



SAFETY DATA SHEET FOR CHEMICALS
MSDS

PHOSPHORIC ACID, 54%

REVISION DATE: 1/10/2019

1. - IDENTIFICATION OF PRODUCT AND COMPANY

Product name: PHOSPHORIC ACID, 54%

Internal Code of product identification: 188.71.0 **Company name:** USQUÍMICA DO BRASIL LTDA.

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

Company Phone: (11) 2481-3355 - PBX System.

Emergency call numbers: SUATRANS - COTEC - Environmental Emergency.

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

193 - Firefighters.

Main recommended uses for the substance: Production of fertilizers, dicalcium phosphate and general chemical industry.

2. - HAZARDS IDENTIFICATION

Substance classification or mixture (according to ABNT NBR 14.725-2):

Acute toxicity - Oral - Category 4.

Acute toxicity - Dermal - Category 5. Corrosion/irritation of skin- Category 1 A- 1C.

Serious eye damage / eye irritation - Category 1.

Toxicity to organs - specific targets - Single Exposure - Category 3.

Most important hazards:

Eye contact, skin absorption, inhalation and ingestion. Its action depends on the concentration, time of exposure and whether the first aid measures were taken promptly, as it is irritating.

Effects of the product:

Corrosive product.

Adverse effects to the human health:

Phosphoric acid causes irritation when in contact with some parts of the body, however the burn may not appear immediately. Ingestion can cause vomiting, abdominal pain, shock, diarrhea and severe abdominal damage.

Environmental effects:

It can contaminate courses or water spring, in case of spill making them unfit for consumption for any purpose.

Physical and Chemicals Hazards:

It is not flammable, but in contact with some common metals it releases hydrogen, a flammable gas, which can form an explosive mixture with air.

Specific hazards:

Avoid contact with metals, as hydrogen can be released.

Main symptoms:

Inhalation of vapors or mists of phosphoric acid can cause irritation of the upper airways, causing sneezing, coughing, salivation and difficulty in breathing.

Emergency Overview:

Depending of the proportions, isolate and evacuate the area. In case of leakage and / or spill, try to block the leak, contain the spilled liquid or transfer the product. During emergency care, keep the wind blowing on your back. People must only be allowed access to contaminated areas if they are using specific clothing and appropriate respiratory protection.

Appropriate elements of labeling:

LABELING ELEMENTS	DATA
Product identification and supplier emergency phone.	Technical name: Phosphoric acid, 54% Emergency call number: SUATRANS - COTEC - Environmental Emergency. DDG (0800) 0111-767 - (0800) 7071-767 - 24 HOURS.



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Hazard pictogram	
Warning words	DANGER
Hazard phrase	H302 - Harmful if swallowed. H313 - May be harmful in contact with skin. H314 - Causes severe skin burn and eye damage. H318 - Causes serious eye damage. H335- May cause irritation to the respiratory tracts.
Caution Phrases	- P273: Avoid the release to the environment. - P303+P361+P353: IN CASE OF SKIN CONTACT (or with the hair): Remove immediately all contaminated clothing. Wash the skin with water/take a shower. - P304+P340+P310 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. Please Immediately contact a TOXICOLOGICAL INFORMATION CENTER/physician. - P305+P351+P338+P310: IN CASE OF EYES CONTACT: Rinse thoroughly with water for several minutes. If contact lenses are used, remove them if it is easy. Continue rinsing. Please Immediately contact a TOXICOLOGICAL INFORMATION CENTER/physician. - P308+P311: IN CASE OF exposure or suspected of exposure: Please contact a TOXICOLOGICAL INFORMATION CENTER/physician. P321: Specific treatment (see supplementary first aid instructions on this label). P332 + P313: In case of skin irritation: consult a physician. P337 + P313: If eye irritation persists: consult a physician. P362: Remove contaminated clothing. P370 + P378: In case of fire: use dry sand, dry chemical or alcohol-resistant foam to extinguish. P403 + P233: Storing in a well-ventilated place. Keeping the container tightly closed. P405: Storing in a place closed with a key. P501: Dispose of contents / container to an approved waste disposal facility.
Further information	The Safety Data Sheet for chemicals (MSDS) for this hazardous chemical can be requested via telephone (11) 3821-7000, or by email: laboratorio@usiquimica.com.br

Other hazards which do not result in classification:

No other hazards occur.

3. - COMPOSITION AND INFORMATION ON THE INGREDIENTS:

Substance: Phosphoric Acid - 54%

Common chemical name or generic name: Phosphoric Acid - 54% or H₃PO₄.

Synonym: Orthophosphoric acid.

Chemical Abstract Service (CAS No.): 7664-38-2.

Chemical substance composition: Phosphoric Acid - 54% There are no impurities that contribute to the hazard.

4. - FIRST AID MEASURES:



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Inhalation: Remove the victim to an uncontaminated and ventilated area and manage oxygen, if available. Apply resuscitation maneuvers in case of cardiorespiratory arrest. To seek medical care quickly.

Skin contact: Quickly remove contaminated clothing and shoes and wash affected parts with running water in abundance for at least 15 minutes. Do not rub the area. To seek medical care quickly.

Eye contact: Immediate service is essential. The first 10 seconds are critical to avoid blindness. Wash your eyes under running water for 15 minutes, lifting the eyelids to allow maximum product removal. After these precautions, immediately refer to the ophthalmologist.

Ingestion: Never give anything by mouth to people unconscious or in a convulsive condition. The conscious victim can drink water. If vomiting occurs spontaneously, the victim shall be lying on his side to avoid pulmonary aspiration. To seek medical care quickly.

Measures to be avoided: Do not induce vomiting. Do not give liquids to a victim, unconscious person or in a convulsive crisis.

Brief description of the main symptoms and effects: Phosphoric acid causes irritation when in contact with some parts of the body, however the burn may not appear immediately. Ingestion can cause vomiting, abdominal pain, shock and diarrhea. Intoxication can be slight, severe or fatal. In slight cases, first aid measures are sufficient. In severe cases to seek a healthcare.

Protection of the first-aider: Use the indicated personal protective equipment. Access to people in contaminated areas must only be allowed if they are using specific clothing and appropriate respiratory protection, with filters for acidic (or combined) gases, autonomous mask or with air supply.

Notes to the physician: Corrosive and irritating to eyes, skin and respiratory tract. The burn severity depends on the concentration and time of exposure to the product without medical attention. Aspiration can occur during ingestion and / or vomiting, it is life-threatening. Gastric lavages must be performed by an expert professional, considering the risk of gastrointestinal perforation and in the induction of vomiting through the nasogastric probe and introduction of liquid for its performance. Assess renal function.

5. - FIRE FIGHTING MEASURES

Extinguishing measures appropriate: The product is not combustible. When involved in fire, use water to cool.

Extinguishing measures not appropriate: Large volume water jet and other extinguishing agents.

Specific hazards: Non-combustible material. The product can decompose when heated, releasing corrosive and / or toxic gases. Contact with metals can release flammable hydrogen gas.

Special methods: Avoid the application of excess water, as there may be contamination of the watercourse.

fire fighter protection: Use personal protective, mainly respiratory protective equipment. In case of fire, there is the possibility of decomposition with the release of irritating toxic gases. Use self-contained mask or supplied air mask, and acid-resistant PVC clothing.

6. - MEASURES OF CONTROL FOR SPILL OR LEAK

Personal precautions:

Removal ignition sources: Phosphoric acid is not flammable. Avoid contact with incompatible materials.

Prevention of inhalation and contact with skin, mucous membranes and eyes: Use the appropriate personal protective equipment. Access to people in contaminated areas must only be allowed if they are using specific clothing and appropriate respiratory protection, with filters for acidic (or combined) gases, autonomous mask or with air supply.

Precautions to the environment: It can contaminate water courses, making them unsuitable for any purpose. High concentrations in the air endanger human and animal life. Storage locations must have containment dikes. Isolate and evacuate the area in case of leakage and / or spill. Try to block the leak, contain the spilled liquid or transfer the product. Keep the wind blowing on your back during emergency care. Access to people in contaminated areas must only be allowed if they are using specific clothing and appropriate respiratory protection, with filters for acidic (or combined) gases, autonomous mask or with air supply.

Cleaning methods: Use personal protective equipment and isolate the area. Contain spilled acid by making containment dikes, with sand or land. Dilute the acid contained, using excess water. Neutralize carefully with lime.

Recovery: Try to contain the spilled product with sand or earth dike. If possible, perform the transfer of the



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product. Never use organic material to contain spills.

Neutralization: Heat release results.

Disposal: Try to reuse the product, if possible or neutralize the residue before taking it to the appropriate final disposal.

Secondary hazard prevention: Review guidelines contained in the previous fields.

7. - HANDLING AND STORAGE

Handling

Technical measures: Prevent physical damage to tanks, piping and valves. Isolate them from incompatible substances.

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

Remediation of fire and explosion: Avoid contact with metals, as it can release flammable hydrogen gas.

Precautions for safe handling: To reduce the possibility of a health risk, ensure sufficient ventilation or exhaustion in place to control the ambient concentration at low levels. Using specific clothing and appropriate respiratory protection, with filters for acidic (or combined) gases, autonomous mask or with air supply.

Guidance for safe handling: Avoid to contact with incompatible materials and environmental contamination, as mentioned in the previous fields. Avoid to exposure of the product to heat and incompatible materials.

Storage

Appropriate technical measures: Providing suitable, ventilated, fireproof and suitable packaging materials. The site must contain containment dikes.

Storing conditions:

Appropriate: Storing in a cool, dry place avoiding contact with heat, flames, sparks and other sources of ignition.

To be avoided: Avoid light and heat, avoid to contact with organic or incompatible material. Please see previous information. **Risk signaling:** Signaling plates with the indication of **CORROSIVE**.

Incompatible product and materials. Please see previous information.

Packaging safe materials: Recommended: Bulk and drums.

Inadequate: Metal packaging.

8. - EXPOSURE CONTROLS AND INDIVIDUAL PROTECTION

Measures of engineering control: 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.

Parameters of specific control:

Occupational exposure limits:

TWA = 1mg/m³.

STEL = 3mg/m³.

Biological indicators: Please see table I of NR 7 of Ordinance 3214/78 of the Ministry of Labor and Employment (www.mte.gov.br)

Recommended monitoring procedures : Submit individuals exposed to periodic tests of respiratory function; the periodic physical examination must emphasize the possibility of bronchial hyperreactivity occurring in long-term exposures.

Appropriate personal protective equipment:

Respiratory protection: Use respiratory protection if the concentration in the environment is above the action limit or half the tolerance limit. Overview mask with filter against acid gases or multipurpose (combined) since recommended according to the concentration determined in the environment. In large leaks and / or spills, use an autonomous mask (or air supply). **Attention:** masks with mechanical filters do not protect workers exposed to an oxygen deficient atmosphere.

Hand protection: Use acid resistant gloves.

Eye Protection: Use chemical safety glasses and / or face shield.

Skin and body protection: Use acid-resistant PVC clothing.

Hygiene measures: Keep workplaces within hygiene standards. Never eat, drink or smoke in



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work area. Practice good personal hygiene mainly before eating, drinking and smoke. Separate contaminated tool and clothing, ensuring that they are effectively washed before reuse.

9. - PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Viscous liquid.

Color: Brown.

Odor: Sweet acrid. **pH:** 1.0 (to 1% in aqueous medium).

Specific temperatures: Boiling point: 158°C to 760 mmHg.

Boiling temperature range: Not applicable.

Distillation range: Not applicable.

Melting point: 21°C to 85%.

Decomposition temperature: Not determined.

Flash point: Not applicable. **Auto-ignition temperature:** Not applicable.

upper/lower explosive limits: Not applicable.

Vapor pressure: $3,0 \times 10^{-2}$ mmHg at 20°C.

Vapor density: 3,4 Kg/m³ (Air=1.0). **Density:** 1,650 g/cm³ at 26°C.

Solubility: Soluble in miscible water in all proportions.

Partition coefficient octanol / water: Not determined.

Evaporation rate: Not determined.

Viscosity: 28 cP at 20°C. (50 cp)

Other information: Not applicable.

10. - STABILITY AND REACTIVITY

Specific conditions:

Stability: Phosphoric acid is stable when stored at room temperature, in closed equipment under normal conditions of storage and handling.

Instability: In contact with common metals, it produces hydrogen and can form flammable mixtures in contact with air.

Dangerous reactions: Avoid to contact with bases, alkaline metals (caustic soda, ammonia, etc.) and excessive heat.

Conditions to avoid: Avoid contact with incompatible materials.

Materials or incompatible substances: Alkalis, aldehydes, amines, amides, alcohol, glycols, nitrogen compounds, carbonates, esters, caustics, phenols, ketones, organophosphates, epoxides, explosives, combustible products, unsaturated halides and organic peroxides.

Hazardous decomposition products: Corrosive or toxic gases may be released when heated.

11. - TOXICOLOGICAL INFORMATION

Information according to the different manners of exposure:

Acute Toxicity:

LD50 - 1.530 mg/kg,

2,740 dermal routes in rabbits.

LC50 -> 850 mg / m³ / 1 hour in rats

Chronic toxicity:

It can cause dermatitis and under repetitive exposures without protective and safety measures. It can cause respiratory diseases.

Local effects: Phosphoric acid causes irritation when in contact with some parts of the body, however may not appear immediately

Respiratory or skin sensitization: Avoid to contact with the product. Always use appropriate personal protective equipment

Corrosion/irritation of skin: Causes severe skin burns.



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Severe ocular lesions/eye irritation: Causes serious eye damage.

Carcinogenicity: The product is not expected to present carcinogenicity.

Reproductive toxicity: The product is not expected to present toxicity to reproduction.

Toxicity to organs - specific targets - single exposure: Irritating to respiratory system.

Toxicity to organs - specific targets - repeated exposure: The product is not expected to present toxicity to the specific target organ through repeated or prolonged exposure.

Specific effects: Irritating and corrosive to eyes, skin and respiratory tract.

12. - ECOLOGICAL INFORMATION

Environmental effects, behaviors and impacts of the product:

Mobility: Low volatility and soluble in water.

Persistence/ degradability: Free dissociation in aqueous solution.

Bioaccumulation: It can contribute to the nutrition of certain organisms in bodies of water with low flow velocity. In cases of accidents, it can contaminate the soil, requiring soil neutralization and soil recompositing. **Expected behavior:**

Environmental impact: In case of spill on the soil, the material can reach the water table and the local flora. When spilled into water, acidity can immediately reduce mineral content and phosphate can become a source of nutrient.

Ecotoxicity: It is toxic to aquatic life due to its acidity. *Lepomis macrochirus* (96 hours, 50% mortality) pH 3-3.5 *Daphnia Magna* (12 hours, 50% mortality) pH 4.6.

Other adverse effects: In case of spill on the soil, the material can reach the water table and the local flora. When spilled into water, acidity can immediately reduce mineral content and phosphate can become a source of nutrient.

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). Neutralize slowly and carefully with lime, if possible.

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:

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 Wednesday, December 14, 2016 of the National Land Transport Agency (ANTT), *Approves the Supplementary Instructions to the Regulation for the Land Transportation of Dangerous Products and their modifications.*

ONU number: 1805

Appropriate name for shipment: PHOSPHORIC ACID, SOLUTION

Risk class: 8 (corrosive).

Risk number: 80.

Packaging group: III

Special Provision: 223 - If the physical or chemical properties of a substance covered by this description are such that, when tested, it does not classify in the criteria for defining the class or subclass indicated in Column 3, the List of Hazardous Products, or any other class or subclass, such a substance is not subject to this



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Regulation.

In such cases, the Tax Document for transportation must contain or be accompanied by a statement from the shipper that such substance has been tested according to the criteria of the class or subclass provided for in this Regulation and considered not dangerous for transportation.

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: 1805

Appropriate name for shipment: PHOSPHORIC ACID, SOLUTION

Risk class: 8 (corrosive).

Risk number: 80.

Packaging group: III

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: 1805

Appropriate name for shipment: PHOSPHORIC ACID, SOLUTION

Risk class: 8 (corrosive).

Risk number: 80.

Packaging group: III

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 & 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, 2019

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IARC - INTERNATIONAL AGENCY FOR RESEARCH ON CANCER. Available at: <<http://monographs.iarc.fr/ENG/Classification/index.php>>. Access on: January, 2019

IPCS - INTERNATIONAL PROGRAMME ON CHEMICAL SAFETY - INCHEM. Available at: <<http://www.inchem.org/>>. Access on: January, 2019

IUCLID - INTERNATIONAL UNIFORM CHEMICAL INFORMATION DATABASE. [S.I.]: European chemical Bureau. Available at: <<http://ecb.jrc.ec.europa.eu>>. Access on: January, 2019

NIOSH - NATIONAL INSTITUTE OF OCCUPATIONAL AND SAFETY. International Chemical Safety Cards. Available at: <<http://www.cdc.gov/niosh/>>. Access on: January, 2019

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