Product: HYDROCHLORIC ACID (HCl)

1. IDENTIFICATION

Product Identification: Hydrochloric Acid (HCl)

Other ways of identification: -

Recommended uses and restrictions on use: Cleaning and treatment of ferrous metals; Flotation and processing of minerals; Acidification of oil wells; Regeneration of ion exchange resins; Civil construction; Neutralization of effluents;

Supplier Details:

Katrium Chemical Industries SA

Address: João Paulo Road, 530 – Honorio Gurgel

Zip Code: 21512-002

Rio de Janeiro/RJ – Brazil

Contact telephone number: 55 (21) 2472-9060

Emergency Telephone Number: AMBIPAR RESPONSE - 0800 117 2020

2. HAZARD IDENTIFICATION

GHS classification of the substance or mixture:

Skin corrosion/irritation: Category 2 Serious eye damage/eye irritation: Category 2A

Specific Target Organ Toxicity – Single Exposure: Category 3

Classification system used:

ABNT-NBR 14725 standard.

Globally Harmonized System for the Classification and Labeling of Chemicals, UN.

GHS labeling elements, including precautionary statements:

Words of warning: DANGER

Hazard phrase(s):

H314 – Causes severe skin burns and serious eye damage.

H290 - May be corrosive to metals.

H335 – May cause respiratory irritation.

Precautionary phrase(s): PREVENTION

P271 – Use only outdoors or in a well-ventilated area.

P280 – Wear protective gloves/protective clothing/eye protection/face protection/hearing protection

Emergency Response:

P304 + P340 – IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

P303 + P361 + P353 – IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water / shower.

Storage:

P405 – Store locked up.

Other hazards that do not result in a classification:

Aspiration of hydrochloric acid can cause chemical pneumonitis and lead to an inflammatory response.

Other information:

Not available.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

SUBSTANCE: HYDROCHLORIC ACID - HCl

Ingredients, impurities and/or stabilizing additives that contribute to the hazard:

Hydrochloric Acid - HCl (CAS 7647-01-0): 32%

Water – H_2O (CAS -): 68%

4. FIRST AID MEASURES

Inhalation:

Remove the person from the contaminated area to fresh air. If they are not breathing, resuscitate them and administer oxygen. Seek medical attention immediately.

Skin contact:

Wash contaminated areas with soap and plenty of water for at least 20 minutes. A soothing ointment can be applied to irritated skin after vigorous cleaning. Remove contaminated clothing and shoes and wash them before reuse. Discard any shoes that cannot be decontaminated. Do not attempt to neutralize the affected area with alkaline solutions. Seek medical attention.

Eye contact:

Immediately flush your eyes with plenty of water for at least 20 minutes, keeping your eyelids open to ensure the entire surface of your eyes is washed. Do not attempt to neutralize the affected area with alkaline solutions. Seek medical attention.

Ingestion:

Never give anything to drink to an unconscious person. If swallowed, do not induce vomiting. Give large amounts of water or milk. Seek medical help immediately.

Most important symptoms and effects, acute or delayed:

Causes severe skin burns and eye damage. May be corrosive to metals. May cause respiratory irritation.

Indication of immediate medical attention and special treatments required, if necessary:

Symptomatic treatment is advisable. Do not induce vomiting.

5. FIRE FIGHTING MEASURES

Extinguishing media:

Suppress gases/mists with water jets.

Specific hazards arising from the substance or mixture:

The substance is not flammable or explosive. The product reacts with metals, evolving highly flammable hydrogen.

protective measures for firefighting personnel:

In case of insufficient ventilation, use suitable respiratory equipment.

6. CONTROL MEASURES FOR SPILLS OR LEAKS

For non-emergency personnel

If you observe an emergency situation involving a leak, spill, or accidental release, immediately report the accident to those responsible and stay away. If possible, eliminate ignition sources and provide sufficient ventilation to remove contaminants.

For emergency service personnel

Evacuate people from the affected area, isolate the risk area, restrict product leakage by closing valves and turning off pumps, and prevent contact with the environment containing the product by storing it in containment dikes or appropriate containers. Use personal protective equipment as described in section 8.

Environmental precautions:

Avoid environmental contamination. Do not allow to come into contact with sewage or rainwater. Do not dump on the ground.

Methods and materials for containment and cleaning:

Neutralize small spills with lime or sodium carbonate. Rinse the remaining residue with plenty of water.

Methods and materials for sealing and containment:

Wear PPE. Collect contaminated materials in suitable acid-proof containers. Dispose of contaminated materials and their containers as hazardous waste in accordance with local regulations.

Area isolation:

Keep unauthorized persons away.

Methods and materials for cleaning:

Neutralize small spills with lime or sodium carbonate. Rinse the remaining residue with plenty of water.

7. HANDLING AND STORAGE

Precautions for safe handling

Prevention of worker exposure:

Use personal protective equipment as described in section 8.

Fire and explosion prevention:

The substance is not flammable.

Precautions and guidelines for safe handling:

The usual precautions for handling chemicals should be observed. Avoid any direct contact with the material.

Hygiene measures

Appropriate:

Wash your hands before any break and at the end of the work period. Do not eat or smoke during the work period. Remove contaminated clothing immediately.

Inappropriate:

Do not eat, drink or smoke when handling the product.

Conditions for safe storage, including any incompatibilities

Suitable conditions:

Conditions for safe storage, including any incompatibilities . Keep the container tightly closed in a dry, well-ventilated place.

Conditions to be avoided, including any incompatibilities

Packaging materials

Recommended:

Steel tanks lined with hard rubber or plastic containers made of PE or PP or other resistant material.

Unsuitable:

PVC and polyester are not completely resistant.

Other information:

Keep the container hermetically sealed. Use dikes or natural barriers to contain any product leaks. Absorb while dry. If possible, stop the leak using stoppers, sealing tape, or by turning the hole, tear, or dent upward. Collect all material in suitable, properly labeled containers for later treatment and disposal. Waste must be disposed of in accordance with local, state, or federal environmental regulations. For overflow, find an appropriate location and follow the safety procedures described above.

8. EXPOSURE CONTROL AND PERSONAL PROTECTION

Control parameters

Occupational exposure limits:

The values below are applicable for work environments.

HYDROCHLORIC ACID (HCl)

MTE NR 15 – LT: 4 ppm (5.5 mg/m ^{3}) up to 48 hours/week.

CAL / OSHA – PEL-TWA: 0.3 ppm (0.45 mg/m³)

NIOSH - REL-C: 5 ppm (7 mg/m³)

NIOSH - REL - STEL: 10 ppm (15 mg/m ^{3})

ACGIH - TLV-C: 2 ppm [2000]

Biological indicators:

There are no biological exposure indicators established by Brazilian legislation – NR 07.

Engineering control measures:

Gas scrubber

Personal protective measures

Eye/face protection : Wide-vision safety glasses.

Skin protection : Use gloves, PVC or polyethylene, polyvinyl alcohol or nitrile-butyl rubber, nitrile, butyl rubber boots and clothing, Tychem overalls , Tychem barber apron .

Respiratory protection : Full face mask with chemical filter for acid gases (in case of brief exposure). In case of longer exposure, use a self-contained breathing mask.

Thermal hazards : Not available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Clear, slightly yellowish, fuming liquid (aqueous solution)

Color: Slightly yellow

Odor: Pungent and irritating odor

Melting point/freezing point: Not available

Boiling point or initial boiling point and boiling range: 110ºC (30% HCl solution by weight)

Flammability: Non-flammable

Lower and upper explosive/flammability limits: Not available

Flash point: Non-flammable

Autoignition temperature: Not available

Decomposition temperature: Not available

pH: 2 (0.2% HCl solution by weight)

Kinematic viscosity: 1.7 cp

Solubility: Complete

Partition coefficient – n- octanol /water (log value): Not available

Vapor pressure: 11 mm Hg (solution with 30% HCl by weight, at 20ºC)

Density and/or relative density: 1.16 kg/L

Relative vapor density: Not available

Particle characteristics: Not available

10. STABILITY AND REACTIVITY

Reactivity: Reaction with strong oxidizing agents.

Chemical stability: Stable under recommended storage and handling conditions see handling and storage.

Possibility of hazardous reactions: Reaction with alkaline substances (bases).

Conditions to avoid: None known.

Incompatible materials: Strong alkalis and oxidizing agents.

Hazardous decomposition products: Chlorine and Hydrogen.

11. TOXICOLOGICAL INFORMATION

Acute toxicity: In contact with skin and/or eyes, causes severe burns

Skin corrosion/irritation: Causes severe skin burns

Serious eye damage/eye irritation: Causes severe eye burns

Respiratory or skin sensitization: May cause respiratory irritation

Germ cell mutagenicity: Conclusion: not sufficient for classification

Carcinogenicity: Conclusion not sufficient for classification

Reproductive toxicity: Conclusion not sufficient for classification

Specific target organ toxicity - single exposure: May cause respiratory tract irritation.

Specific target organ toxicity - repeated exposure: Conclusion not sufficient for classification

Aspiration hazard: May cause respiratory irritation.

Other information: Not available

12. ECOLOGICAL INFORMATION

Ecotoxicity: Hydrochloric acid can be severely toxic to aquatic life by lowering the pH of the water. Typically, most aquatic species cannot tolerate pH values below 5.5 for any length of time.

Persistence and degradability: Not available

Bioaccumulative potential : Not potentially bioaccumulative

Mobility in soil: Soluble in water – Final destination of the product: Water.

Other adverse effects: Do not allow to enter septic tanks, rivers and rainwater.

13. CONSIDERATIONS ON FINAL DESTINATION

Recommended methods for final disposal

Product: Keep any leftover product in its original, properly sealed packaging. Do not dispose of it in sewage systems, waterways, or wastewater treatment plants.

Used packaging: Do not reuse empty packaging. Packaging should be washed and neutralized. Improper disposal of empty packaging and product residues in the environment causes soil, water, and air contamination, harming fauna, flora, and human health.

14. TRANSPORTATION INFORMATION

National and international regulations

LAND: ANTT - National Land Transportation Agency:

Resolution No. 5,998, of November 3, 2022: Updates the Regulation for the Road Transportation of Dangerous Products, approves its Supplementary Instructions, and provides other measures.

UN Number: 1789

Proper shipping name: HYDROCHLORIC ACID

Risk number: 80

Main risk class or subclass: 8

Packing group: II

WATERWAY: DPC - Directorate of Ports and Coasts (Transportation in Brazilian waters). Maritime Authority Regulations:

NORMAM 01/DPC: Vessels Used in Navigation on the Open Sea.

NORMAM 02/DPC: Vessels Used in Inland Navigation.

NORMAM 05/DPC: Material Approval.

IMO - International Maritime Organization :

IMDG Code - International Maritime Dangerous Goods Code (International Maritime Dangerous Goods Code).

UN Number: 1789

Proper shipping name: HYDROCHLORIC ACID

Risk number: 80

Main risk class or subclass: 8

Packing group: II

inS :

Environmental hazard: Data not available

AIR: ANAC - National Civil Aviation Agency: Resolution No. 714, of April 26, 2023. RBAC (Brazilian Civil Aviation Regulation) No. 175:

Transportation of Dangerous Goods on Civil Aircraft.

IS No. 175-001 - Supplementary Instruction.

ICAO (International Civil Aviation Organization):

Doc 9284 AN/905 (Technical Instructions for the Safe Transport of Dangerous Goods by Air).

IATA - International Air Transport Association (International Air Transport Association):

DGR - Dangerous Goods Regulation (Dangerous Goods Regulation).

UN Number: 1789

Proper shipping name: HYDROCHLORIC ACID

Risk number: 80

Main risk class or subclass: 8

Packing group: II

Specific precautionary measures and conditions: Not applicable

15. REGULATORY INFORMATION

Specific safety, health and environmental regulations for the chemical:

BRAZIL – MINISTRY OF LABOR AND EMPLOYMENT – NR 26.

BRAZIL – MINISTRY OF TRANSPORTATION – ANTT.

BRAZIL – ABNT NBR 14725

16. OTHER INFORMATION

Important information, but not specifically described in the previous sections:

This SDS was prepared based on current knowledge of the chemical product and provides information on protection, safety, health and the environment.

Please note that handling any chemical substance requires prior knowledge of its hazards by the user. It is the responsibility of the company using the product to train its employees and contractors regarding the potential risks posed by the product.

References: [ABNT] BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS NBR 14725.

[BRAZIL] BRAZIL. Ministry of Transport. National Land Transport Agency.

[ECHA] European Union. ECHA European Chemical Agency

Subtitles and abbreviations: ACGIH – American Conference on of Governmental Industrial Hygienists , CAS – Chemical Abstracts Service

[OSHA] - Occupational Safety and Health Administration

[NIOSH] - National Institute for Occupational Safety and Health

[NR] – Regulatory Standard – NR 15 Unhealthy Activities and Operations

[LT] – Tolerance Limit