

UREA

GHS Safety Data Sheet

Version No:5

Page 1 of 10

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
UREA

OTHER NAMES

(NH₂)₂-CO, C-H₄-N₂-O, Aquacare, Aquahydrate, Basodexan, carbamide, carbonyldiamine, "carbamide resin", "carbamimidic acid", "carbonyl diamide", isourea, Keratinamin, Nutraplus, Pastoran, Prespersion, pseudourea

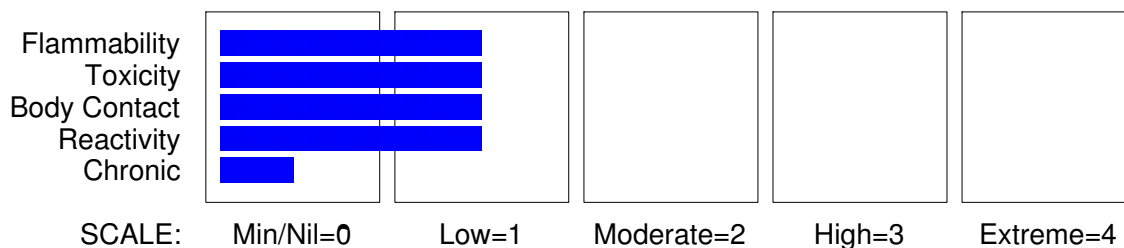
PRODUCT USE

Used widely as a fertilizer (readily available source of nitrogen).
In animal feeds. Reacted with aldehydes to make resins and plastics.
Condensed with malonic ester to form barbituric acid.
Used extensively in the paper industry to soften cellulose.
In ammoniated dentifrices.
In medicine used for treatment of cerebral oedema, also as a diuretic.
Also used in detergents, yeast production, dyes and pigments.

SUPPLIER

Company: S D FINE- CHEM LIMITED
Address:
315- 317, T.V. INDUSTRIAL ESTATE,
248, WORLI,
MUMBAI- 400030.INDIA.
technical@sdfine.com
Telephone: 91- 22- 24959898
Telephone: 91- 22- 24959899
Fax: 91- 22- 24937232

HAZARD RATINGS



continued...

UREA

GHS Safety Data Sheet

Version No:5

Page 2 of 10

Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Skin Corrosion/Irritation Category 3

EMERGENCY OVERVIEW

HAZARD

WARNING

Determined by using GHS criteria:

H316

Causes mild skin irritation

PRECAUTIONARY STATEMENTS

Response

If skin irritation occurs, seek medical advice/attention.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
urea	57-13-6	> 98.5

Section 4 - FIRST AID MEASURES

SWALLOWED

Rinse mouth out with plenty of water.

For advice, contact a Poisons Information Centre or a doctor.

- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Seek medical advice.

EYE

If this product comes in contact with the eyes:

- Wash out immediately with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- If pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin contact occurs:

- Immediately remove all contaminated clothing, including footwear.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

continued...

UREA

GHS Safety Data Sheet

Version No:5

Page 3 of 10

Section 4 - FIRST AID MEASURES

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor.

NOTES TO PHYSICIAN

Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

There is no restriction on the type of extinguisher which may be used.

FIRE FIGHTING

Alert Fire Brigade and tell them location and nature of hazard.

Use fire fighting procedures suitable for surrounding area.

- Wear breathing apparatus plus protective gloves for fire only.
- Prevent, by any means available, spillage from entering drains or water courses.

If safe to do so, remove containers from path of fire.

Use water delivered as a fine spray to control the fire and cool adjacent area.

FIRE/EXPLOSION HAZARD

- Solid which exhibits difficult combustion or is difficult to ignite.
- Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.
- Dry dust can also be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport.
- Build-up of electrostatic charge may be prevented by bonding and grounding.
- Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.
- All movable parts coming in contact with this material should have a speed of less than 1-metre/sec.

Combustion products include: carbon monoxide (CO) and nitrogen oxides (NO_x).

FIRE INCOMPATIBILITY

Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

Avoid contamination with strong oxidising agents, particularly peroxides, perchlorates, etc. as violent decomposition / detonation may result.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

Clean up all spills immediately.

Wear impervious gloves and safety glasses.

Use dry clean up procedures and avoid generating dust.

continued...

UREA

GHS Safety Data Sheet

Version No:5

Page 4 of 10

Section 6 - ACCIDENTAL RELEASE MEASURES

Sweep up. Place in clean drum then flush area with water.
Small quantities may be discharged to sewer with a large excess of water.

MAJOR SPILLS

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Control personal contact by using protective equipment and dust respirator.
- Prevent spillage from entering drains, sewers or water courses.
- Recover product wherever possible. Avoid generating dust.
- Sweep / shovel up.
- If required, wet with water to prevent dusting.
- Put residues in labelled plastic bags or other containers for disposal.
- Wash area down with large quantity of water and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise emergency services.

EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)

The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:

urea 500 mg/m³

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:

urea 15 mg/m³

other than mild, transient adverse effects without perceiving a clearly defined odour is:

urea 2 mg/m³

The threshold concentration below which most people will experience no appreciable risk of health effects:

urea 0.6 mg/m³

American Industrial Hygiene Association (AIHA)

Ingredients considered according to the following cutoffs

Very Toxic (T+)	$\geq 0.1\%$	Toxic (T)	$\geq 3.0\%$
R50	$\geq 0.25\%$	Corrosive (C)	$\geq 5.0\%$
R51	$\geq 2.5\%$		
else	$\geq 10\%$		

where percentage is percentage of ingredient found in the mixture

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

Remove all ignition sources.

- Limit all unnecessary personal contact.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- When handling DO NOT eat, drink or smoke.
- Always wash hands with soap and water after handling.
- Avoid physical damage to containers.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.

continued...

UREA

GHS Safety Data Sheet

Version No:5

Page 5 of 10

Section 7 - HANDLING AND STORAGE

SUITABLE CONTAINER

Multi-ply paper bag with sealed plastic liner or heavy gauge plastic bag.

NOTE: Bags should be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse. Check that all containers are clearly labelled and free from leaks. Packing as recommended by manufacturer.

Glass container.

STORAGE INCOMPATIBILITY

Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

Avoid contamination with strong oxidising agents, particularly peroxides, perchlorates, etc. as violent decomposition / detonation may result.

Avoid storage / contamination with hypochlorites as reaction with formation of explosive nitrogen trichloride may occur.

STORAGE REQUIREMENTS

Keep dry . . . Store in original containers.

- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



+ + + + + +

+: May be stored together

O: May be stored together with specific precautions

X: Must not be stored together

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

- urea: CAS:57- 13- 6

MATERIAL DATA

No exposure limits set by NOHSC or ACGIH.

CEL TWA: 10 mg/m³ (compare WEEL-TWA)

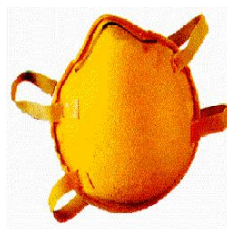
Even if individuals inhaled 10 mg/m³ of urea through the whole workday, they would only inhale 100 mg/day. This increment, even if totally absorbed, would be insignificant when compared to the 30 g/day normal excretion rate. The workplace environmental exposure limit (WEEL) established by the AIHA is protective against the effects of urea as a nuisance dust.

PERSONAL PROTECTION

continued...

UREA

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION



EYE

- Safety glasses with side shields; or as required,
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

Wear chemical protective gloves. eg. PVC gloves with barrier cream
Wear safety footwear.

OTHER

- Overalls.
- Eyewash unit.

RESPIRATOR

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	P1 Air- line*	- -	PAPR- P1 -
50 x ES	Air- line**	P2	PAPR- P2
100 x ES	-	P3	-
		Air- line*	-
100+ x ES	-	Air- line**	PAPR- P3

* - Negative pressure demand ** - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

For further information consult your
Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

Use in a well-ventilated area.

- Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
- Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.
- If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered. Such protection might consist of:
 - (a): particle dust respirators, if necessary, combined with an absorption cartridge;
 - (b): filter respirators with absorption cartridge or canister of the right type;
 - (c): fresh-air hoods or masks

continued...

UREA

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

- Build-up of electrostatic charge on the dust particle, may be prevented by bonding and grounding.
- Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to efficiently remove the contaminant.

Type of Contaminant:

direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).

Air Speed:

1- 2.5 m/s (200- 500 f/min.)

2.5- 10 m/s (500- 2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range

- 1: Room air currents minimal or favourable to capture
- 2: Contaminants of low toxicity or of nuisance value only
- 3: Intermittent, low production.
- 4: Large hood or large air mass in motion

Upper end of the range

- 1: Disturbing room air currents
- 2: Contaminants of high toxicity
- 3: High production, heavy use
- 4: Small hood- local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 4-10 m/s (800-2000 f/min) for extraction of crusher dusts generated 2 metres distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

White crystals, granules, prill or powder; odourless or with a slight ammonia odour. Soluble in water; almost insoluble in chloroform, ether; soluble in concentrated hydrochloric acid.
Grades available are: Fertiliser, Technical, Reagent and BP.

PHYSICAL PROPERTIES

Solid.
Mixes with water.

Molecular Weight: 60.07
Melting Range (°C): 132.7
Solubility in water (g/L): Miscible
pH (1% solution): 7- 9.8
Volatile Component (%vol): Nil @ 38 C.

Boiling Range (°C): Not available.
Specific Gravity (water=1): 1.33 @ 20C/4C
pH (as supplied): Not applicable
Vapour Pressure (kPa): Not applicable.
Evaporation Rate: Non Volatile

continued...

UREA

GHS Safety Data Sheet

Version No:5

Page 8 of 10

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Relative Vapour Density (air=1): Not applicable.
Lower Explosive Limit (%): Not available.
Autoignition Temp (°C): Not available.
State: Divided solid

Flash Point (°C): Non Flammable
Upper Explosive Limit (%): Not available.
Decomposition Temp (°C): 132.7
Viscosity: Not available

log Kow (Prager 1995): - 1.09
log Kow (Sangster 1997): - 2.11
log Kow: -2.97- -2.26

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Although ingestion is not thought to produce harmful effects (as classified under EC Directives), the material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (e.g liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.

Considered an unlikely route of entry in commercial/industrial environments.
Ingestion may result in nausea, abdominal irritation, pain and vomiting.

EYE

Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).

SKIN

The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.

INHALED

The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

continued...

UREA

GHS Safety Data Sheet

Version No:5

Page 9 of 10

Section 11 - TOXICOLOGICAL INFORMATION

Inhalation of dust may aggravate a pre-existing respiratory condition such as asthma, bronchitis, emphysema.

CHRONIC HEALTH EFFECTS

Primary route of exposure is usually by inhalation of generated dust. High levels of exposure to urea in the Russian workplace have been reported to produce emphysema.

The backs of rats were treated by dermal application with 10%, 20%, 40% urea ointment daily for 4 to 24 weeks. No erythema or other responses were noted at the application site. At 25 weeks there was a decrease, in the 40% urea ointment group, of brain and prostrate weights.

In medicine, avoid urea in cases of renal or hepatic impairment.

Urea is excreted as a product of normal body metabolic processes.

TOXICITY AND IRRITATION

unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY

Oral (rat) LD50: 8471 mg/kg

Intraperitoneal (rat) LD50: >5000 mg/kg

Subcutaneous (rat) LD50: 8200 mg/kg

Intratracheal (rat) LD50: 567 mg/kg

Oral (mouse) LD50: 11000 mg/kg

Subcutaneous (mouse) LD50: 9200 mg/kg

Intravenous (mouse) LD50: 4600 mg/kg

IRRITATION

Skin (human): 22 mg/3 d (I)- Mild

NOTE: Substance has been shown to be mutagenic in at least one assay, or belongs to a family of chemicals producing damage or change to cellular DNA.

Altered sleep time, change in motor activity, antipsychosis, dyspnea, methaemoglobinaemia, convulsions, lymphomas recorded.

Carcinogenic by RTECS criteria.

Section 12 - ECOLOGICAL INFORMATION

Algae IC50 (72hr.) (mg/l):	10000
log Kow (Prager 1995):	- 1.09
log Kow (Sangster 1997):	- 2.11
log Pow (Verschueren 1983):	1.31415929

log Kow: -2.97- -2.26

Section 13 - DISPOSAL CONSIDERATIONS

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Management Authority for disposal.
- Bury residue in an authorised landfill.
- Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION

HAZCHEM: None

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS:UN, IATA, IMDG

continued...

UREA

GHS Safety Data Sheet

Version No:5

Page 10 of 10

Section 15 - REGULATORY INFORMATION

REGULATIONS

urea (CAS: 57-13-6) is found on the following regulatory lists;
IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances
OECD Representative List of High Production Volume (HPV) Chemicals

Section 16 - OTHER INFORMATION

MSDS SECTION CHANGES

The following table displays the version number of and date on which each section was last changed.

Section Name	Version	Date	Section Name	Version	Date	Section Name	Version	Date
Appearance	4	11- Aug- 2005						

The above information is believed to be accurate and represent the best information currently available to us, but does not represent any warranty expressed or implied of the properties of the product. User should make their own investigation to determine the suitability of the information for their particular purpose.

Issue Date: 14-Jul-2017