures

5.1 Flammability & Extinguishing Media: Urea itself is non-combustible and does not burn or sustain flame. For surrounding fires, use flooding **water spray**, dry chemical, foam, or CO_2.

5.2 Special Fire Hazards: When heated above melting point (> 133–135 °C) in an external fire, urea decomposes cleanly to release toxic/irritating **Ammonia (NH_3)**, nitrogen oxides (NO_x), biuret, and cyanuric acid fumes.

5.3 Firefighter PPE: Wear positive-pressure SCBA and full protective gear against ammonia vapor in enclosed fires. Prevent nutrient-rich firefighting runoff from reaching streams or public drains.

SECTION 6 Accidental Release Measures

6.1 Personal Precautions: Avoid excessive dust clouds; beware of slippery floors if product becomes damp. Wear safety glasses, gloves, and a dust mask (N95) during bulk sweeping.

6.2 Environmental Precautions: Contain dry spills promptly and block drains/watercourses to prevent heavy nitrogen nutrient runoff.

6.3 Containment & Clean-up: Sweep, shovel, or vacuum up clean dry granules/prills for beneficial agricultural reuse or salvage bagging. Flush minor final residue with ample water only when routed to treatment drains.

SECTION 7 Handling and Storage

7.1 PRECAUTIONS FOR SAFE HANDLING

Provide adequate general or local exhaust ventilation during unloading and bagging to keep dust low. Avoid dropping or crushing granules unnecessarily. Keep away from open flames, hot steam pipes (> 60 °C), and welding equipment. Wash hands before meals.

7.2 STORAGE CONDITIONS & INCOMPATIBILITIES

Store in cool, dry, well-ventilated warehouses with low relative humidity (< 75% RH) out of direct sunlight to prevent caking. **CRITICAL SEGREGATION:** Keep strictly away from **sodium/calcium hypochlorite bleaches** (risk of explosive NCl_3 gas!), strong oxidizers, nitrites, strong acids, and ammonium nitrate (compatibility limit).

SECTION 8 Exposure Controls / Personal Protection

8.1 OCCUPATIONAL EXPOSURE LIMITS (OELS)

Urea Substance-Specific OEL: None assigned by OSHA or ACGIH.

Nuisance Dust Limits (PNOR/PNOS): OSHA PEL: 15 mg/m³ (total dust) · 5 mg/m³ (respirable). **ACGIH TLV:** 10 mg/m³ (inhalable) · 3 mg/m³ (respirable).

8.2 ENGINEERING CONTROLS & HYGIENE

Use covered hoppers and local exhaust dust extraction at vessel/container discharge points. Ensure clean washing water and eyewash bottles are accessible on loading decks.

EYE / FACE PROTECTION	HAND PROTECTION	RESPIRATORY PROTECTION	SKIN & BODY PROTECTION
Safety glasses with side shields (EN 166); dust goggles for windy bulk dumping.	Nitrile, butyl rubber, or cotton-lined work gloves for prolonged handling.	Not needed for intact granules; use NIOSH N95 / EN FFP2 dust mask in dusty areas.	Standard long-sleeved workwear and dust-resistant safety boots.

SECTION 9 Physical and Chemical Properties

PROPERTY	VALUE / DESCRIPTION	PROPERTY	VALUE / DESCRIPTION
Physical State & Appearance	White solid granules (2–4 mm) or spherical prills (1–2.8 mm)	**Molecular Formula / Weight**	$CO(NH_2)_2$ / 60.06 g/mol
Odor	Odorless to faint characteristic ammoniacal odor	**Melting Point**	132.7 °C (decomposes > 135 °C)
pH (10% Aqueous Solution)	7.2 – 9.0 (mildly alkaline on aging)	**Flash Point / Flammability**	Not applicable — Non-combustible solid
True Crystal Density	1.32 g/cm³ @ 20 °C	**Loose Bulk Density**	720–780 kg/m³ (Granular) · 700–750 (Prilled)
Water Solubility (@ 20 °C)	~1,079 g/L (strongly endothermic dissolution)	**Partition Coeff. (Log Kow)**	-1.73 (hydrophilic; non-bioaccumulative)
Vapor Pressure (@ 25 °C)	Negligible (~0.0016 Pa)	**Explosive / Oxidizing**	Non-explosive · Not an oxidizing substance

SECTION 10 Stability and Reactivity

10.1–10.3 Reactivity & Stability: Stable under cool, dry storage conditions. Hygroscopic when ambient relative humidity exceeds ~75%.

10.4 Conditions to Avoid: Moisture, extreme heat (> 130 °C), and storage adjacent to chlorine-based oxidizers.

10.5 Incompatible Materials: Hypochlorites (forms explosive nitrogen trichloride), strong oxidizers (nitrates, perchlorates, chromates, permanganates), nitrites, gallium perchlorate, and strong mineral acids/alkalis.

10.6 Decomposition Products: Ammonia (NH_3), biuret, isocyanic acid, cyanuric acid, and NO_x at temperatures > 135 °C.

SECTION 11 Toxicological Information

11.1 Acute Toxicity (Practically Non-Toxic):

· **Oral LD_{50} (Rat):** ~14,300 mg/kg (literature range 8,471 – 15,000 mg/kg)

· **Dermal LD_{50} (Rat/Rabbit):** > 3,200 mg/kg

· **Irritation & Sensitization:** Mild reversible mechanical eye/skin dust irritation in unwashed exposure; non-sensitizing.

CMR / Carcinogenicity: Not mutagenic; not carcinogenic (IARC, NTP, OSHA: Not listed); no reproductive or developmental toxicity at relevant exposures.

SECTION 12 Ecological Information

12.1 Ecotoxicity (Low Acute Aquatic Toxicity): Fish 96h **LC_{50} 6,810 – 18,300 mg/L** (*Poecilia reticulata / Leuciscus idus*); *Daphnia magna* 48h **EC_{50} 3,910 – 22,998 mg/L**.

12.2–12.4 Persistence & Bioaccumulation: Readily biodegradable; naturally hydrolyzes via urease enzyme into ammonium/nitrate nutrients. Will not bioaccumulate (Log Kow -1.73).

12.5 PBT / Other: Not PBT or vPvB. Avoid large spills directly into rivers/lakes to prevent excessive nutrient enrichment.

SECTION 13 Disposal Considerations

13.1 Waste Treatment: Recover spilled clean urea for agricultural fertilizer or industrial use whenever possible. Contaminated unrecoverable material should be disposed of at a licensed agricultural waste or chemical treatment site per local regulations.

Empty Bags / FIBCs: Shake empty 50 kg PP+PE bags and 1 MT FIBCs clean for authorized polypropylene plastic recycling.

SECTION 14 Transport Information (IMDG / ADR / RID / IATA-ICAO)

TRANSPORT MODE / REGULATION	UN NO.	PROPER SHIPPING NAME	CLASS / PG	MARINE POLLUTANT & BULK SEA PROVISION
Sea Freight (IMDG Code / IMSBC)	—	Not Regulated as Dangerous Goods	Non-DG	Marine Pollutant: No · Dry bulk vessel holds must be clean, dry, and weather-tight
Road / Rail (ADR / RID / DOT)	—	Not Regulated as Dangerous Goods	Non-DG	Keep bagged & bulk trucks tarped against rain and away from hypochlorite cargo
Air Freight (IATA / ICAO)	—	Not Regulated as Dangerous Goods	Non-DG	No hazardous cargo restrictions on passenger or cargo aircraft

SECTION 15 Regulatory Information

15.1 International Inventories: Listed on EU EINECS/REACH (EC 200-315-5), US TSCA (CAS 57-13-6), UK REACH, Canada DSL, China IECSC, and Australia AIIC.

Regulatory Classification: Exempt from EU REACH registration under Annex V or registered as standard industrial substance; non-hazardous under EU CLP and OSHA HazCom 2012.

SECTION 16 Other Information

Hazard Statements: None (Non-hazardous under UN GHS criteria).

Key Abbreviations: DEF: Diesel Exhaust Fluid (ISO 22241) · IMSBC: Int'l Maritime Solid Bulk Cargoes · LC_{50}/LD_{50}: Median Lethal Conc./Dose · PNOR/PNOS: Particulates Not Otherwise Regulated/Specified · RH: Relative Humidity.

Revision History: Rev. 2.0 (23 Nov 2026) — Full 16-section GHS/REACH supplier SDS edition.

Supplier Notice & Disclaimer (Beroil Energy Group): Beroil Energy Group issues this Safety Data Sheet in its capacity as global commodity supplier and commercial distributor (not primary petrochemical manufacturer). This SDS covers safe transport, warehousing, and industrial handling of Urea 46% (CAS 57-13-6). Refer to BEG-TDS-UREA46 and shipment SGS/Intertek COA for contractual grade specifications.