


 Razi Petrochemical Company (RPC)	<b>Material Safety Data Sheet (MSDS)</b>  <i>According to the Directives 91/155/CEE-2001/58/CE-ISO 11014-1</i>	Revision Number: 1			
	Product Name:  <p style="text-align: center;"><b>Urea</b></p>		<table border="1"> <tr><td style="background-color: yellow;">Reactivity</td></tr> <tr><td style="background-color: red;">Flammability</td></tr> <tr><td style="background-color: cyan;">Health</td></tr> </table>	Reactivity	Flammability
Reactivity					
Flammability					
Health					

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/ UNDERTAKING

<b>Identification of the substance or preparation:</b> Country of origin: CAS Number: Synonyms:  <b>Company/undertaking identification</b>  <b>Manufacturer subcontractor:</b> Emergency phone number: Contact email: Fax: Association/Organization: Use of the substance/Preparation:	Urea Iran (Islamic Republic of Iran) 57-13-6 B-I-K, carbamide, carbamide resin, carbamimidic acid, carbonyl diamide, isourea, pseudourea, carbonyldiamine, supercel 3000, ureaphil, ureophil, urevert, varioform II National Petrochemical Company Iran Petrochemical Commercial Company (IPCC) None 00982188881735 msds@petrochem-ir.net 00982188839511 None Urea is a chemical fertilizer and the most of it, is used in agriculture. Furthermore urea is used in the production of resins and glues. Industrial resins are used in the manufacture of such forestry products as plywood and oriented strandboard. Urea is used in the production of fiberglass insulation, forestry fertilization and on airport runways as a de-icer. Urea is used in the control of NOX emissions.
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## 2. COMPOSITION/INFORMATION ON INGREDIENTS

<b>Hazardous substances:</b>  <b>Hazardous label(s):</b> Toxicological characteristics:  <b>Substances present at a concentration below the minimum danger:</b> <b>Other component:</b>	<b>Hazardous Decomposition Products:</b> Oxides of carbon and nitrogen, ammonia, Cyanide  Oxides of carbon and nitrogen are air pollutant; ammonia is the one of the easiest form of nitrogen compounds for nutrition of livings but could be harmful in the huge amount. Cyanides are the very toxic for livings. Refer to carbon oxides MSDS, nitrogen oxides MSDS and cyanides MSDS. None
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### 3. IDENTIFICATION OF HAZARDS

<b>Risk phrases:</b>	<b>R 36/37/38 60</b>
<b>Skin contact:</b>	Causes skin irritation
<b>Eye contact:</b>	Causes eye irritation
<b>Inhalation :</b>	Inhalation of dust causes irritation of the nose and throat, coughing and sneezing
<b>If swallowed:</b>	Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause cardiac disturbances. May cause disturbed blood electrolyte balance.
<b>Other information:</b>	

### 4. FIRST AID MEASURES

As a general rule, in case of doubt or if symptoms persist, always call a doctor  
**NEVER induce swallowing in an unconscious person.**

<b>Skin contact :</b>	Get medical aid. Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
<b>In case of exposure by inhalation:</b>	Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
<b>In case of splashes or contact with eyes:</b>	Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
<b>In case of swallowing:</b>	If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid.
<b>Note of physician:</b>	

### 5. FIRE FIGHTING MEASURES

<b>Flammable class:</b>	<b>Nonflammable</b>
<b>Suitable extinguishing media:</b>	Substance is noncombustible; use agent most appropriate to extinguish surrounding fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.



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Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases:

Special protective equipment for fire fighting :

During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Wear appropriate protective clothing to prevent contact with skin and eyes.

Wear a self-contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products.

Other information:

### 6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

Wear appropriate protective eyeglasses or chemical safety goggles. Wear appropriate protective gloves to prevent skin exposure. Wear appropriate protective clothing to prevent skin exposure.

Environmental precautions:

Avoid generating dusty conditions. Provide ventilation.

Methods for cleaning up and disposal:

Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately.

Other information:

None

### 7. HANDLING AND STORAGE



The regulations relating to storage premises apply to workshop where the product is handled :

Handling:

observe all warnings and precautions listed for the product

Storage:

To preserve product integrity, store at 25C, excursions permitted between 15C and 30C. Store in a tightly closed container. Protect container from physical damage. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Exposure limit values:

### Airborne Exposure Limits:

#### For Urea:

-AIHA Workplace Environmental Exposure Limit (WEEL):

10 mg/m<sup>3</sup>, 8-hour TWA

### Exposure controls:

#### Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### Personal protective equipment:

#### Eye protection:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

### Respiratory protection:

NIOSH approved dust mask. Personal Respirators

#### (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest.. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-



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**Hand protection:**

**Skin and body protection:**

**Health measures:**

facepiece positive-pressure, air-supplied respirator. **WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. If heat is involved, an ammonia/methylamine, dust/mist cartridge may be necessary. Wear appropriate protective gloves as latex or vinyl to prevent skin exposure. Wear appropriate protective gloves to prevent skin exposure.**

<b>Health:</b>	<b>1</b>			
<b>Flammability</b>	<b>0</b>			
<b>Reactivity</b>	<b>0</b>			
<b>Hazard Rating:</b>				
Least Slight Moderate High Extreme				
0	1	2	3	4
NA = Not Applicable NE = Not Established				

**Environmental exposure controls:**

Prevent large quantities from contacting vegetation or waterways. Keep animals away from large spills. Vacuum or sweep up and place into approved containers for later disposal.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**General information:**

**Appearance (at 20°C):**

**Colour:**

**Odour:**

**PH (at 20°C):**

**Melting point/range (°C):**

**Flash point (°C):**

**Flammability:**

**Auto-ignition temperature:**

**Explosive properties:**

**UREA**

**White crystals**

**white**

**Ammonia-like**

**7.2 (10% solution)**

**132°C - 135°C**

**Not applicable**

**Not flammable**

**Not applicable**

**Uncontaminated urea is not an explosion hazard. However it may form explosive mixtures subject to spontaneous detonation when contaminated with strong acid (nitric or perchloric) or nitrates.**

**None**

**Oxidising properties:**

**Vapour pressure (at 20°C):**

**Negligible , urea is not a volatile solid**

**Density (at 20°C):**

**1.33 , Bulk density is 700-780kg/m<sup>3</sup>**

**Solubility (at 20°C):**

**water solubility: 67 gm/100 gm H<sub>2</sub>O @ 32°F**

**solubility in fats: not soluble**



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Viscosity (40°C):  
Evaporation rate:  
Other information:

Not applicable  
Not applicable  
None

### 10. STABILITY AND REACTIVITY

Stability:  
Conditions to avoid:  
Material to avoid:

The product is stable.  
Excess heat, excess dust generation, incompatible materials.  
Reactive with oxidizing agents.  
Calcium hypo chloride, sodium hypo chloride reacts with urea and may explode.  
Chloride sodium and anidrid dichloromalik reacts with urea and make potential explosion material. case study for other materials would be better.

Hazardous decomposition products:

Urea decomposes upon heating and can form products including ammonia, oxides of nitrogen, cyanuric acid, cyanic acid, biuret, carbon dioxide.

### 11. TOXICOLOGICAL INFORMATION

Acute toxicity:

- LD<sub>50</sub>, oral, rat (mg.kg<sup>-1</sup>): 8471 mg/kg  
- LD<sub>50</sub>, oral, mouse (mg.kg<sup>-1</sup>): 11000 mg/kg  
- LD<sub>50</sub>, dermal (mg.kg<sup>-1</sup>): 2000 mg/kg rabbit

Sub chronic – chronic toxicity:

Sub chronic toxicity: In a repeated dose toxicity study, urea at 10%, 20%, and 40% in ointment was applied to the back skin of rats for 4 weeks. No dose-dependent toxicity was observed. There were no consistent treatment-related effects on standard hematological parameters, clinical chemistry, organ weights or organ histopathology, including the testicles, prostate, seminal vesicles, ovaries and the uterus.  
Chronic Toxicity: In a chronic toxicity and carcinogenicity screening study conducted in mice over 12 months, urea was administered at 0, 0.45%, 0.9% and 4.5% in the diet. No pathology was reported immediately following treatment period. After 4 months tests, prostate and uterus were histologically examined for



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occurrence of tumors in the survivors. Although there was a statistically increased incidence of interstitial cell adenomas of the testis in the high dose group, its biological significance was deemed questionable, since the lesion may occur in 100% of controls.

**Sensibilization:**  
**Carcinogenicity:**  
**Reproductive effects:**

Not reported  
**Rats and Mice: Cancer Test Summary**  
May cause adverse reproductive effects (fetotoxicity) and genetic material (mutagenicity) based on animal studies.  
Not reported  
None

**Human experience:**  
**Other information:**

#### 12. ECOLOGICAL INFORMATION

**Ecotoxicity:**  
**Bio accumulative potential:**  
**Mobility:**  
**Persistence and degradability:**  
**Other adverse effects:**

This product is biodegradable  
Does not bioaccumulate.  
Water contaminating.  
Inherently biodegradable. Non-persistence.  
Do not apply directly to lakes, streams or ponds.

#### 13. DISPOSAL CONSIDERATIONS

**Disposal of product:**  
  
**Disposal of packaging:**

Depend on local regulations. Urea is a fertilizer and is applicable in agricultural lands.  
Urea is bagged in 50 kg. Special double-envelope polyethylene. Disposal of the bags is depending on local regulations for disposal of polyethylene bags.

#### 14. TRANSPORT INFORMATION

**Land transport:**  
  
**ADR/RID:**  
**Packaging group:**  
**Maritime transport:**  
**Air transport:**

Not classed, i.e. considered non-hazardous material according to UN Orange Book and international transport codes e.g. RID (rail), ADR (road) and IMDG (sea).  
N/A  
N/A  
N/A  
Not applicable



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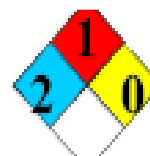
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### 15. REGULATORY INFORMATION

**Hazardous label(s):**

N/A

**Safety phrases:**

S 24/25

Avoid contact with skin and eyes

**Risk phrases:**

R 36/37/38 /60

### 16. OTHER INFORMATION

None

**The contents and format of this MSDS are in accordance with EEC Commission Directive 2001/58/EC**

#### **Disclaimer of liability:**

**The information in this MSDS was obtained from different sources, which National Petrochemical Company (NPC) and Iran Petrochemical Commercial Company (IPCC) believe, are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, National Petrochemical Company (NPC) and Iran Petrochemical Commercial Company (IPCC) do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable.**