SECTION 1 - IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: Hydrochloric Acid CAS #: 7647-01-0

Formula: HCl

Synonyms: Muriatic acid; Hydrogen chloride, aqueous; Chlorohydric acid

Supplier: Mehrarad Energy Development Co. (Pureicals Brand)

Address: No. 7, Dashteestan 2nd, Pasdaran Street, Tehran, Iran

Emergency phone: +98 21-91200139

www.kardisenergy.ir\\192.168.120.6\Mehrarad\Pac Sales\01-Marketing\Data sheet\MSDS\HCl\www.puricals.com

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SECTION 2 – COMPOSITION / INFORMATION ON INGREDIENTS

NO	Parameter	Specification
1	Appearance	Yellow to Colourless
2	Purity (% by wt)	Min 30
3	Fe (ppm)	Max 3

SECTION 3 – HAZARD IDENTIFI CATION

- **Emergency Overview:**
  - DANGER! Corrosive. Causes severe skin, eye, and digestive tract burns. Harmful if swallowed. Mist or vapor extremely irritating to eyes and respiratory tract.
- **GHS Classification (Globally Harmonized System):**
  - **Corrosive to Metals**: Category 1
  - **Acute Toxicity, Oral**: Category 4
  - **Skin Corrosion/Irritation**: Category 1
  - **Serious Eye Damage/Eye Irritation**: Category 1
  - **Specific Target Organ Toxicity, Single Exposure**: Category 3 (respiratory tract irritation)

- **Hazardous to the Aquatic Environment**: Category 3

- **Hazard Statements:**
  - May be corrosive to metals.
  - Causes severe skin burns and eye damage.
  - May cause respiratory irritation.

- **Precautionary Statements:**
  - If medical advice is needed, have product container or label at hand.
  - Keep out of reach of children.
  - Read label before use.
  - Use only outdoors or in a well-ventilated area.
  - Wear protective gloves/protective clothing/eye protection/face protection.
  - Keep only in original container.

- **HMIS Rating:**
  - **Health**: 3, Severe
  - **Flammability**: 0, None
  - **Reactivity**: 1, Slight
  - **Contact**: 4, Extreme

SECTION 4 – FIRST AID MEASURES

General Advice:

In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

Inhalation:

- Move the affected person to fresh air.
- If breathing is difficult, provide oxygen.
- If breathing has stopped, provide artificial respiration.
- Seek medical attention immediately.

Skin Contact:

- Immediately wash the affected area with soap and water.
- If irritation or symptoms persist, seek medical attention.

- Remove contaminated clothing immediately.

Eye Contact:

- Rinse eyes immediately with plenty of water for at least 15 minutes.
- Remove contact lenses if present and easy to do so during rinsing.
- Seek medical attention immediately.

Ingestion:

- Rinse mouth with water.
- Seek medical attention immediately.
- If vomiting occurs, keep the head lower than the chest to prevent aspiration into the lungs.
- Never give anything by mouth to an unconscious person.

SECTION 5 – FIRE FIG HTING MEASURES

Flammable properties	The material is not flammable
Flash point	Not applicable
Auto Ignition Temperature	Not applicable
Flammable Limits in Air	Not applicable
Rate of Burning	Does not burn
Suitable Extinguishing Media	Water, dry powder, foam, carbon dioxide
Unsuitable Extinguishing Media	No information found

Fire and Explosion Hazard:

- Hydrochloric acid itself is not flammable, but in a fire, it can produce toxic and corrosive gases such as hydrogen chloride and chlorine.

Suitable Extinguishing Media:

- Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide to extinguish nearby fires.
- Avoid using regular foam, as it may react with hydrochloric acid and produce hazardous gases.

Advice for Firefighters:

- Wear self-contained breathing apparatus (SCBA) and full protective gear when fighting a fire.
- Avoid inhaling smoke, and prevent contact with skin and eyes.
- If possible, remove containers of hydrochloric acid from the fire area and cool them with water spray.

Hazardous Combustion Products:

- In case of fire, hydrochloric acid may release hydrogen chloride and chlorine gases, which are toxic and corrosive.

NFPA 704 Rating:

- **Health**: 3 (High hazard)
- **Flammability**: 0 (Non-flammable)
- **Instability**: 1 (Stable, but reactive)
- **Special Hazards**: Acid (Acidic substance)

SECTION 6 – ACCIDE NTAL RELEASE MEASURES

Personal Precautions:

- Evacuate the area immediately and ensure proper ventilation.
- Avoid contact with skin, eyes, and clothing.
- Do not inhale fumes. If inhaled, move the person to fresh air.

Protective Equipment:

- Wear protective gloves, safety goggles, and appropriate protective clothing.
- For large spills or confined spaces, use proper respiratory protection.

Emergency Procedures:

- In case of small spills, neutralize with sodium bicarbonate or a similar neutralizing agent.
- For larger spills, contact emergency responders and follow their guidance.

Environmental Precautions:

- Prevent the material from entering watercourses, drains, or soil.
- Notify the relevant authorities if the spill reaches water sources or the environment.

Clean-Up Methods:

- Neutralize the acid with sodium bicarbonate or another suitable neutralizing agent.
- Once neutralized, rinse the area with water and absorb the liquid with non-combustible materials, like sand or earth.
- Collect all waste in a suitable container for disposal.

Disposal:

- Dispose of the collected materials according to local regulations for hazardous waste.
- Never discharge neutralized or contaminated materials into drains or open environments.

SECTION 7 – HANDLING AND STORAGE

7.1 Handling Hydrochloric Acid:

- **Personal Protective Equipment (PPE):** When handling hydrochloric acid, wear chemical-resistant gloves, safety goggles, protective clothing, and respiratory protection if necessary.
- **Containers for Handling:** Use appropriate, corrosion-resistant containers to handle hydrochloric acid.
- **Ventilation:** Handling should be done in well-ventilated areas to prevent inhalation of vapors.
- **Emergency Readiness:** Ensure access to emergency equipment such as eye wash stations and safety showers.

7.2 Storage of Hydrochloric Acid:

- **Storage Location:** Store hydrochloric acid in cool, dry, and well-ventilated areas.
- **Storage Containers:** Use corrosion-resistant containers, such as PVC or stainless steel, for storing hydrochloric acid.
- **Prevent Leaks:** Ensure containers are stored upright with tightly sealed lids to prevent leaks.
- **Away from Ignition Sources:** Keep hydrochloric acid away from heat sources, sparks, and open flames.
- **Away from Incompatible Materials:** Do not store hydrochloric acid near organic materials, alkalis, or metals.

- **Labeling:** All containers of hydrochloric acid must be clearly labeled.
- **Temperature Control:** Store at temperatures not exceeding 35°C (95°F).
- **Ventilation:** Ensure proper ventilation in the storage area to avoid the buildup of vapors.
- **Childproofing:** Storage areas should be restricted to authorized personnel and should be inaccessible to unauthorized individuals.
- **Regular Inspections:** Regularly inspect containers and equipment for signs of leakage or damage.
- **Emergency Equipment:** Ensure that emergency equipment, such as safety showers and first aid kits, is easily accessible in storage areas.

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTE CTION

Exposure Limits:

- **OSHA PEL:** 5 ppm (8-hour TWA)
- **NIOSH REL:** 5 ppm (10-hour TWA)
- **ACGIH TLV:** 2 ppm (ceiling limit)

Engineering Controls:

- Use local exhaust ventilation or fume hoods to maintain concentrations below exposure limits.
- Use closed systems where possible.

Personal Protective Equipment (PPE):

- **Eye Protection:** Safety glasses or chemical splash goggles. Face shields if splashing is possible.
- **Skin Protection:** Lab coat, acid-resistant gloves, and apron.
- **Respiratory Protection:** NIOSH-approved respirator with an acid gas cartridge if exposure limits are exceeded.

Hygiene Measures:

- Do not eat, drink, or smoke in areas where hydrochloric acid is used.

- Wash hands and skin thoroughly after handling.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Colorless to pale yellow liquid
Odor	Pungent, strong acid odor
Molecular Formula	HCl
Molecular Weight	36.46
pH	<1 (strongly acidic)
Specific Gravity:	1.18
Freezing/Melting Point:	-25 °C (-13 °F)
Boiling Point:	110 °C (230 °F)
Flash Point:	Not applicable
Evaporation Rate	Faster than water
Flammability	Non-flammable
Upper/Lower Flammability or Explosive Limits	Not applicable
Vapor Pressure	25 kPa at 25°C (estimate)
Vapor Density	1.3 (estimate)
Solubility	Completely soluble in water
Partition Coefficient (n-octanol/water)	Not applicable
Auto-ignition Temperature	Not applicable
Decomposition Temperature:	Not determined

SECTION 10 – STABILITY AND REACTIVITY

Reactivity:

- Reacts with most metals to release hydrogen gas.
- Reacts with alkalis and bases, forming salts and water.
- Reacts with amines to form chloramines.
- Reacts with ammonia to form ammonium chloride.

Chemical Stability:

- Stable under normal conditions of use and storage.

Conditions to Avoid:

- Avoid high temperatures and direct sunlight.
- Avoid contact with incompatible materials such as strong bases, oxidizing agents, and reactive metals.

Incompatible Materials:

- Strong bases (e.g., sodium hydroxide).
- Oxidizing agents (e.g., chlorine).
- Alkaline metals and their alloys.
- Organic materials.

Hazardous Decomposition Products:

- **Hydrogen chloride gas (HCl) when heated or reacts with incompatible substances.**

SECTION 11 – TOXICOLOGIC AL INFOR MATION

Toxicological Data:

Oral Rat LD50: 240 mg/kg (estimate)

Oral Rabbit LD50: 900 mg/kg

Inhalation Rat LC50: 3124 mg/L 1 H

Acute Effects: Strongly corrosive. May cause deep tissue damage. Harmful if swallowed

.**Local Effects:** Causes severe burns. Mist or vapor extremely irritating to eyes and respiratory tract.

Sensitization: Not a skin sensitizer

Chronic Effects: Corrosive. Prolonged or repeated skin contact causes serious tissue damage.

Carcinogenic Effects: This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

ACGIH: A4 – Not classifiable as a human carcinogen

IARC: 3- Not classifiable as to carcinogenicity of humans.

Skin Corrosion/Irritation: Corrosive to skin and eyes.

Epidemiology: available for this product.

Mutagenicity: No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Neurological Effects: No information found.

Reproductive Effects: Contains no ingredient listed as toxic to reproduction**.**

Teratogenic Effects: No data available to indicate product or any components present at greater than 0.1% may cause birth defects.

Target Organs and Symptoms: Corrosive effects. Mucus membranes, skin, eyes, kidneys, liver, respiratory tract

SECTION 12 – ECOLOGICAL INFORMATIO N

Ecotoxicological Data: LC50 Western mosquitofish (Gambusia affinis): 282 mg/L 96 H

Ecotoxicity: This product may affect the acidity (pH) in water with risk of harmful effects to aquatic organisms**.**

Environmental Effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Persistence and Degradability: Expected to be readily biodegradable.

Partition Coefficient (n-octanol/water): No information found.

SECTION 13 – DISPOSAL CONSIDERATIONS

Disposal Instructions: Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. All wastes must be handled in accordance with local, state and federal regulations.

Contaminated Packaging: Since emptied containers retain product residue, follow label warnings even after container is emptied. Offer rinsed packaging material to local recycling facilities.

Waste Codes: D002: Waste corrosive material (pH ≤ 2 or pH ≥12.5, or corrosive to steel)

SECTION 14 – TRANSPORT I NFOR MATION

- UN Number: 1789
- Proper Shipping Name: Hydrochloric Acid
- Transport Hazard Class: 8 (Corrosive)
- Packing Group: II (Severe hazard)
- Environmental Hazards: Not classified as a marine pollutant
- Labels Required: Corrosive (Class 8)
- Transport Regulations:
    - DOT (U.S.): UN1789, Hydrochloric Acid, 8, PG II
    - IMDG (International Maritime): UN1789, Hydrochloric Acid, 8, PG II
    - IATA (Air Transport): UN1789, Hydrochloric Acid, 8, PG II

Special Precautions:

- Keep containers tightly sealed.
- Store and transport in corrosion-resistant containers.
- Avoid exposure to extreme temperatures and incompatible materials

SECTION 15 – REGULATORY INFO RMATION

- U.S. Regulations:
    - OSHA (Occupational Safety and Health Administration): Classified as hazardous under 29 CFR 1910.1200
    - TSCA (Toxic Substances Control Act): Listed
    - CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act): Reportable Quantity (RQ) = 5000 lbs (2270 kg)

- SARA Title III (Superfund Amendments and Reauthorization Act):
  - Section 302 (Extremely Hazardous Substances): Not listed
  - Section 311/312 (Hazard Categories): Acute health hazard, chronic health hazard
  - Section 313 (Toxic Chemicals): Listed

- International Regulations:
  - EU Classification (CLP/GHS):
    - Signal Word: Danger
    - Hazard Statements: H290, H314, H335
  - REACH (Registration, Evaluation, Authorization, and Restriction of Chemicals): Registered
  - Canada (WHMIS Classification): Class E - Corrosive Material, D2A - Very Toxic
  - Australia (AICS), China (IECSC), Japan (ENCS), Korea (KECI): Listed

- Other Regulations:
  - NFPA Ratings: Health: 3, Flammability: 0, Reactivity: 1
  - HMIS Ratings: Health: 3, Flammability: 0, Physical Hazard: 1

SECTION 16 – OTHER INFORMATION

- **Revision Date:** March, 2025
- **Prepared By: Mehrarad Energy Development Company (Pureicals Brand)**
- **Disclaimer:** The information provided in this SDS is based on available data and is believed to be accurate. However, **Mehrarad Energy Development Company (Pureicals Brand)** makes no warranty, express or implied, regarding its accuracy or completeness. The user is responsible for ensuring proper handling, storage, and compliance with applicable regulations. **Mehrarad Energy Development Company (Pureicals Brand)** assumes no liability for any damages resulting from the use or reliance on this information.
- **Abbreviations and Acronyms:**

- **OSHA:** Occupational Safety and Health Administration
- **TSCA:** Toxic Substances Control Act
- **SARA:** Superfund Amendments and Reauthorization Act
- **NFPA:** National Fire Protection Association
- **HMIS:** Hazardous Materials Identification System
- **IATA:** International Air Transport Association
- **IMDG:** International Maritime Dangerous Goods