



SAFETY DATA SHEET FOR CHEMICALS
MSDS

AMMONIUM SULFATE

REVISION DATE: 5/12/2018

1. - IDENTIFICATION OF PRODUCT AND COMPANY

Product name: Ammonium Sulfate.

Internal Code of product identification: 130.60.0

Company name: USIQUÍMICA DO BRASIL LTDA.

Address: Rua da Lagoa, 431 - Cumbica - Guarulhos - SP.

Company Phone: (11) 3821-7000 (PBX system) - (11) 2481-3355.

Emergency call numbers: SUATRANS - COTEC - Environmental Emergency.

DDG (0800) 0111-767 - (0800) 7071-767 - 24 HOURS. 193 - Firefighters.

Main recommended uses for the substance: Used in agriculture as a fertilizing agent.

2. - HAZARDS IDENTIFICATION

Substances classification:

Corrosive/irritation to skin, Category 3,

Serious eye damage / eye irritation, category 2B,

Toxicity specific organs - later than single exposure, Category 3,

Acute toxicity - Oral- Category 5,

Dangerous to the aquatic environment- Acute- Category 3.

Most important hazards: Harmful if swallowed. Avoid to contact directly as product.

Effects of the product: The product has low toxicity, but the following points must be observed:


- **Inhalation:** High concentration of suspended material can cause irritation to the nose and respiratory tract, with symptoms such as sore throat and cough.
- **Skin contact:** Prolonged contact can cause some irritation.
- **Eye contact:** May cause irritation after contact.
- **Ingestion:** Small quantities can infrequently cause toxic effects. Large quantities can cause disorders in the gastrointestinal tract.
- **Environmental effects:** It can contaminate water courses, making them unsuitable for any purpose.
- **Specific hazards:** The combustion of ammonium can result in the emission of toxic gases from nitrogen oxides.
- **Main Symptoms:** Ingestion can cause nausea, vomiting, diarrhea, hemorrhagic gastritis, seizures and nephritis.

Emergency Overview: When recovering any reusable product, take care not to generate excessive dust. Take careful with the product as it can be slippery when wet. Keeping the product away from drainage systems and water bodies, as it can be toxic to aquatic organisms.

Try to contain the spilled product, removing it as soon as possible.

Isolate and evacuate the area in case of spill. Keep the wind blowing on your back during emergency care. People must only be allowed access to contaminated areas if they are using specific clothing and appropriate protection.

GHS labeling elements, included the precautionary phrases:

LABELING ELEMENTS	DATA
Product identification and supplier emergency phone.	Commercial Name: Ammonium Sulphate (NH ₄) ₂ SO ₄ Synonym: Diammonium sulfate. Emergency call number: SUATRANS - COTEC - Environmental Emergency. DDG (0800) 0111-767 - (0800) 7071-767 - 24 HOURS.
Chemical composition:	Total Nitrogen: 20.5-21.0 (Minimum, N. 20%). Water, maximum: 0.3%.
Hazard pictogram	
Warning words	CAUTION



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Hazard phrase	H334 - May cause allergy, asthma or breathing difficulties - when inhaled. H320 - Causes eye irritation. H316- Causes moderate irritation to the skin. H401 - Toxic to aquatic organisms.
Caution Phrases	P234 - To conserve only in the original container. P261 - Avoid inhaling vapors and mists. P264 - Rinse carefully after handling. P270 - Do not eat, drink or smoke when using this product. P272 - Contaminated work clothing must not leave the workplace. P273 - Avoid to release for the environment. P280 - Use protective gloves/protective clothing/eye protection/face shield. P301 + P312- IN CASE OF INGESTION: If you feel unwell, contact a TOXICOLOGICAL INFORMATION CENTER/or a doctor. P301 + P310- IN CASE OF INGESTION: Please Immediately contact a TOXICOLOGICAL INFORMATION CENTER/physician. P302 + P352- IN CASE OF SKIN CONTACT: Apply moist compresses. P303+P361+P353 - IN CASE OF SKIN CONTACT (or with the hair): Remove immediately all contaminated clothing. Rinse the skin with water or take a shower. P304 + P340- IN CASE OF INHALATION: Remove the person to a ventilated area and keep the person in a rest position that does not make it difficult to breathe. P305 + P351 + P338 - IN CASE OF EYE CONTACT: Rinse thoroughly with a water for several minutes. If contact lenses are used, remove them if it is easy. Continue rinsing. P311- Please contact a TOXICOLOGICAL INFORMATION CENTER/physician. P312 - If you of discomfort, please contact a TOXICOLOGICAL INFORMATION CENTER/physician. P342+ P311 - If you feel discomfort, please contact a TOXICOLOGICAL INFORMATION CENTER/physician. P362 + P364- Remove all contaminated clothing and wash it before using it again.

Other hazards which do not result in classification: No other hazards occur.

3.- COMPOSITION AND INFORMATION ON THE INGREDIENTS:

Substance: Ammonium sulphate (NH₄)₂SO₄.

Common chemical name or generic name: Ammonium sulphate, (NH₄)₂SO₄. **Synonym:** Diammonium sulfate.

Chemical Abstract Service (CAS No.): 7783-20-2.

Impurities that contribute to the hazard: None.

4- FIRST AID MEASURES

First aid measures:

Inhalation: Remove the victim to an uncontaminated and ventilated area. If you are breathing hard, administering oxygen. Apply resuscitation maneuvers in case of cardiorespiratory arrest. Immediately forward to the nearest hospital.

Skin contact: Remove clothing contaminated by the product. Wash the victim's mouth with plenty of water. If irritation persists, seek to physician.

Eye contact: Wash at once the eyes under running water for 15 minutes, lifting the eyelids to allow maximum product removal. Refer to the physician.

Ingestion: If a large amount of this substance is ingested, see to physician immediately.

What actions must be avoided: Do not induce vomiting. If vomiting occurs spontaneously, the victim shall be lying on his side to prevent pulmonary aspiration. Never administer liquids to unconscious victims.

Brief description of the main symptoms and effects: High concentration of suspended material can cause irritation to the nose and respiratory tract, with symptoms such as sore throat and cough. Prolonged contact can cause some



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irritation of skin. It can cause irritation to the eyes after contact. Ingestion of small quantities can infrequently cause toxic effects. Large quantities can cause disorders in the gastrointestinal tract.

Notes to the physician: Avoid contact with the product to help the victim. Keep the victim on standing and heated. Do not give anything by mouth to an unconscious person. Symptomatic treatment must include, mainly, supportive measures such as correction of hydro electrolytic, metabolic disorders, as well as respiratory assistance. In case of contact with the skin and/or eyes, do not rub the affected parts.

5. - FIRE FIGHTING MEASURES

Extinguishing measures appropriate: The product is not combustible. In case of fire, use water.

Not recommended extinguishing measures: Water jets.

Specific substance hazards: Ammonia vapors, oxides of nitrogen and sulfur, can be produced in the event of fire.

Special methods to fight the fire: None.

fire fighter protection: Special protective equipment for personnel deployed for firefighting. Do not stay in the danger zone without self-contained breathing apparatus suitable for breathing independently of the environment. To avoid contact with the skin, keep a safe distance and wear suitable protective clothing. Refresh closed containers exposed to fire with sprayable water. Suppress (throw) with water jets (fog) the gases, vapors and mists. Avoid to contamination of surface water and groundwater with water to firefighting.

Other relevant information: Avoid breathing toxic fumes. Open the warehouse doors and windows for maximum ventilation.

6. - MEASURES OF CONTROL FOR SPILL OR LEAK

Personal precautions, protective equipment and emergency procedures:

Staff that is not part of the emergency services: Do not breathe vapor or aerosols. Avoid to contact with the substance. Ensuring adequate ventilation. Evacuating the hazard area, observe emergency procedures. If necessary, consult a specialist.

For the staff of the emergency department: Using complete PPE, with PVC protective gloves, safety glasses with side protection and appropriate protective clothing. The material used must be waterproof. In case of large leaks, where exposure is large, it is recommended to use a protective mask with a filter against vapors or mists. Spilled product that gets wet or spills of aqueous solutions creates a hazardous condition due to its slippery nature. Avoid to formation of dust.

Removal ignition sources: Keeping away from sources of heat and ignition.

Prevention of inhalation and contact with skin, mucous membranes and eyes: Please see Section 8, Field: "Appropriate personal protective equipment".

Precautions to the environment: Avoid to spilled product reaching watercourses. Collect the spilled product, place the material in appropriate containers for proper final disposal.

Cleaning methods: Any spill of fertilizer must be cleaned up immediately and stored in a labeled container for proper final disposal. Depending on the degree and nature of contamination, reuse the product on the farm or give the appropriate final destination.

Differences in the measures of large and small leaks:

Small spills: Use appropriate tools to put the spilled solid in an appropriate container.

Large spill: Use a wheel loader to place the material in an appropriate container. Finishes with manual sweeping.

7. - HANDLING AND STORAGE

Handling:

Technical measures: Use only in areas provided with adequate exhaust ventilation. Providing the product handling area with emergency shower set and eye wash. Handling must only be done with the indicated PPEs and under safe conditions.

Prevention of worker's exposure: Avoid a formation of vapors / aerosol. Working with exhaust / chimney. Do not inhale the substance / mixture. Wear specific PPEs - splashes glasses, face shield, PVC gloves and protective clothing. To avoid inhaling vapors.

Washing after handling and decontaminate PPEs after use. The PPEs must be approved for use only with the



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respective CAs - Certificates of Approval.

Precautions for safe handling: Keep the product in a closed package. Avoid to excessive dust formation. Avoid to exposure to the atmosphere to prevent moisture absorption. When handling the product for long periods, use gloves. Do not eat, drink or smoke when in contact with the product.

Storage:

Appropriate technical measures: Storing in a cool, dry and ventilated area. Isolating from incompatible materials.

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

Remediation of fire and explosion: Keep the product away from heat and flames.

Precautions and guidelines for safe handling: Properly ventilate the area. Washing contaminated clothing before reuse. Avoid breathing dust. Using protection to eyes, skin and respiratory tract.

Hygiene measures appropriate: Never eat, drink or smoke in the work area. Wash the hands after handling the product and change the clothes before entering the dining area.

Storage: Store the product in a well-ventilated area, away from heat and flames. The storage area must be dry and clean.

Packaging Materials: The product is sold in bulk or packaged in a big-bag with liner or polyethylene tube sacks.

8. - EXPOSURE CONTROLS AND INDIVIDUAL PROTECTION

Parameters of specific control.

Occupational exposure limits:

For ammonium sulfate: LT=3 mg/m³.

Biological indicators: Not found.

Other limits and values: N.A.

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

Appropriate personal protective equipment:

Eyes/face protection: Use safety glasses

Skin/body protection: Using waterproof clothing (boots and overalls).

Respiratory protection: Using a dust / mist mask where ventilation is inadequate.

Special precautions: Expose yourself only as necessary.

9. - PHYSICAL AND CHEMICAL PROPERTIES

Physical condition: Solid.

Form: Granules or crystals.

Color: White.

Odor: Odorless.

pH: 3.5 to 5.0 (10% in water).

Melting point / freezing point: Not applicable.

Boiling point: Not applicable.

Flash point: Not applicable.

Evaporation rate: Not applicable.

Flammability: Non-flammable.

Upper / lower explosive or flammable limits: Not applicable.

Vapor pressure: Not applicable.

Vapor density: Not applicable.

Free density: - 945 a 1138 kg/m³ (20 °C).

Solubility in water: 76.9 g/100 mL of water at 25 °C.

Solubility in others solvents: 72 g/1000 mL (30 °C).



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Partition coefficient octanol / water: Not applicable.

Auto-ignition temperature: Not applicable.

Decomposition temperature: >235 °C.

Viscosity: Not available.

Other information: Molecular weight: 132.14 g/mol.

10. - STABILITY AND REACTIVITY

Specific conditions:

Chemical stability: It is stable under normal storage and handling conditions.

Reactivity: Does not react.

Possibility of hazardous reactions: Does not react.

Conditions to be avoided: Avoid extreme temperatures.

Materials or incompatible substances: Alkalis, strong acids, copper and their mixtures. **Hazardous decomposition products:** It can emit ammonia and sulfur

11. - TOXICOLOGICAL INFORMATION

Information according to the different manners of exposure:

Acute Toxicity: DL₅₀ (oral for rats): 58 mg/kg.

Corrosion/irritation of skin: Causes irritation.

Severe ocular lesions/eye irritation: Causes irritation.

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

Germ cell mutagenicity: It has no mutagenic effect.

Carcinogenicity: It has no carcinogenic effect.

Reproductive toxicity: Not classified for reproductive toxicity.

Toxicity to organs - specific targets - single exposure: Not available.

Toxicity to organs - specific targets - repetitive exposure: Not available.

Aspiration hazard: Not available.

12. - ECOLOGICAL INFORMATION

Environmental effects, behaviors and impacts of the product:

Ecotoxicity: LC₅₀ for fish (96 h): > 10 mg/L;

EC₅₀ for daphnia (48 h): >10 mg/L;

EC₅₀ for algae: > 10 mg/L.

Persistence and degradability: Product are substantially biodegradable in water.

Bioaccumulation: No potential.

Mobility: Soluble in water. Not absorbed by the soil.

Environmental impact: It can contaminate water courses, making them unsuitable for any purpose.

Other adverse effects: None.

13. - CONSIDERATION ON THE FINAL DISPOSAL

Recommended methods for final destination:

The treatment and disposal of product wastes must be carried out in an appropriate environment, by people trained with 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 that all Federal, State and local agencies receive appropriate notices of spills and disposal methods. CONAMA Resolution 005/1993, Law No. 12,305, of August 2, 2010 (National Policy on Solid Waste).

Waste of products:

Please consult environmental regulatory agencies for counselling on the acceptable disposal practices. Please contact the relevant local authorities. It can be incinerated when in compliance with local regulations. Or dispose of at an approved chemical waste landfill.

- **Used Package:**



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Empty packages must be drained and covered before handling and transport operations. If the packaging is not conveniently washed and decontaminated, it is considered to contain product.

14. - TRANSPORT INFORMATION

National and International Regulations

Land:

Resolution No. 5232 of as December 14, 2016 of the National Land Transportation Agency (ANTT), *Approves the Complementary Instructions to the Regulation of Land Transportation of Dangerous Products and its amendments.*

ONU number: Product not classified by the Legislation in force on the o transport of dangerous products.

Appropriate name for shipment: -

Risk class: -

Risk subclass: -

Risk number: -

Packaging group: -

Waterway:

DPC - Directorate of Ports and Coasts (Transport in Brazilian waters) Maritime Authority Standards (NORMAM) NORMAM 01 / DPC: Vessels Employed in Open Sea Navigation

ONU number: Product not classified by the Legislation in force on the o transport of dangerous products.

Appropriate name for shipment: -

Risk class: -

Risk subclass: -

Risk number: -

Packaging group: -

Air:

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

RBAC No. 175 - (BRAZILIAN CIVIL AVIATION REGULATION) - TRANSPORT OF DANGEROUS MATERIALS 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)

ONU number: Product not classified by the Legislation in force on the o transport of dangerous products.

Appropriate name for shipment: -

Risk class: -

Risk subclass: -

Risk number: -

Packaging group: -

15. - INFORMATION ON THE REGULATIONS

Specific regulations for the chemicals:

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

Standard ABNT-NBR 14725:2014;

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

16. - OTHER INFORMATION

The information in this sheet corresponds to the current status of our knowledge and our product experience and is not exhaustive. Applies to the product under the conditions specified, unless mention otherwise. In case of combinations or mixtures, make sure that no new hazards can appear. This information does not exempt, in any case, the user of the product from respecting the all legislative, regulatory and administrative texts related to the product, safety, hygiene and protection of human and environmental health.

Bibliographical References:

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIALS HYGIENISTS. TLVs® and BEIs®: Based on the "Documentation" dos Limites de Exposição Ocupacional (TLVs®) for Chemical Substances and Physical Agents &



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Biological Exposure Indices (BEIs®). Brazilian Association of Occupational Hygienists Translation. São Paulo, 2016.

BRAZIL. MINISTRY OF LABOR AND EMPLOYMENT (MTE) Regulatory Standard (NR) No. 7: Programa de controle médico de saúde ocupacional. Brasília, DF. Jun. 1978.

BRAZIL. MINISTRY OF LABOR AND EMPLOYMENT (MTE) Regulatory Standard (NR) No. 15: Atividades e operações insalubres. Brasília, DF. Jun. 1978.

EPA of USA. 2011. EPI Suite™ for Microsoft® Windows, v 4.10. United States: Environmental Protection Agency, Washington. 2011. Available at:

< <http://www.epa.gov/oppt/exposure/pubs/episuite.htm>>. Access on: January, 2018

Globally Harmonized System of Classification and Labelling of Chemicals (GHS). 7. rev. United Nations, 2017.

HSDB - HAZARDOUS SUBSTANCES DATA BANK. Available at: <<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB>>. Access on: January, 2018

IARC - INTERNATIONAL AGENCY FOR RESEARCH ON CANCER. Available at:

<<http://monographs.iarc.fr/ENG/Classification/index.php>>. Access on: January, 2018

IPCS - INTERNATIONAL PROGRAMME ON CHEMICAL SAFETY - INCHEM. Available at: <<http://www.inchem.org/>>. Access on: January, 2018

IUCLID - INTERNATIONAL UNIFORM CHEMICAL INFORMATION DATABASE. [S.I.]: European chemical Bureau. Available at: <<http://ecb.jrc.ec.europa.eu>>. Access on: January, 2018

NIOSH - NATIONAL INSTITUTE OF OCCUPATIONAL AND SAFETY. International Chemical Safety Cards. Available at: <<http://www.cdc.gov/niosh/>>. Access on: January, 2018

NITE-GHS JAPAN - NATIONAL INSTITUTE OF TECHNOLOGY AND EVALUATION. Available at:

<http://www.safe.nite.go.jp/english/ghs_index.html>. Access on: January, 2018

U.S. ENVIRONMENTAL PROTECTION AGENCY. ECOSAR - Ecological Structure-Activity Relationships. Versão 1.11.

Available at: <<http://www.epa.gov/oppt/newchems/tools/21ecosar.htm>>. Access on: January, 2018