

SAFETY DATA SHEET

(according to Regulation (EC) No 1907/2006 (REACH), ANNEX II)

UREA

Revision date: 01.06.2012 Version 3.0

SECTION 1: IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY**1.1 Product identifier**

Trade name:	Urea
Other names:	Carbonyl Diamide
Name IUPAC/international chemical name:	Urea
INDEX No. and name as listed in Annex VI of CLP:	Not listed
CAS No.:	57-13-6
EINECS No.:	200-315-5
REACH registration No.:	01-2119463277-33-0048
Molecular formula:	CH4N2O

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses:	Fertilizers Resins and polymers manufacture Formulation of preparations Intermediates pH-regulating agents
Uses advised against:	None

1.3 Details of the supplier of the safety data sheet

Only Representative:	OSTCHEM GERMANY GmbH Erdmannstr. 10 222765 Hamburg, Germany Phone: +49 40 5300 300 Fax: +49 40 5300 30 33 www.ostchem.com E-mail: matthaeus.ebinal@ostchem.de larissa.schmelzing@ostchem.de
Manufacturer:	PJSC "AZOT" 72, Pervomayskaya Str., Cherkassy, Ukraine Tel.: +38 0472 39-63-03 +38 0472 39-23-33 URL website: http://www.azot.cherkassy.net Email: let@azot.cherkassy.net sale@azot.cherkassy.net avalon@azot.cherkassy.net
E-mail address of the person responsible for this Safety Data Sheet:	PJSC "AZOT" REACH Department onr@azot.cherkassy.net
National contact:	Not available

1.4 Emergency telephone number

Emergency phone number:	Tel: + 49 405 300 300 Opening hours: 9-18 (CET) Languages of the phone service: German, English, Russian Tel: + 38 (0472) 39 61 17 Opening hours: 0-24 Languages of the phone service: Russian, Ukrainian
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SECTION 2: HAZARDS IDENTIFICATION**2.1 Classification of the substance**

The substance is not classified as hazardous in accordance with Regulation 1272/2008 (CLP) as well as with Directive 67/548 (DSD).

2.2 Label elements

Hazard pictograms:	Not applicable
Signal word:	No signal word
Hazard statements:	Not applicable
Precautionary statements	
Prevention:	Not applicable
Response:	Not applicable
Storage:	Not applicable
Disposal:	Not applicable

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2.3 Other hazards:		
Substance meets the criteria for PBT according to Regulation (EC) No.1207/2006, Annex XIII	No. P: Not available. B: Not available. T: No.	
Substance meets the criteria for vPvB according to Regulation (EC) No.1207/2006, Annex XIII	Not available	
Other hazards which do not result in classification	Fine dust clouds may form explosive mixtures with air. Dust explosion class No. 1. Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat.	
SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS		
3.1 Substances		
Components	INDEX No. as listed in Annex VI of CLP	Weight % content (or range)
Urea	Not listed	Not less than 97 % (w/w)
<i>Note: This substance is treated with conditioning agent (urea-formaldehyde resin).</i>		
SECTION 4: FIRST-AID MEASURES		
4.1 Description of first aid measures		
General notes:	Appropriate first-aid equipment should be provided. No action shall be taken involving any personal risk or without suitable training.	
Following eye contact:	Irrigate thoroughly with water for at least 10 minutes. Obtain medical attention.	
Following skin contact:	Wash the affected parts with water and soap.	
Following ingestion:	Wash out mouth with water. Do not induce vomiting. If victim is conscious, give water to drink. If victim feels unwell seek medical attention.	
Following inhalation:	Remove from exposure. In severe cases, or if recovery is not rapid or complete seek medical attention.	
Self-protection for the first aider:	None	
4.2 Most important symptoms and effects, both acute and delayed		
Potential acute health effects		
Eye contact:	Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.	
Inhalation:	Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.	
Skin contact:	No known significant effects or critical hazards.	
Ingestion:	No known significant effects or critical hazards.	
Over-exposure signs/symptoms		
Eye contact:	Adverse symptoms may include the following: irritation, redness.	
Inhalation:	Adverse symptoms may include the following: respiratory tract irritation, coughing.	
Skin contact:	No specific data. The substance can be absorbed through skin.	
Ingestion:	No specific data. Nausea, vomiting, diarrhea.	
4.3 Indication of any immediate medical attention and special treatment needed		
Notes to physician:	In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.	
Specific treatments:	No specific treatment	
SECTION 5: FIRE-FIGHTING MEASURES		
5.1 Extinguishing media		
Suitable extinguishing media::	Water and extinguishers suitable to put out the cause of fire	
Not suitable extinguishing media::	None	
5.2 Special hazards arising from the substance or mixture		
Hazards from the substance or mixture:	Fine dust clouds may form explosive mixtures with air	
Hazardous combustion products:	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides ammonia, amines	

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5.3 Advice for firefighters	
Special precautions for fire-fighters:	No special measures required
Special protective equipment for fire-fighters:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for firefighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
Remarks : References: SECTION 9: Physical and chemical properties.	
SECTION 6: ACCIDENTAL RELEASE MEASURES	
6.1 Personal precautions, protective equipment and emergency procedures	
6.1.1 For non-emergency personnel <u>Protective equipment</u> : Put on appropriate personal protective equipment. <u>Emergency procedures</u> : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. No flares, smoking or flames in hazard area. Avoid breathing dust.	
6.1.2 For emergency responders: If specialized clothing is required to deal with the spillage, take note of any information in Section 8. See also the information in "For non-emergency personnel".	
6.2 Environmental precautions:	
Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).	
6.3 Methods and material for containment and cleaning up	
6.3.1 For containment: Avoid creating dusty conditions and prevent wind dispersal. Isolate and stop discharge. Take immediate steps to contain the spillage.	
6.3.2 For cleaning up: Vacuum or sweep up and place into approved containers for later disposal.	
6.3.3 Other information Dispose of via a licensed waste disposal contractor.	
6.4 Reference to other sections See section 8 for personal protective equipment and section 13 for waste disposal.	
Remarks : Warning!: Dust explosion class 1	
SECTION 7: HANDLING AND STORAGE	
7.1 Precautions for safe handling	
<u>Protective measures</u> : Put on appropriate personal protective equipment (see Section 8). Avoid breathing dust. Wear appropriate respirator when ventilation is inadequate. <u>Measures to prevent fire</u> : Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. <u>Measures to prevent aerosol and dust generation</u> : Prevent dust accumulation. Use only with adequate ventilation. <u>Measures to protect the environment</u> : Prevent from sewage or ground/surface water. <u>Advice on general occupational hygiene</u> : Do not eat, drink or smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.	
7.2 Conditions for safe storage, including any incompatibilities	
Technical measures/Storage conditions:	Store under dry conditions. Store in accordance with local regulations. Store in a segregated and approved area, away from incompatible materials (see section 10) and food and drink. Separate from oxidizing materials. The substance is hygroscopic.
Packing materials:	Polypropylene
Requirements for storage rooms and vessels: Storage class:	13
Further information on storage conditions:	None
Incompatible products:	Strong oxidizing agents (hypochlorites, nitric acid, sodium nitrite, etc.)
7.3 Specific end use(s):	None

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SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION**8.1 Control parameters**

8.1.1 National occupational exposure limit values: Not available

8.1.2 National biological limit values: Not available

8.1.3 PNEC (Predicted No Effect Concentration):

Environmental protection target	PNEC
Aqua – freshwater	0.047 mg/L
Aqua - salt water	0.047 mg/L
Aqua – intermittent releases	No exposure expected
Sediment	No exposure expected
Soil	No exposure expected
Sewage treatment plant	No exposure expected
Food chain: oral (secondary poisoning)	No exposure expected
Air:	No exposure expected

8.1.4 DNEL:

Route	ACUTE	
	Derived No Effect Level (DNEL)	
	Workers	General population
Oral	Not applicable	42 mg/kg bw/day
Dermal	580 mg/kg bw/day	580 mg/kg bw/day
Inhalation	292 mg/m ³	125 mg/m ³

Route	LONG TERM	
	Derived No Effect Level (DNEL)	
	Workers	General population
Oral	Not applicable	42 mg/kg bw/day
Dermal	580 mg/kg bw/day	580 mg/kg bw/day
Inhalation	292 mg/m ³	125 mg/m ³

No evidence of local effects is seen in any of the dermal studies performed with urea; there is no evidence of local effects from human studies or from experience of human exposure. Respiratory irritation is not predicted. DNELs for local effects are therefore not relevant and are not calculated for urea.

8.1.5 Monitoring procedures: Not available

8.2 Exposure controls

8.2.1 Appropriate engineering controls:

Substance/mixture related measures to prevent exposure during identified uses: None required.

Technical measures to prevent exposure: Use of adequate ventilation is good industrial practice. In addition, an eyewash facility and a safety shower for facilities storing or utilizing this material is good industrial practice.

8.2.2 Personal protection equipment:

8.2.2.1 Respiratory protection:	Wear dust protection mask, suitable protective equipment.
8.2.2.2 Skin protection: Hand protection:	>8 hours (breakthrough time): Nitril rubber (0.35 mm), butyl rubber (0.5 mm), natural rubber (latex) (0.5 mm), neoprene (0.5 mm), Viton (0.4 mm). Replace damaged gloves.
Other skin protection:	Working clothes.
8.2.2.3 Eye and face protection:	Safety glasses with side shields, suitable protective equipment.
8.2.2.4 Thermal hazards:	None

Advice on personal protection is applicable for high exposure levels.**Select proper personal protection based on a risk assessment of the actual exposure situation**

8.2.3 Environmental exposure controls: Dispose of rinse water in accordance with local and national regulations.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**9.1 Information on basic physical and chemical properties**

Appearance:	Solid crystalline, white
Odour:	Slight

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Odour threshold:	Not available				
pH:	7,2-9,0 (10% sol)				
Melting/Freezing point:	133,3 – 134°C				
Initial boiling point and boiling range:	No boiling point, decomposes before the boiling point is reached				
Flash-point:	Study technically not feasible				
Evaporation rate:	Not available				
Flammability (solid, gas):	Non-flammable				
Auto-ignition temperature	No evidence of autoflammability				
Upper/lower flammability or explosive limits	Not applicable				
Oxidising properties	None				
Vapour pressure:	0,002 Pa at 25°C				
Vapour density:	Not available				
Relative density:	1,330 g/cm ³ at 20°C				
Solubility in water:	624 g/l at 20°C				
Partition coefficient n-octanol/water:	-1,73 at 20°C				
Decomposition temperature:	Above 220°C				
Viscosity:	Study technically not feasible				
Explosive properties:	Not available				
9.2 Other information					
Molecular weight : 60.06 g/mole					
SECTION 10: STABILITY AND REACTIVITY					
10.1 Reactivity					
No specific test data related to reactivity available for this product or its ingredients.					
10.2 Chemical stability					
The product is stable. The substance is hygroscopic.					
10.3 Possibility of hazardous reactions					
No hazardous reaction when handled and stored according to these provisions (see section 7, handling and storage).					
10.4 Conditions to avoid					
Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Prevent dust accumulation. Exposure to sources of heat. Exposure to moisture.					
10.5 Incompatible materials					
Strong oxidizing agents (hypochlorites, nitric acid, sodium nitrite, etc.) Risk of explosion with: oxidizing substances, chromyl chloride, perchlorates, chlorine, nitrites, nitrosyl compounds, acids, nitrates. Reacts with: alkalis, calcium and sodium hypochlorite.					
10.6 Hazardous decomposition products					
Under normal conditions of storage and use, hazardous decomposition products should not be produced. In case of fire: ammonia, carbon oxides, nitrous oxides.					
SECTION 11: TOXICOLOGICAL INFORMATION					
11.1 Information on toxicological effects					
11.1.1 Acute toxicity					
<i>Route of exposure</i>	<i>Species</i>	<i>Method</i>	<i>Effective dose</i>	<i>Exposure time</i>	<i>Results</i>
inhalation	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
oral	rat (Wistar) male/female	oral: gavage equivalent or similar to OECD Guideline 401 (Acute Oral Toxicity)	–	–	LD ₅₀ : 14300 mg/kg bw
dermal	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
11.1.2 Skin corrosion/irritation:		Not irritating			
11.1.3 Serious eye damage/irritation:		Not irritating			
11.1.4 Respiratory or skin sensitization:		Not sensitizing			
11.1.5 Germ cell mutagenicity:		Negative			
11.1.6 Reproductive toxicity:		Not available			

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11.1.7 Carcinogenicity:	Not carcinogenic			
11.1.8 STOT-single exposure:	Not available			
11.1.9 STOT-repeated exposure:	Not available			
11.1.10 Aspiration hazard:	Not available			
SECTION 12: ECOLOGICAL INFORMATION				
12.1 Toxicity				
Fish (freshwater, short-term):	LC50 values range from >6810 to 28000 mg/l			
Fish (long-term):	Not applicable, urea is of inherently low toxicity			
Freshwater invertebrates (short-term):	EC50/LC50 - 10000 mg/l			
Freshwater invertebrates (long-term):	Not applicable, urea is of inherently low toxicity			
Freshwater algae:	EC10/LC10 or NOEC - 47 mg/l			
Terrestrial plants:	The substance is widely used as a plant nutrient (N-source) in fertilizer, hence toxicity is unlikely			
Soil macro-organisms:	Urea is of low toxicity and rapidly assimilated into the nitrogen cycle by soil microorganisms			
Birds:	The limited data available indicate that urea is of low toxicity to birds			
Mammals:	Low toxicity is predicted base on the physiological production of urea by mammalian species			
12.2 Persistence and degradability				
<i>Abiotic degradation:</i>				
Hydrolysis:	Not predicted based on a theoretical assessment of the structure of the molecule.			
Phototransformation/photolysis:	No data are available: not required.			
<i>Biodegradation:</i>	Urea is considered to be readily biodegradable.			
12.3 Bioaccumulative potential				
Partition coefficient n-octanol /water (log Kow)	-1.73 at 20 °C			
Bioconcentration factor (BCF)	Not available			
Due to the low log Kow value urea is not likely to undergo bioaccumulation				
12.4 Mobility in soil				
Adsorption coefficient:	from 0,037 to 0,064			
12.5 Results of PBT and vPvB assessment				
Urea is neither a PBT nor a vPvB substance				
12.6 Other adverse effects:				
No known significant effects or critical hazards				
Remarks: No ecological problems are to be expected when the product is handled and used with due care and attention.				
12.7 Additional information: None				
SECTION 13: DISPOSAL CONSIDERATIONS				
13.1 Waste treatment methods				
13.1.1 Product / Packaging disposal:	Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.			
Waste codes/ waste designations according to LoW (Commission Decision 2001/118/EC):	06 10 99 Wastes not otherwise specified			
13.1.2 Waste treatment-relevant information:	Dispose of surplus and non-recyclable products via a licensed waste disposal contractor.			
13.1.3 Sewage disposal-relevant information:	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.			
13.1.4 Other disposal recommendations:	The generation of waste should be avoided or minimized wherever possible.			
SECTION 14: TRANSPORT INFORMATION				
Urea is not classified as a dangerous substance when carried by road (ADR), train (RID) or maritime (IMDG)				
	ADR/RID	ADN/ADNR	IMDG	IATA
14.1 UN number	Not regulated	Not regulated	Not regulated	Not regulated
14.2 UN proper shipping name	-	-	-	-
14.3 Transport hazard class(es)	-	-	-	-
14.4 Packing group	-	-	-	-

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14.5 Environmental hazards	No	No	No	No
14.6 Special precautions for user	Not available	Not available	Not available	Not available
Additional information	–	–	–	–
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not available				
SECTION 15: REGULATORY INFORMATION				
15.1 Safety, health and environmental regulation/legislation specific for the substance or mixture				
EU Regulations				
Authorisations and/or restrictions on use:				
Authorisation: EU Regulation (EC) No. 1907/2006 (REACH); Annex XIV - List of substances subject to authorisation Substances of very high concern	None of the components are listed			
Restrictions on use: Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	Not applicable			
National regulations (<i>country</i>): Not available				
15.2 Chemical safety assessment:	In accordance with REACH Article 14, the Chemical Safety Assessment has been carried out for this substance.			
SECTION 16: OTHER INFORMATION				
The information provided in this safety data sheet is correct to the best of our knowledge, information, and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal, and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any proceed, unless specified in the text.				
16.1 Indication of changes:	Changes were made to comply with the Guidance on the compilation of safety data sheets (version 1.1)			
Page header; 1.1; 1.3; 1.4; 3.1; 4.1; 6.1; 6.3; 7.1; 7.2; 8.1; 8.2; 9.1; 11.1; 12.2; 12.3; 12.7; 13.1; 15.1				
16.2 Abbreviations and acronyms:				
<ul style="list-style-type: none"> • ADN - European Agreement concerning the International Carriage of Dangerous Goods on Inland Waterway • ADNR - ADN Rhine • ADR - Agreement on Dangerous Goods by Road • CAS - Chemical Abstracts Service • CLP - Classification, Labelling and Packaging of chemicals • DSD - Dangerous Substance Directive • EC - European Commission • EC50 - half maximal effective concentration • EINECS - European Inventory of Existing Commercial Chemical Substances • IATA - International Air Transport Association • IBC Code - International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk • IMDG - International Maritime Dangerous Goods • IUPAC - International Union of Pure and Applied Chemistry • LC50 - Lethal Concentration • LD50 - Lethal Dose • LoW - List of Wastes • MARPOL - International Convention for the Prevention of Pollution From Ships • NOAEL - No observable adverse effect level • NOEC - No Observed Effect Concentration • OECD - Organization for Economic Co-operation and Development • PBT - Persistent, bioaccumulative, toxic chemical • PJSC - Public Joint-Stock Company • REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals • RID - International Rule for Transport of Dangerous Substances by Railway • STOT - Specific Target Organ Toxicity • UN - United Nations • vPvB - very persistent, very bioaccumulative 				
16.3 Key literature references and sources for data: CSR (Chemical Safety Report), Guidance on safe use etc.				
16.4 Training advice:	In accordance with the local regulations			
16.5 Further information:	None			