**MATERIAL SAFETY DATA SHEET**

Date of Compilation: «11» 09 2021 y.

## 1 Product and Vendor Identification

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| **Product Name (Technical according to ND)** | Granular Urea(Carbamide) |
| **Chemical Name (IU-HFC)** | Carbonildiamide |
| **Trade Name** | Carbamide Mark A and B |
| **Application** | Carbamide is intended for use in industry as a raw material for production of resins, adhesives, etc., in agriculture, including personal subsidiary farms and farms as a mineral nitrogen fertilizer, as well as in animal husbandry as a feed additive.<br>Depending on its intended use Carbamide is produced in two marks (A and B):<br>A - for industry;<br>B - for crop, livestock and retail sale. |

**Vendor details:**

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| 1.1 Full official name of the 1.2 organization | «Navoiyazot» Joint Stock Company |
| 11.2 Postal address, telephone number, including for emergency consultations, time limits | 210105, Uzbekistan, Navoi city.<br>Fax: (436) 223-75-80, (99879) 223-75-80, (436) 229-22-04, (436) 229-22-90, (436) 229-20-54<br>E-mail: **office@navoiyazot.uz** |
| 1.3 Information on international product certification | ISO 9001:2015 QMSCERT № 250717-6<br>ISO 50001:2018 QMSCERT № 250717-7<br>ISO 14001:2015 QMSCERT № 291217-4<br>ISO 45001:2018 QMSCERT № 291217-5 |
| Responsible for supplying products to the market | Director of Marketing, Sales and Procurement - Z. P. Jumayev. |
| **2 Hazard identification** | |
| 2.1 Hazard characteristics: | According to the degree of impact on the human body Carbamide is classified as moderately hazardous substances (Hazard Class 3 according to GOST 12.1.007).The maximum permissible concentration (MPC) in the air of the working area of production facilities is 10 mg/m3.Carbamide under normal conditions is incombustible, fire and explosion-proof. During prolonged storage in bulk at elevated temperatures it may cake and partially decompose forming biurethane and ammonia gas - combustible substance. |

| 3 Composition (component information) | |
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| 3.1 Technical name | Carbamide Marks A and B |
| 3.2 Chemical formula | $CO(NH_2)_2$ |
| 3.3 Composition | |
| 3.3.1 General description | |

| The name of indicator | Norm for Mark A | |
|---|---|---|
| | Top grade | 1-st grade |
| 1 | 2 | 3 |
| 1. Mass fraction of nitrogen in terms of dry matter,%, no less | 46,3 | 46,2 |
| 2. Mass fraction of biuret,%, no more | 0,6 | 1,4 |
| 3. Mass fraction of free ammonia,%, no more, for urea:<br>Crystalline<br>Granular | <br>0,01<br>0,02 | <br>0,01<br>0,03 |
| 4. Mass fraction of water,%, no more:<br>Hygroscopic<br>General | <br>0,3<br>0,6 | <br>0,3<br>0,6 |

| The name of indicator | Norm for Mark B | | | | |
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| | for crop production | | | for retail | for animal husbandry |
| | Top grade | 1-st grade | 2-nd grade | | |
| 1 Appearance | Granules or crystals white or slightly colored | | | | |
| 2 Mass fraction of nitrogen in recalculation on dry matter, %, no less | 46,2 | 46,2 | 46,2 | 46,2 | 46,0 |
| 3 Mass fraction of biuret, %, no more | 1,4 | 1,4 | 1,4 | 1,5 | 3,0 |
| 4 Mass fraction of water, % no more:<br>- hygroscopic<br>- total | <br>0,3<br>0,5 | <br>0,3<br>0,5 | <br>0,3<br>0,6 | <br>0,3<br>- | <br>0,3<br>- |
| 5 Mass fraction of free ammonia, %, no more: | Not standardized | | | | 0,03 |
| 6 Crumbliness, % | 100 | 100 | 100 | - | - |
| 7 Particle size distribution,%: weight fraction of pellets with size, mm:<br>- from 1 to 4, not less than<br>- from 2 to 4, not less than<br>- less than 1, not more than<br>- rest on sieve 6 mm | <br><br>94<br>70<br>3<br>absence | <br><br>94<br>50<br>5<br>absence | <br><br>94<br>-<br>5<br>absence | <br><br>-<br>-<br>-<br>- | <br><br>-<br>-<br>-<br>- |
| 8 Static strength of gras-zero, MPa (kg/cm2), not less than or in conversion to 1 granule, N (kgf), not less than | 1,4 (14)<br>7 (0,7) | 1,2 (12)<br>5 (0,5) | 1,2 (12)<br>3 (0,3) | -<br>- | -<br>- |
| Note: The norm for indicator 7 is set when using sieves with round holes. | | | | | |

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| 3.4 Synonyms: | |
| 3.4.1 JCP code | 21 81910200 |
| 3.4.2 FEACN CU code | 3102101000 |
| 3.4.3 NCEO code | 00203849 |

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| **4 First aid measures** | |
| 4.1 Human exposure<br>4.1.1 General characteristics | Prolonged inhalation of Carbamide dust in concentrations exceeding maximum permissible concentration leads to development of chronic inflammation of tracheal and bronchial mucosa (tracheobronchitis), changes in liver and kidney function, inhalation poisoning - irritation of mucosa of respiratory tract, difficulty in breathing; if ingested - frothy nasal discharge, blue skin, seizures (if severely poisoned). Skin exposure - irritation; eye exposure - lacrimation, corneal damage. |
| 4.1.2 Routes of intake: | In contact with the skin and mucous membranes of the eyes. Can also penetrate through the respiratory organs, gastrointestinal tract. |
| Observed symptoms:<br>- by skin exposure | Inhalation poisoning causes irritation of the respiratory mucosa and difficulty in breathing. |
| - In contact with skin | Irritation. |
| - In contact with eyes | Lacrimation, corneal damage. |
| 4.2. In case of inhalation poisoning (inhalation and ingestion): | Call an ambulance. Fresh air, rest, warmth, clean clothes. Rinse mouth and nose thoroughly with water. If swallowed, give plenty of fluids, activated charcoal, saline laxatives. |
| 4.2.1 In contact with skin | Rinse with plenty of water. |
| 4.2.2 In contact with eyes | Affected eyes should be immediately rinsed with cold water for 10-30 minutes with eyelids well open, followed by admission to an ophthalmology department. |
| First aid measures: | Until the arrival of the ambulance:<br>- provide rest,<br>- Ensure the body is warm,<br>- Unfasten constricting clothing. |
| 4.3 Availability of first aid equipment: | Medical kit. |
| **5 Fire safety measures and facilities** | |
| 5.1 General characteristics of fire flammability | Carbamide under normal conditions is not flammable, explosion-proof |
| 5.2 Indicators of fire and explosion hazards: | Ignition temperature - 223 0C.<br>Auto-ignition temperature - 640 0C.<br>Auto-ignition temperature of aerosol suspension - 470 0C.<br>Flash point - 182 0C (open crucible).<br>Lower concentration limit of aero-suspension flame spread - 70.0 g/m3. |
| 5.3 Hazard caused by combustion products or thermodegradation: | Carbamide under normal conditions is not flammable, explosion-proof. |
| 5.4 Recommended means of fire extinguishing: | Carbamide under normal conditions is not flammable, explosion-proof. |
| 5.5 Prohibited means of fire extinguishing: | Carbamide under normal conditions is not flammable, explosion-proof |
| 5.6 Personal protective equipment for firefighting (PPE for firefighters and personnel) | For chemical reconnaissance and work manager - PPU-3 (for 20 min). For emergency crews - insulating protective suit KIH-5 complete with insulating gas mask IP-4M or breathing apparatus ASV-2. Acid-resistant rubber, butyl rubber dispersion gloves, special shoes. In the absence of the above samples: general service protective suit L-1 or L-2, complete with an industrial gas mask and breathing apparatus A (or "A2B2E2AXR3", "A2B2E2K2P3XL", "M", "KD"). In case of fire - flame retardant suit complete with self-rescuer SPI-20. |
| 5.7 Specifics of firefighting | Carbamide under normal conditions is not flammable, explosion-proof. |
| **6 Measures to prevent emergencies** | |

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| 6.1 General recommendations: | Sealing of production equipment.<br>Ensuring control of working area air.<br>Production processes are equipped with modern monitoring and automatic control devices.<br>The equipment shall be grounded.<br>Passages, driveways, entrances to buildings, stairwells, access to fire-fighting equipment shall not be cluttered. |
| 6.2 Measures to prevent emergencies<br>6.2.1 Recommendations for: Fire and explosion safety | Carbamide under normal conditions is not flammable, explosion-proof. |
| 6.2.2 Handling and storage | Carbamide should be stored in covered, well-ventilated warehouses that protect the product from atmospheric precipitation.<br>When storing the product in bulk, urea should not be allowed to mix with other types of fertilizers.<br>Containers with urea and transportation packages bound with shrink-wrap should be stored outdoors.<br>During storage it is necessary to observe sanitary rules establishing hygienic requirements for storage, application and transportation of agrochemicals. |
| 6.2.3 Ensuring personnel safety | Ventilation of rooms, compliance with the norms of technological mode, use of PPE, compliance with the requirements of safety instructions and fire safety. |
| 6.2.4 Environmental protection | Sealing of technological equipment, transport containers, compliance with the norms of technological mode in the production of the product. |
| 6.3 Measures to eliminate emergencies.<br>Necessary actions<br>6.3.1 General measures | Isolate the hazardous area in a radius of at least 50 m. Avoid low areas. Keep to windward side. Keep other people out of the danger zone. Wear protective equipment when entering the danger zone. Do not smoke. Eliminate sources of fire and sparks.<br>Keep to a neutral position. Give first aid to casualties. Send people out of the affected area for medical examination. |
| **7 Handling and storage rules** | |
| 7.1 Safety measures and means of protection when working with the substance | All work must be carried out using PPE.<br>Maintain regular monitoring of the air environment. |
| 7.2 Conditions and terms of safe storage | Carbamide should be stored in covered, well-ventilated warehouses that protect the product from atmospheric precipitation.<br>When storing the product in bulk, urea should not be allowed to mix with other types of fertilizers.<br>Containers with urea and transportation packages bound with shrink-wrap should be stored outdoors.<br>When storing, it is necessary to comply with sanitary regulations which establish hygienic requirements for the storage, application and transportation of agrochemicals.<br>Guaranteed storage life of urea in accordance with the requirements of GOST 2081:2010 is 6 months from the production date. Guaranteed shelf life of Carbamide intended for retail sale is 2 years from the production date. |
| 7.2.1 Incompatible substances (materials) during storage | When storing the product in bulk, urea should not be allowed to mix with other types of fertilizers. |
| 7.2.2 Materials recommended for packangs | Carbamide is packed in containers made of waterproof materials. The following containers are used for transportation:<br>- Five- and six-layer paper butimized or laminated bags as per GOST 2226; |

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| | - Polyethylene bags according to GOST 17811;<br>- polypropylene bags in accordance with GOST 30090, sewed with an inner polyethylene insert.<br>It is allowed to pack urea in imported bags or other transport packaging (strength and quality not less than listed). |
| **8 User safety rules and measures** | |
| 8.1 Parameters of the work area subject to mandatory control (MPC) | Carbamide is classified as Hazard Class 3 in terms of its impact on the human body. The maximum permissible concentration (MPC) of urea dust in the air of the working area of production facilities is 10 mg/m3. |
| 8.2 Measures to ensure the content of harmful substances in permissible concentrations | Sealing of production equipment and pipelines, operation of supply and exhaust ventilation. Systematic monitoring of the condition of the air environment. |
| 8.3 Personnel protection measures and equipment<br>8.3.1 General recommendations | When working with urea, necessary protective equipment should be used. Observe safety precautions. Avoid direct contact with the product. Undergo periodic medical examinations. |
| 8.3.2 Respiratory protection | Filtering gas mask with a box of "KD", "M" or "A2B2E2AXR3", "A2B3E3AXR3" and insulating. As well as a respirator RU-60MB or RU-60mu according to GOST 17269, U-2k or F-62Sh or RPA-1 respirator according to standard documents, respirator RPG-67 according to GOST 12.4.004, a cotton gauze bandage. |
| 8.3.3 Protective clothing | Special suits, special footwear - boots according to GOST 5394 or boots according to GOST 5375, helmet, rubber apron. |
| 8.3.4 Eye protection | Protective goggles. |
| 8.3.5 Hand protection | Rubber knitted gloves. |
| **9 Physical and chemical properties** | |
| 9.1 Physical state (aggregate state, color) | Granules or crystals are white or slightly colored. |
| 9.2 Parameters characterizing the main properties of the substance (primarily hazardous) | The molecular weight of Cambamide is 60.05 g/mol.<br>Density of urea at 20 °C is 1.335 kg/m3.<br>Urea melting point - 132,6 °C.<br>Inflammation temperature - 223 0C.<br>Auto-ignition temperature - 640 0C.<br>Autoignition temperature of the aerosol suspension - 470 0C.<br>Flash point - 182 0C (open crucible).<br>Lower concentration limit of aerosol suspension flame spreading - 70.0 g/m3. |
| **10 Stability and chemical activity** | |
| 10.1 Stability | The product is stable when stored in a sealed container. |
| 10.2 Conditions causing a hazardous reaction | During prolonged storage in bulk at elevated temperatures, it may cake and partially decompose to form biurethane and ammonia-burning gas. |
| 10.3 Substances which may cause a hazardous reaction | No data available. |
| 10.4 Possibility of dangerous exothermic reaction | No data available.. |
| 10.5 Shelf life under ful- | Guaranteed storage life of urea in accordance with the requirements of |

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| filled conditions | GOST 2081:2010 is 6 months from the production date. Guaranteed storage life of Carbamide intended for retail sale - 2 years from the production date. |
| **11 Toxicity** | |
| 11.1 Assessment of the degree of hazard (toxicity) impact on the human body | Carbamide is classified as Hazard Class 3 in terms of its impact on the human body. The maximum permissible concentration (MPC) of urea dust in the air of the working area of production facilities is 10 mg/m3. |
| 11.2 Information about the health hazards of direct contact with the substance, as well as the consequences of these effects (irritant effect on the upper respiratory tract, eyes, skin) | Prolonged inhalation of Carbamide dust in concentrations exceeding maximum permissible concentration leads to development of chronic inflammation of tracheal and bronchial mucosa (tracheobronchitis), changes in liver and kidney functions, inhalation poisoning - irritation of mucosa of airways, difficulty in breathing; if ingested - frothy discharge from nose, blue skin, seizures (at severe poisoning). On skin - irritation; on eyes - lacrimation, corneal damage. |
| **12 Impact on the environment** | |
| 12.1 Assessment of possible environmental impacts | The main type of hazardous impact on the environment is atmospheric air pollution in populated areas as a result of emissions, discharges, storage violations, accidents. |
| 12.2 Most important characteristics of the environmental impact | When storing and transporting carbamide, measures should be taken to prevent its uncontrolled penetration into the environment.<br>Application of carbamide should comply with the rules of environmental protection against harmful effects of mineral fertilizers. Doses of carbamide - a source of amide nitrogen are determined by soil conditions, crops grown and should not lead to contamination of soil, water bodies and the environment, accumulation in soil and agricultural products. |
| 12.2.1 Hygienic standards | The maximum permissible average daily mass concentration of urea in the atmospheric air of residential areas is 0.2 mg/m3 which corresponds to Hazard Class 4.<br>Maximum allowable concentration of urea in water bodies intended for fishery purposes is 80.0 mg/dm3. |
| 12.2.2 Toxicity | It is not toxic. |
| **13 Waste management and storage** | |
| 13.1 Safety requirements for waste management | Use PPE when handling waste.<br>Waste handling safety measures are the same as for product handling. |
| 13.2 Waste neutralization or disposal methods | In case of spillage enclose with an earthen berm, collect in dry containers and seal hermetically. |
| **14 Transportation rules** | |
| 14.1 Shipping name | Carbamide marks A and B |
| 14.2 Transport marking (handling marks) and information inscriptions | Transport marking - according to GOST 14192 with application of manipulation sign "Protect from moisture" and additional data characterizing products, as well as in accordance with cargo carriage regulations applicable to the respective type of transport.<br><br>Labeling of packaged carbamide intended for export must meet the requirements of the agreement (contract) or GOST 14192. |
| 14.3 Classification of dangerous goods | Carbamide is not classified as hazardous cargo and is not classified according to GOST 13493. |

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| 14.4 Type of vehicles | Carbamide is transported by all means of transportation in accordance with cargo carriage regulations applicable to a particular transportation mode. |
| 14.5 Safety requirements for transportation | Carbamide is transported by all means of transportation in accordance with cargo carriage regulations applicable to a particular transportation mode. |
| **15 References** | |
| 15.2 GOST 2081-2010 "Granulated urea".<br>15.3 Emergency cards for hazardous cargoes transported by railroads of CIS, Latvian Republic, Lithuanian Republic, Estonian Republic, Moscow, "Transport" 2000.<br>15.4 Safe levels of hazardous substances in the environment.<br>Severodonetsk, 1990 | |
| **16 Additional Information** | |
| 16.1 Emergency cards for dangerous goods transported on CIS railroads,<br>Republic of Latvia, Republic of Lithuania, Republic of Estonia, Moscow, "Transport", 2000.<br>16.2 GOST 30333-2007 Safety data sheet for chemical products. | |

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**AGREED:**

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