

# MATERIAL SAFETY DATA SHEET

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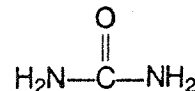
## SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: UREA

OTHER DESIGNATIONS: Carbamide, Carbonyldiamine, CAS.#000 057 136,  $(\text{NH}_2)_2\text{CO}$

MANUFACTURER: Available from many suppliers, including:

Agrico Chem. Co.  
P.O. Box 3454  
Tulsa, Oklahoma 74101  
Tel: (918) 588-3632



## SECTION II. INGREDIENTS AND HAZARDS

Typical Industrial Grade:

Urea ( $\text{NH}_2\text{CONH}_2$ )

Biuret ( $\text{NH}_2\text{CONHCONH}_2$ )

Free Ammonia

(<2%) } Total Nitrogen

(<200 ppm)

%	HAZARD DATA
45 min*	No TLV Established** Oral, domestic animal LDLo 511 mg/kg Skin, human 22 mg/m <sup>3</sup> D-I Mild Irritation

\*Total Nitrogen for pure urea is 46.6%.

\*\*Exposure should be kept below that of a nuisance dust;  
OSHA PEL 15 mg/m<sup>3</sup> total dust, 5 mg/m<sup>3</sup> respirable dust.

## SECTION III. PHYSICAL DATA

Boiling point, deg C ----- (decomposes) Specific gravity, 20/4 C ----- 1.33  
Solubility in water @ 20C, % ----- 51.6 Melting point, deg C ----- 132-135  
pH (10% solution) ----- 7-9.8 Molecular weight ----- 60.07

Appearance and Odor: White crystals, granules, prill or powder; odorless or with a slight ammonia odor.

## SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits in Air	Lower	Upper
Noncombustible	N/A*	N/A	<	-

Extinguishing media: Use that which is appropriate for the surrounding fire. This material is noncombustible. A water spray can be used to wet down the material to help reduce any airborne particulate levels. Beware of possible explosive mixtures with oxidizing agents such as nitrates, hypochlorites.

Firefighters should wear self-contained breathing apparatus.

\*Urea dust cloud reported not to ignite at 900C.

## SECTION V. REACTIVITY DATA

This is a stable material at room temperature under normal storage and handling conditions. It does not polymerize.

Hypochlorites can react with urea to form an explosive compound (nitrogen trichloride).

Incompatible with gallium perchlorate and strong oxidizing agents (permanganate, dichromate, nitrate, chlorine, etc.) Avoid contact with caustic and alkalis.

Thermal and oxidative degradation products can include ammonia, cyanuric acid, biuret, carbon dioxide and/or carbon dioxide.

SECTION VI. HEALTH HAZARD INFORMATION	TLV (See Sect II)
Excessive inhalation of dust may cause irritation and coughing; heavily exposed workers with asthma may have difficulty breathing. Prolonged skin contact may cause stinging sensation and mild irritation. It is an irritant to eyes and mucous membranes. No human chronic effects reported. (Urea is a normal component of human urine, a product of metabolism.)	
<b>FIRST AID:</b> <u>Eye Contact:</u> Flush thoroughly with running water for 15 min. including under eyelids. <u>Skin Contact:</u> Wash affected area with soap and water. <u>Inhalation:</u> Remove to fresh air. Restore and/or support breathing as needed. Administer oxygen if breathing is difficult. <u>Ingestion:</u> Give several glasses of water to drink to dilute; then induce vomiting. Seek medical help for further treatment, observation and support after first aid.	
SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES	
Clean-up personnel should have protection against inhalation of dust. Sweep up or scoop up spilled material for recovery or disposal, avoiding dusting conditions and using good ventilation. <u>Do not</u> contaminate solid waste with oxidizing agents such as nitrates. Flush residue with much water. <u>DISPOSAL:</u> Waste may be buried in an approved landfill or spread on farmland as fertilizer (if other contaminants will allow this use). Follow Federal, State, and Local regulations. AQUATIC TOXICITY TLM 96: over 1000 ppm	
SECTION VIII. SPECIAL PROTECTION INFORMATION	
Provide general ventilation and local exhaust ventilation as needed to keep dust at a low level in the workplace. Dust respirators should be available for nonroutine or emergency use for exposure above the nuisance particulate level (15 mg/m <sup>3</sup> ). Avoid eye contact by use of chemical goggles where dusty conditions occur. Use rubber gloves and body covering clothing appropriate for the work situation to reduce skin contact. Promptly remove grossly contaminated clothing; launder before reuse. Eyewash stations and washing facilities should be accessible in areas of use and handling. Wear clean work clothing. Shower daily after workshift of dust exposure to remove potential irritants from skin, with a change to separately lockered street clothes after showering.	
SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS	
Store in a dry area with natural ventilation away from sources of heat and strong oxidizing agents. Protect containers from physical damage. Use good housekeeping techniques that will keep airborne particulate and dust deposits at a minimum. Avoid breathing dust. Avoid prolonged or repeated skin contact. Practice good personal hygiene daily to minimize possible industrial dermatitis. Individuals with kidney impairment or asthmatic condition should have physician's approval before exposure to urea dust.	
DATA SOURCE(S) CODE: 1,4-7,9-11,23,54	
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