

UREA (TECHNICAL GRADE)

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SECTION 1: IDENTIFICATION

1.1 GHS Product identifier:

UREA (TECHNICAL GRADE)
Carbamide, Carbonyldiamide, Diaminomethanal
CAS: 57-13-6

Other means of identification:

Not relevant

1.2 Recommended use of the chemical and restrictions on use:

Relevant uses: Raw material for urea-formaldehyde/melamine-urea-formaldehyde resins, industrial adhesives, animal feed additive (non-protein nitrogen source), diesel exhaust fluid (AUS-32) manufacture, chemical intermediate, and general nitrogen fertiliser applications. For industrial user only.
Uses advised against: All uses not specified in this section or in section 7.3. Not for pharmaceutical/food-grade use unless separately certified.

1.3 Supplier's details:

SURAJ CHEMICALS
No 92, Govindappa Naicken Street, Shiva Complex, Chennai – 600001, Tamil Nadu, India
Tel: +91 - 7092722822, +91 - 9840284032 / +91 - 44 - 25393652, 42130281
Email: sales@surajchemicals.com | Website: www.surajchemicals.com
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1.4 Emergency phone number:

Emergency Contact No: +91 - 7092722822, +91 - 9840284032

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture:

GHS:
Classification of this product has been carried out in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), based on standard published data for urea (technical grade).

Not classified	Does not meet GHS classification criteria as a hazardous substance based on available data
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2.2 GHS label elements, including precautionary statements:

GHS: No signal word, pictogram or hazard statement required under GHS based on available data.

Hazard statements:

None assigned.

Precautionary statements:

P264: Wash hands thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P280: Wear protective gloves/eye protection when handling large quantities/dust.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P501: Dispose of contents/container in accordance with local regulations.

2.3 Other hazards which do not result in classification:

Prilled/granular dust may be a mild nuisance dust and, at high concentration, may form combustible dust clouds. Strong heating above the melting point causes decomposition, releasing ammonia, biuret, cyanuric acid and isocyanic acid – adequate ventilation is required wherever the product is melted or processed at elevated temperature. Contact with strong oxidisers, nitrites or nitrous acid can form hazardous/unstable compounds – see Section 10. Not identified as PBT/vPvB.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances:

Chemical description: Urea, Technical Grade (prills or granules)
In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 57-13-6	Urea (carbamide) – Not classified	Min. 46% nitrogen equivalent (approx. 98–99% urea content, technical grade); trace biuret (typically <1.5%)

To obtain more information on the hazards of the substances, consult sections 11, 12 and 16.

3.2 Mixtures:

Non-applicable

SECTION 4: FIRST AID MEASURES

4.1 Description of necessary first-aid measures:

Under normal conditions of use, first aid is generally not required. If needed:

By inhalation:

If dust causes irritation or discomfort, remove the person to fresh air and keep at rest.

By skin contact:

Wash affected skin with plenty of water. Not normally irritating; seek medical attention if irritation persists.

By eye contact:

Rinse eyes thoroughly with plenty of water for several minutes, holding eyelids open. If irritation persists, seek medical attention.

By ingestion/aspiration:

Not normally hazardous in small amounts. Rinse mouth with water and give water to drink. If a large quantity is swallowed, seek medical advice.

4.2 Most important symptoms/effects, acute and delayed:

Considered to be of low acute toxicity; may cause mild, transient eye or mucous membrane irritation from dust. See sections 2 and 11.

4.3 Indication of immediate medical attention and special treatment needed, if necessary:

Not relevant; treat symptomatically if needed.

SECTION 5: FIRE-FIGHTING MEASURES

- 5.1 Suitable extinguishing media:**
Suitable: Water spray, foam, dry chemical powder, carbon dioxide – select per surrounding fire.
Unsuitable: None known.
- 5.2 Specific hazards arising from the chemical:**
Not combustible/flammable in itself. On strong heating or involvement in a fire, decomposes releasing ammonia and irritant/toxic fumes (oxides of nitrogen, isocyanic acid, biuret, cyanuric acid). Do not allow contact with strong oxidisers or nitrite salts (see Section 10).
- 5.3 Special protective actions for fire-fighters:**
Wear self-contained breathing apparatus and standard fire-fighting protective clothing when fighting fires involving this product or its decomposition fumes. Cool fire-exposed containers with water spray from a safe distance.

SECTION 6: ACCIDENTAL RELEASE MEASURES

- 6.1 Personal precautions, protective equipment and emergency procedures:**
For non-emergency personnel:
Avoid generating and inhaling dust. Spilled prills/granules create a slip hazard. Use PPE as described in Section 8.
- For emergency responders:**
No special measures beyond routine dust control PPE required.
- 6.2 Environmental precautions:**
Prevent large quantities from entering drains or watercourses – high nitrogen content can contribute to eutrophication if released in bulk to surface water.
- 6.3 Methods and materials for containment and cleaning up:**
Sweep or vacuum up spilled material for reuse (preferred) or disposal in a suitable labelled container. Avoid generating dust during cleanup.
- 6.4 Reference to other sections:**
See sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

- 7.1 Precautions for safe handling:**
A. General precautions for safe use:
Avoid generating and breathing dust. Keep away from strong oxidisers, nitrites and strong acids. Provide good general ventilation, especially where the product is melted or processed at high temperature.
- B. Technical recommendations for the prevention of fires and explosions:**
Control dust accumulation in enclosed handling/conveying systems. Keep away from ignition sources and incompatible materials.
- C. Technical recommendations on general occupational hygiene:**
Do not eat, drink or smoke during handling; wash hands after handling.
- D. Technical recommendations to prevent environmental risks:**
Avoid uncontrolled discharge of product/dust to drains, soil or watercourses.
- 7.2 Conditions for safe storage, including any incompatibilities:**
A. Specific storage requirements:
- | | |
|---------------|--|
| Minimum Temp. | Ambient (protect from moisture/caking) |
| Maximum Temp. | <40°C, away from direct heat sources |
| Maximum time | 12 Months (unopened original packaging, dry storage) |
- B. General conditions for storage:**
Store in a cool, dry, well-ventilated area, away from moisture (product is hygroscopic and will cake/dissolve), strong oxidisers, nitrites and direct sunlight, in tightly closed bags/containers.
- 7.3 Specific end use(s):**
Except for the instructions already specified, it is not necessary to provide any special recommendation regarding the uses of this product.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

- 8.1 Control parameters:**
No substance-specific occupational exposure limit is notified for urea under the Factories Act, 1948. Control as a nuisance/inert dust:
- | Identification | Occupational Exposure Limit Type | Value |
|---|--|---|
| Urea (as total dust, general/particulates-not-otherwise-classified basis)
CAS: 57-13-6 | Time Weighted average concentration (8 hrs), total dust | 10 mg/m³ (general nuisance dust guidance) |
| | Time Weighted average concentration (8 hrs), respirable fraction | 3 mg/m³ (general nuisance dust guidance) |
- 8.2 Appropriate engineering controls:**
Local exhaust ventilation at bagging, grinding and dissolving operations to control dust levels; ensure good ventilation wherever the product is heated/melted.
- B. Respiratory protection:**
Dust/particulate respirator (e.g. FFP2) where dust levels are elevated; not normally required for routine handling of prills/granules.
- C. Specific protection for the hands:**
Protective gloves recommended for prolonged handling.
- D. Eye and face protection:**
Safety glasses recommended where dust is generated.
- E. Bodily protection:**
Standard work clothing.
- F. Additional emergency measures:**
Eyewash station recommended in the work area.
- Environmental exposure controls:**
Avoid unnecessary release of dust or product to the environment. See subsection 7.1.D.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

- 9.1 Information on basic physical and chemical properties:**
- | Appearance | |
|------------------------|--|
| Physical state at 20°C | Solid (prills or granules) |
| Appearance | Prills/granules |
| Color | White |
| Odor | Practically odourless (may show a faint ammoniacal note) |
| Odour threshold | Not relevant * |

Volatility	
Boiling point at atmospheric pressure	Non-applicable (decomposes before boiling, approx. 132–135°C melting followed by decomposition)
Vapour pressure at 20°C / 50°C	Negligible at ambient temperature
Evaporation rate at 20°C	Not relevant *
Product Description	
Bulk density (prills/granules)	Approx. 0.74–0.77 g/cm³
Dynamic / Kinematic viscosity	Non-applicable (solid)
Concentration	Min. 46% N (approx. 98–99% urea, technical grade)
pH (10% aqueous solution)	Approx. 7.2–9.0 (weakly alkaline)
Vapour density at 20°C	Not relevant *
Partition coefficient n-octanol/water 20°C	Log Pow approx. –2.1 (highly hydrophilic)
Solubility in water at 20°C	Highly soluble, approx. 545 g/L (endothermic dissolution)
Decomposition temperature	Decomposes above approx. 152°C, releasing ammonia, biuret and related compounds
Melting point/freezing point	Approx. 132–135°C
Flammability	
Flash Point	Non-applicable (solid, does not sustain flame)
Flammability (solid, gas)	Not classified as flammable
Autoignition temperature	Not relevant *
Lower / Upper flammability limit	Not relevant *
Particle Characteristics	
Median equivalent diameter	Approx. 1–3 mm (prilled/granular grade, specification dependent)

* Not relevant due to the nature of the product, not providing information on the properties of its hazards.

9.2 Other information:

Explosive properties	Not explosive as supplied; can form explosive urea nitrate if contacted with concentrated nitric acid – avoid such contact
Oxidising properties	Not oxidising
Corrosive to metals	Not significantly corrosive to metals in solid form; concentrated aqueous solutions may be mildly corrosive to some metals over prolonged contact
Heat of combustion	Not relevant (non-combustible)
Surface tension at 20°C	Not relevant *
Refraction index	Not relevant *

SECTION 10: STABILITY AND REACTIVITY

- 10.1 Reactivity:**
Reacts with strong oxidising agents, nitrites (forms hazardous nitrogen compounds) and strong acids (e.g. concentrated nitric acid can form shock-sensitive urea nitrate). Not reactive with water beyond dissolution.
- 10.2 Chemical stability:**
Chemically stable under the indicated conditions of storage, handling and use. Hygroscopic – absorbs moisture and cakes on prolonged exposure to humid air.
- 10.3 Possibility of hazardous reactions:**
Under normal conditions, hazardous reactions are not expected. Avoid contact with nitrites, strong oxidisers and strong acids as noted above.

10.4 Conditions to avoid:

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Not applicable	Not applicable	Decomposes above approx. 152°C	No particular effect	Avoid – product is hygroscopic and cakes/dissolves

10.5 Incompatible materials:

Strong Oxidising Agents	Nitrites	Strong Acids	Chlorine / Hypochlorites
Risk of vigorous reaction	Forms hazardous nitrogen compounds	May form unstable urea nitrate with concentrated nitric acid	Reaction may generate nitrogen trichloride/other hazardous by-products

- 10.6 Hazardous decomposition products:**
Above approx. 152°C: ammonia, biuret, cyanuric acid, isocyanic acid, and oxides of nitrogen and carbon on more extensive thermal decomposition/combustion of fumes.

SECTION 11: TOXICOLOGICAL INFORMATION

- 11.1 Information on toxicological effects:**
Urea is of low acute toxicity and is a normal metabolic product in mammals. Under normal industrial handling conditions, adverse effects are not expected:
- A. Ingestion (acute effect):**
Acute toxicity classification criteria are not met based on available data; large doses may cause gastrointestinal discomfort, nausea or vomiting.
- B. Inhalation (acute effect):**
Dust may cause mild, transient irritation of the respiratory tract at high concentrations; not classified as an inhalation hazard.
- C. Contact with skin and eyes (acute effect):**
Generally non-irritating; concentrated solutions or prolonged dust contact may cause mild, transient eye irritation.
- D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity):**
Classification criteria for carcinogenicity, mutagenicity and reproductive toxicity are not met based on available data.
- E. Sensitizing effects:**
Classification criteria for respiratory or skin sensitisation are not met based on available data.
- F. Specific target organ toxicity (STOT) – single exposure:**
Classification criteria are not met based on available data.
- G. Specific target organ toxicity (STOT) – repeated exposure:**
Classification criteria are not met based on available data.
- H. Aspiration hazard:**
Classification criteria are not met based on available data.
- Product-specific toxicological information:**

Identification	Acute Toxicity	Genus
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Urea	LD50 oral: 8471 mg/kg	Rat
CAS: 57-13-6	LD50 dermal: >2000 mg/kg (estimated, low dermal absorption)	Rabbit

SECTION 12: ECOLOGICAL INFORMATION

Not classified as hazardous to the aquatic environment based on available acute data; however, nitrogen loading from bulk release can contribute to eutrophication.

12.1 Toxicity:

Acute Toxicity	Species	Genus
LC50: >10000 mg/L (96h)	Non-applicable	Fish
EC50: >1000 mg/L (48h)	Non-applicable	Crustacean

12.2 Persistence and degradability:

Readily biodegradable; hydrolyses/is microbially converted (urease) to ammonia and carbon dioxide in soil and water.

12.3 Bioaccumulative potential:

Not expected to bioaccumulate (very low log Pow, highly water-soluble).

12.4 Mobility in soil:

Koc	Henry	Dry Soil	Moist Soil
Low (highly water-soluble)	Not relevant	High mobility	High mobility; converts to ammonium via urease

12.5 Results of PBT and vPvB assessment:

Not considered PBT or vPvB.

12.6 Other adverse effects:

Excessive/uncontrolled release to surface water can contribute to nutrient enrichment (eutrophication).

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Disposal methods:

Recover for reuse where possible. Dispose of via a licensed waste contractor in accordance with local regulations; avoid uncontrolled discharge to water bodies due to nutrient loading. Packaging that has contained the product should be emptied completely before disposal or recycling.
Refer to national and local regulations on waste management.

SECTION 14: TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR 2023 / RID 2023):

14.1 UN number	Not assigned
14.2 UN proper shipping name	Non-hazardous for transport under ADR/RID
14.3 Transport hazard class(es)	Not classified
14.4 Packing group	N/A
14.5 Environmental hazard	No
14.6 Special precautions for user	Physico-chemical properties: see section 9
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by sea (IMDG 41-22):

14.1 UN number	Not assigned
14.2 UN proper shipping name	Non-hazardous for transport under IMDG
14.3 Transport hazard class(es)	Not classified
14.4 Packing group	N/A
14.5 Marine pollutant	No
14.6 Special precautions for user	Non-applicable
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	IMSBC Code applies for bulk shipment of urea prills/granules – consult current schedule

Transport of dangerous goods by air (IATA/ICAO 2024):

14.1 UN number	Not assigned
14.2 UN proper shipping name	Non-hazardous for transport under IATA/ICAO
14.3 Transport hazard class(es)	Not classified
14.4 Packing group	N/A
14.5 Environmental hazard	No
14.6 Special precautions for user	Non-applicable
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations specific for the product in question:

It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of local circumstances, in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product.

Other legislation:

The Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987)
Fertiliser (Control) Order, 1985, where applicable to fertiliser-grade material
Water (Prevention and Control of Pollution) Act, 1974

SECTION 16: OTHER INFORMATION

Legislation related to safety data sheets:

This safety data sheet has been designed in accordance with Annex 4 – Guidance on the preparation of Safety Data Sheets of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Texts of the legislative phrases mentioned in sections 2 and 3:

Not applicable – product is not classified as hazardous under GHS based on available data.

Advice related to training:

Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources:

Publicly available GHS classification and physical/toxicological reference data for CAS 57-13-6.

Abbreviations and acronyms:

ADR: European agreement concerning the international carriage of dangerous goods by road | IMDG: International maritime dangerous goods code | IMSBC: International Maritime Solid Bulk Cargoes Code | IATA: International Air Transport Association | ICAO: International Civil Aviation Organisation | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | Log-POW: Octanol-water partition coefficient | Koc: Partition coefficient of organic carbon | PBT: Persistent, Bioaccumulative, Toxic | vPvB: very Persistent, very Bioaccumulative

The information contained in this safety data sheet is based on sources, technical knowledge and current legislation, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product; it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within Suraj Chemicals' awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

END OF SAFETY DATA SHEET