

**UREA**


REVISION DATE: 19/09/2022

1. - PRODUCT AND COMPANY IDENTIFICATION**Product name:** Urea.**Internal Code of product identification:** 131.35.0.**Company name:** USIQUÍMICA DO BRASIL LTDA.**Address:** Rua da lagoa, 431 - Cumbica - Guarulhos - SP.**Company phone:** + 55 11 3821-7000 - PBX system.**Emergency phone:** SUATRANS - COTEC - Environmental Emergency.

DDG (0800) 0111-767 - (0800) 7071-767 - 24 HOURS.

193 – Firefighters.

Main recommended uses for the substance: Used in the manufacture of fertilizers.**2. - HAZARD IDENTIFICATION****Classification of the substance or mixture (according to ABNT NBR 14.725-2):****Toxicity:** Category 5**Corrosion:** Category 5**Skin irritation:** Category 5**Eye injury/irritation:** Category 4**Respiratory sensitization:** Category 4**Mutagenicity:** Category 4**Systemic/target organ toxicity:** Category 4**Aspiration:** Category 4**Label element (according to ABNT NBR 14.725-2):**

| LABEL ELEMENTS | DATA |
|---|---|
| Product identification and supplier emergency telephone number. | Commercial Name: UREA (NH ₂) ₂ CO. Synonym: CARBAMIDE (NH ₂) ₂ CO. Emergency phone: SUATRANS - COTEC - Environmental Emergency. DDG (0800) 0111-767 - (0800) 7071-767 - 24 HOURS |
| Chemical composition. | Total nitrogen: 46.1-46.4% (Minimum, N. 46%). Water: 0.10 - 0.40% (Maximum: 0.5%). Biuret: 0.80 -1.40% (Maximum: 1.5%). Free Ammonia: 72,0 - 129,6 ppm (Maximum: 275 ppm). |
| Hazard pictograms. |  |
| Warning words. | ATTENTION |
| Danger phrases. | Causes eye irritation. Causes moderate skin irritation. May cause genetic defects. |
| Precautionary phrases. | Keep out of reach of children and pets. Avoid contact with skin and eyes. Do not use or store near heat or flame. Do not store or transport with hypochlorite's or strong oxidizing agents. Never vacuum dust from the product. |
| | The Material Safety Data Sheet (MSDS) for this |

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| Other information. | chemical can be requested via phone + 55 11 3821-7000 / + 55 11 2481-3355 or via e-mail: laboratorio@usiquimica.com.br |
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Other hazards which do not result in classification: No other hazards occur

3.- COMPOSITION AND INFORMATION ON THE INGREDIENTS

Substance: Urea - $(\text{NH}_2)_2\text{CO}$.

Common chemical name or generic name: Urea $(\text{NH}_2)_2\text{CO}$.

Synonym: Carbamide, carbonyldiamide.

Chemical Abstract Service (CAS No): 57-13-6.

Impurities that contribute to the danger: Free Ammonia - 72.0-129.6 ppm (maximum 275 ppm) - CAS: 7664-41-7.

4 - FIRST AID MEASURES

Inhalation: Remove casualty to uncontaminated, ventilated area. If breathing is difficult, give oxygen. Apply resuscitation maneuvers in case of cardiorespiratory arrest. Immediately forward to the nearest hospital.

Skin contact: Remove clothing contaminated by the product. Wash contact areas with plenty of water. If irritation persists, seek medical attention.

Eye contact: Immediately wash eyes with running water for 15 minutes, lifting eyelids to allow maximum removal of product. seek medical attention.

Ingestion: Do not induce vomiting. If vomiting occurs spontaneously, the victim must be laid on their side to prevent pulmonary aspiration. If the victim does not suffer from seizures, give him 0.5 to 1 liter of water to dilute the material. seek medical attention.

5. - FIREFIGHTING MEASURES

Suitable extinguishing measures: Urea is not a fire hazard, however it can burn. In this case use water spray, alcohol resistant foam, dry chemical or carbon dioxide.

Small fire: Use dry chemical powder.

Large fire: Use water spray or alcohol resistant foam.

Avoid the application of excess water, as there may be contamination of water courses.

Inappropriate extinguishing measures: Do not use water jets.

Special methods to fire fighting: Not found.

Protection of people involved in fighting the fire: Wear protective clothing and self-contained respiratory protective equipment or a blown air mask if necessary.

Specific hazards of chemical combustion: Reaction with nitrates presents the risk of fire and explosion. Urea is not a fuel, but decomposes at temperatures above 133°C to form toxic vapors.

6. - CONTROL MEASURES FOR SPILLING OR LEAKING

Personal precautions, protective equipment and emergency procedures:

Removal of ignition sources: Keep the product away from sources of heat and ignition.

Urea presents a risk of decomposition when exposed to heat or flame.

Prevention of inhalation and contact with skin, mucous membranes and eyes: See Section 8, field "Appropriate Protective Equipment"

For the staff that is not part of the emergency services:

Prevention of inhalation and contact with skin, mucous membranes and eyes: See Section 8, field "Appropriate Protective Equipment"

For the staff of the emergency department:

Prevention of inhalation and contact with skin, mucous membranes and eyes: See Section 8, Field "Appropriate Protective Equipment"

Precautions to the environment

In case of spillage, the product must be collected, as contact in high concentration will cause damage to vegetation. Report the fact immediately to the environmental control agency in the region. Falling into streams or rivers should be avoided, as this could make them unsuitable for human and animal consumption.

Methods and material for to containment and cleaning

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- a) Neutralization techniques: Not applicable.
- b) Decontamination techniques: Not applicable.
- c) Absorbent materials: Not applicable.
- d) Cleaning techniques: Collect the spilled product, avoiding the formation of dust.
- e) Aspiration cleaning: Not applicable.
- f) Equipment and tools: Hoes, shovels, brooms and backhoe.

7. - HANDLING AND STORAGE

Precaution for handling: Ensure sufficient ventilation or the existence of exhaust in the room to control the ambient concentration at low levels. Always use personal protective equipment (section 8).

Appropriate technical measures: If handling and storage operations generate dust or mist, use forced ventilation to keep the contaminant below the exposure limit.

Prevention of worker's exposure: Submit the entire system to periodic maintenance control. Keep staff permanently trained.

Prevention of fire and explosion: Keep the product away from heat and flame.

Precautions and guidance for safe handling, including any incompatibilities: To reduce the possibility of a health risk, ensure sufficient diluting ventilation or the existence of exhaust in the room to control ambient concentration to low levels. Always use personal protective equipment.

Appropriate hygiene measures: Do not eat, drink or smoke at the workplace. Wash your hands after handling the product and change your clothes before entering a meal.

Storage: Store the product in a cool, well-ventilated area, away from heat, sparks and open flame. Do not mix or store ammonium nitrate with urea as they will react to produce a paste.

Packaging materials: The product is sold in bulk or bagged. Recommendations: Always use specified material, compatible with the product.

Inadequate: Avoid using incompatible material. See sections 10.

8. - EXPOSURE CONTROLS AND PERSONAL PROTECTION

Parameters of specific control:

Occupational exposure limits:

For urea: AIHA WEEL: 10 mg/m³ (8h, TWA).

Biological indicators: Not found.

Measures of engineering control: Handling the product in a place with good natural or mechanical ventilation, in order to keep the concentration of vapors/dust below the tolerance limit. Provide mechanical ventilation and direct exhaust system to the outside environment. These measures help to reduce exposure to the product. It is recommended to make emergency showers and eye washes available in the work area. Engineering control measures are most effective in reducing product exposure.

Appropriate Protective Equipment:

Protection for the eyes/face: Wear dust protection goggles when there is a risk of contact with your eyes.

Protection for the skin/body: Wear cotton gloves and protective clothing.

Respiratory protection: Wear PFF-2 dust/mist mask where ventilation is inadequate. In an emergency, use an air-supplied mask.

Notice: Avoid repeated contact without recommended protective equipment.

9. - PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Crystalline solid in pearl shape at 20°C and 101 kPa.

Color: White.

Odor: Odorless or a slight ammonia odor.

pH: 7.2 (10% in water).

Melting / freezing point: 132.7 °C (literature data).

Boiling point: 135 °C (decomposition).

Flash point: Not applicable.

Evaporation rate: Not applicable. Flammability: Not flammable.

Upper/lower explosive or flammable limits: Not applicable.

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Vapor Pressure: 80 Pa (0.6 mmHg) to 20°C CAL.
Vapor Density: Not applicable.
Free density: 1.34 g/cm³.
Apparently density: 730 kg/m³.
Solubility (water): 78 g/100 ml (5 °C); 119.3 g/100 ml (25°C).
Solubility (ethanol): 72 g/1000 mL (30 °C).
Octanol/water partition coefficient: log -1.59 to 20- 25 °C experimental.
Auto-ignition temperature: Not applicable.
Decomposition temperature: 142 °C.
Viscosity: 1.78 mPas (46% solution) at 20°C;
1.81 mPas (46% solution) at 137 °C;
1.90 mPas (saturated solution) at 20 °C.
Molecular weight: 60.06 g/mol.

10. - STABILITY AND REACTIVITY

Chemical stability: The product is stable under normal conditions. In the presence of heat it becomes unstable, decomposing. Does not polymerize.

Reactivity: Reacts violently with gallium perchlorate. Reacts with chlorine to form chloramines. Urea also reacts with sodium hypochlorite, sodium nitrate, calcium hypochlorite, sodium nitrite, strong oxidizing agents (permanganate, nitrate, dichromate, chloride).

Possibility of hazardous reactions: Contact with hypochlorite's and gallium perchlorate can cause a violent reaction.

Conditions to avoid: Do not mix with other chemical products without the advice of a qualified professional. **Materials or incompatible substances:** Urea can be slightly corrosive to steel, aluminum, zinc and copper. Hazardous decomposition products Urea decomposes under heat and can form products such as: ammonia, nitrogen oxides, cyanuric acid, cyanic acid, biuret and carbon dioxide.

11. - TOXICOLOGICAL INFORMATION

Acute toxicity: Causes digestive tract irritation with nausea, vomiting and diarrhea. The substance can be toxic to the blood and cardiovascular system. It can affect the individual's behavior.

Skin corrosion/irritation: Causes skin irritation.

Severe ocular lesions/eye irritation: Causes eye irritation.

Respiratory or skin sensitization: Causes irritation to the respiratory tract, nose, throat, may cause coughing and sneezing.

Germ cell mutagenicity: Laboratory experiments in animals have shown mutagenic effects.

Carcinogenicity: It has no carcinogenic effect, according to the International Agency for Research in Cancer- IARC.

Reproductive toxicity: Prolonged exposure may cause adverse reproductive effects.

Specific target organ toxicity- single exposure: Irritation of the eyes.

Specific target organ toxicity- repetitive exposure: Repeated exposure may cause respiratory tract irritation.

Aspiration hazard: Repeated exposure may cause respiratory tract irritation.

Further information:

LD₅₀ (oral, rat): 14300-15000 mg/kg.

LD₅₀ (oral, mouse): 11500-13000 mg/kg.

DL₅₀ (cutaneous, rat): 8,200 mg/kg.

Chronic toxicity: Potential chronic health effects: Prolonged exposure or exposure to high concentrations can damage the eyes. Not teratogenic.

NOAEL (oral, mouse): 6750 mg/kg.

NOAEL (oral, rat): 2250 mg/kg.

12. - ECOLOGICAL INFORMATION

- Environmental effects, behaviors and impacts of the product: In case of spillage, the product must be collected. High concentration contact with vegetation will damage it. The fall of the product into streams and rivers must be avoided, as it may make them unfit for human and animal consumption. In this case, report the fact immediately to the region's environmental control agency.

Ecotoxicity: Low toxic to human and animal life.

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LC₅₀ (fish, 96 hr): > 9,100 mg/L.

EC₅₀ (daphnia, 24 hr): > 10,000 mg/L. Do not contaminate water sources with urea.

Persistence and degradability: Substantially biodegradable in soil and water. Urea is degraded at the rate of 93-98% in a 24 hour cycle.

Bioaccumulative potential: Low potential for bioaccumulation. log Pow <1.

Mobility in soil: Urea is soluble in water. Values not found.

Other adverse effects: Dissolved in water, urea takes the form of a corrosive solution.

13. - CONSIDERATIONS ON FINAL DISPOSAL**Recommended methods for final disposal:**

The treatment and disposal of product residues must be done in a suitable environment, by people trained in the use of special equipment and the recommended PPE's to avoid contact with the product, its vapors or mists. Leaks must be contained and collected for later disposal after neutralization.

Product:

Ensure all Federal, State and local agencies receive proper notice of spills and disposal methods. CONAMA Resolution 005/1993, Law No. 12,305, as of August 2, 2010 (National Solid Waste Policy).

Product waste:

Consult environmental regulatory agencies for advice on acceptable regulatory practices. Come in contact with relevant local authorities. It can be incinerated when in compliance with local regulations. Or dispose of in an approved chemical waste landfill.

Used Package:

Empty containers must be drained and covered before handling and transport operations. If the package is not properly washed and decontaminated, it is considered to contain the product.

14. - TRANSPORT INFORMATION**National and International Regulations****Land:**

Resolution No. 5947/2021 of the Brazilian National Land Transport Agency (ANTT), Approves the Complementary Instructions to the Regulation of Land Transport of Dangerous Goods and its amendments.

Waterway:

DPC – Directorate of Ports and Coasts (Transport in Brazilian waters) Maritime Authority Regulations (NORMAM) NORMAM 01/DPC: Vessels Used in Open-seas Navigation

- Air Transport:

ANAC - National Civil Aviation Agency - Resolution No. 129 as of January 8, 2009

RBAC N°175 - (BRAZILIAN CIVIL AVIATION REGULATION) - TRANSPORTATION OF DANGEROUS ITEMS IN CIVIL AIRCRAFT IS No. 175-001 - SUPPLEMENTARY INSTRUCTION - IS

ICAO - "International Civil Aviation Organization" - Doc 9284-NA/905 IATA - "International Air Transport Association" Dangerous Goods Regulation (DGR)

UN Number:

Not classified as dangerous for transport in different modes.

15. - REGULATORY INFORMATION**Specific regulations for the chemical product:**

Federal Decree No. 2,657, as of July 3, 1998;

Standard ABNT-NBR 14725:2014;

Ordinance No. 229, of May 24, 2011 - Amends Regulatory Standard No. 26.

16. - OTHER INFORMATION

The information on this sheet corresponds to the current state of our knowledge and experience of the product and is not exhaustive. It applies to the product under the conditions specified, unless otherwise stated. In case of combinations or mixtures, make sure that no new danger can appear. This information does not

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, under any circumstances, exempt the user of the product from respecting all the legislative, regulatory and administrative texts relating to the product, safety, hygiene and protection of human and environmental health.

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