

MSDS UREA

1. PRODUCT IDENTIFICATION

PRODUCT/CHEMICAL NAME	Urea, Solid
CHEMICAL FORMULA	CH ₄ N ₂ O
CASE NUMBER	57-13-6
OTHER DESIGNATIONS	Carbamide, Carbonyl dimaide, Carbamimidic acid
GENERAL USE	Fertilizer, Crop Nutrient
MANUFACTURER	Kingsberg Group

2. COMPOSITION / HAZARDOUS INGREDIENTS

Urea CAS NO.	57-13-6
%	97-99
Biuret CAS NO.	108-19-0
%	C
METHYLENEDIUREA CAS NO.	68611-64-3
%	0.9-1.8
WATER CAS NO.	7732-18-5
%	0.1-0.3

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW	Harmful if swallowed. May cause irritation to skin, eyes, and respiratory system. Hazardous decomposition products may be formed under fire conditions. Avoid contamination with sodium or calcium hypochlorite. See Section 10 for more information on Chemical Incompatibilities. If spilled into a waterway, this product can be toxic to aquatic life and may contribute to eutrophication.
HMIS	H: 1; F: 0; R: 0; PPE:++ Sec.8



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3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

PRIMARY ENTRY ROUTES: Inhalation (breathing), ingestion (swallowing), eye contact, skin contact.

TARGET ORGANS: No Target Organ data was found for these products.

ACUTE EFFECTS

INHALATION: Inhalation of airborne dust may cause irritation of the respiratory.

EYE: Eye contact with material or dust may cause irritation.

SKIN: Mild skin irritation can occur on exposure to material or dust.

INGESTION: Ingestion may cause irritation of the gastro-intestinal tract, resulting in cramps, vomiting, and diarrhea. Ingestion may also cause mild central nervous system depression such as drowsiness, slow reflexes, and slurred speech.

CARCINOGENICITY: IARC, NTP and OSHA do not list this product as a carcinogen.

MEDICAL CONDITIONS AGGRAVATED BY LONG-TERM EXPOSURE: Existing respiratory disorders such as asthma and skin disorders may be aggravated by long-term exposure.

CHRONIC EFFECTS

No chronic effects are expected.

4. FIRST AID MEASURES

INHALATION

Remove from area of exposure immediately. Seek medical attention, if irritation persists.

EYE CONTACT

Wash eyes immediately and thoroughly. Hold eyelids apart to ensure complete irrigation of all eye and eyelid tissues. Seek medical attention, if irritation persists.

SKIN CONTACT

Wash thoroughly with soap and water. Seek medical attention, if irritation persists.

INGESTION

Drink large amount of water, DO NOT INDUCE VOMITING. NEVER give anything by mouth to an unconscious person. GET MEDICAL ATTENTION IMMEDIATELY.



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5. FIRE & EXPLOSION DATA

FLASH POINT	Not applicable
AUTOIGNITION TEMPERATURE	Not applicable
LEL	Not applicable
UEL	Not applicable
FLAMMABILITY CLASSIFICATION	NFPA = 0, HMIS = 0, Nonflammable
NFPA:	
HEALTH	1
FLAMMABILITY	0
REACTIVITY	0
SPECIAL EXTINGUISHING MEDIA	Use extinguishing media appropriate for surrounding materials.
UNUSUAL FIRE OR EXPLOSION HAZARDS	Hazardous decomposition products may be formed under fire conditions. This product becomes slippery when wet. This product may form explosive compounds if mixed with calcium or sodium hypochlorite or with nitrates. See Section 10 for Chemical Incompatibilities.
HAZARDOUS DECOMPOSITION PRODUCTS	Ammonia, Biuret, cyanuric acid, nitrogen oxides.
FIRE-FIGHTING EQUIPMENT	Because of the potential that the fire may produce toxic decomposition products wear chemical resistant suit, gloves, boots, and a self-contained breathing apparatus (SCBA) with a full face piece operated in positive-pressure mode.

6. ACCIDENTAL RELEASE MEASURES

SPILL PROCEDURES	Wear chemical resistant gloves, and boots to prevent skin contact. Wear a dust respirator if exposure conditions warrant. See Section 8 for additional PPE information.
SMALL SPILLS	Sweep or shovel up, recover and use, if uncontaminated. Do not release into sewers or waterways.
LARGE SPILLS CONTAINMENT	Contain and recover material using mechanical equipment (if available) and use, if uncontaminated. Do not release into sewers or waterways.
CLEANUP	Sweep area clean if spill occurs on paved surface. Remove adequate topsoil to ensure recovery of all product if spilled directly onto the ground.
REGULATORY REQUIREMENTS	Follow applicable OSHA regulations to protect workers during cleanup. See Section 15 for additional regulatory requirements.



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7. HANDLING AND STORAGE

HANDLING PRECAUTIONS

Avoid spillage and contamination of product.

STORAGE REQUIREMENTS

Storage should be in dry conditions away from sources of excess heat. Do not store with ammonium nitrate. See Section 10 for additional information.

REGULATORY REQUIREMENTS

See Section 8 for employee exposure controls and Section 15 for other regulatory requirements.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS:

VENTILATION

If needed, provide general or local exhaust ventilation systems or other engineering controls to maintain airborne dust concentrations below regulatory levels (see section15).

ADMINISTRATIVE CONTROLS:

RESPIRATORY PROTECTION

If concentrations exceed recommended exposure levels, use a NIOSH-approved respirator for dust, suitable for the exposure conditions. Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134). Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. **WARNING!! AIR-PURIFYING RESPIRATORS DO NOT PROTECT WORKERS IN OXYGEN-DEFICIENT ATMOSPHERE.** If respirators are required, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

PROTECTIVE CLOTHING/EQUIPMENT

Wear gloves and appropriate clothing as needed to prevent prolonged or repeated skin contact. Wear protective eyeglasses or safety goggles, per OSHA eye- and face-protection regulations (29CFR 1910.133). Contact lenses are not eye protection; protective eyeglasses or safety goggles must be worn instead of, or in conjunction with contact lenses.

SAFETY STATIONS

Make emergency eyewash stations and wash facilities available in the work area.

CONTAMINATED EQUIPMENT

Separate heavily contaminated work clothes from street clothes. Launder before reuse. If concentrations exceed recommended exposure levels, use a NIOSH-approved respirator for dust, suitable for the exposure conditions. Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations(29 CFR 1910.134) Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. **WARNING!! AIR-PURIFYING RESPIRATORS DO NOT PROTECT WORKERS IN OXYGEN-DEFICIENT ATMOSPHERE.** If respirators are required, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

COMMENTS

Practice good personal hygiene during and after use of this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.



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9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Solid
APPEARANCE AND ODOUR	White granule, prill, or powder, with slight ammonia odour possible.
ODOUR THRESHOLD	25 ppm (ammonia in air)
VAPOR PRESSURE	Not applicable
VAPOR DENSITY (air=1)	Not applicable
EVAPORATION RATE (butyl acetate = 1)	Not applicable
SPECIFIC GRAVITY	1.335 (@68 deg F)
MOECULAR WEIGHT	CN ₄ N ₂ O = 60.07
WATER SOLUBILITY	119 gm/100 gm water @ 68 deg F
BOILING POINT	Decomposes
MELTING POINT	270 deg F
pH (10% solution)	7.2
% VOLATILE	Not applicable

10. STABILITY AND REACTIVITY

STABILITY	Stable, under normal storage and handling conditions.
POLYMERIZATION	Hazardous polymerization will not occur.
CHEMICAL INCOMPATIBILITIES	Urea reacts with calcium or sodium hypochlorite to form the explosive nitrogen trichloride. It is incompatible with sodium nitrate, gallium perchlorate, strong oxidizing agents (permanganate, dichromate, nitrate, chlorine), phosphorus pentachloride, nitrosyl perchlorate, titanium tetrachloride, and chromyl chloride. Urea, dichloromalcic anhydridem, and sodium chloride form potentially explosive dichloromalcimide. Corrosive to copper and copper alloys.
CONDITIONS TO AVOID	Exposure to elevated temperatures, and fire. Preparation of the N-labeled urea is hazardous.
HAZARDOUS DECOMPOSITION PRODUCTS	Ammonia, Biuret, cyanuric acid, nitrogen oxides.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS	Irritant
SKIN EFFECTS	UREA: Standardize Test (human): 22mg/3D (intermittent) = Mild
ACUTE DERMAL EFFECTS	No data
ACUTE ORAL EFFECTS	UREA LD50 (rat): 8471-14300 mg/kg Urea has been determined to be "not toxic" based on the criteria of OSHA 1910-1200, Appendix A, Oral (mammal) LD50> 500mg/kg.
ACUTE INHALATION EFFECTS	No data
CHRONIC EFFECTS	See Section 3
CARCINOGENICITY	No data
MUTAGENICITY	No data
OTHER DATA	Human lymphocyte, DNA inhibition: 600 mmol/L. Women, 16 weeks pregnant, TDLO: 1600 mg/kg affects fertility (abortion). A study from the Soviet Union suggests a maximum recommended air concentration of 10 mg/m ³ . *See NIOSH, RTECS YR6250000 (Urea) for additional information.



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12. ECOLOGICAL INFORMATION

ECOTOXICITY

This product in elevated concentrations can cause vegetation kill and contribute to eutrophication. Urea has been determined to be "nontoxic to aquatic organisms" per USEPA criteria.

ENVIRONMENTAL FATE

Urea is ultimately biodegradable. When released to soil, this product will hydrolyze to ammonium in a matter of days. Ammonia in soil can be rapidly transformed to nitrate by the microbial population through nitrification. The nitrate will either leach through the soil or be taken up by plants or other organisms. In water ammonia can undergo sequential transformation by two processes in the nitrogen cycle, nitrification and denitrification, which would produce ionic nitrogen compounds, and from these, elemental nitrogen.

13. DISPOSAL CONSIDERATIONS

DISPOSAL

Contact federal or state regulatory agencies for acceptable disposal/use of the recovered materials. Recovered product may be suitable for use or may need to be sent to a waste treatment facility.

DISPOSAL REGULATORY REQUIREMENTS

Follow applicable Federal, state, and local regulations.

CONTAINER CLEANING AND DISPOSAL

Containers should be thoroughly emptied before disposal.

14. TRANSPORTATION INFORMATION

DOT TRANSPORTATION DATA (49 CFR 172.101)

This product is not regulated as a DOT Hazardous Material.



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15. REGULATORY INFORMATION

EPA REGULATIONS

RCRA HAZARDOUS WASTE NUMBER (49 CFR 261.33): Not listed

CERCLA HAZARDOUS SUBSTANCE (40 CFR 302.4): No

CERCLA REPORTABLE QUANTITY (RQ): Not applicable

SARA 311/312 CODES: Yes - Acute

SARA TOXIC CHEMICAL (40CFR 372.65): No

SARA EHS (Extremely Hazardous Substance)(40 CFR 355): No

SARA EHS THRESHOLD PLANNING QUANTITY (TPQ): Not applicable

CAA/RMP (Toxic Substances) (40 CFR 68.130): No

CAA/RMP (TQ): Not applicable

OSHA REGULATIONS

AIR CONTAMINANT (29 CFR 1910.1000, Table Z-1, Z-1-A): This product is not listed; however, the exposure levels for nuisance dust are applicable.

OSHA and ACGIH nuisance dust exposure levels are given below:

Nuisance Dust (TOTAL): OSHA PEL (TWA): 15mg/m³

ACGIH TLV (TWA): 10mg/m³

Nuisance Dust (RESPIRABLE): OSHA PEL (TWA): 5mg/m³

ACGIH TLV (TWA): 3mg/m³

PROCESS SAFETY MANAGEMENT (29 CFR 1910.119): No

PSM THRESHOLD QUANTITY (TQ): Not applicable

STATE REGULATIONS: This product is regulated in commerce by state agricultural and/or consumer protection laws. This product may be listed in various state Right-to-know, worker protection, and/or environmental protection laws. If you are unable to determine the proper status of this product under your respective state laws contact the manufacturer.

16. EMERGENCY INFORMATION

CHEMTREC

800-424-9300

