CORCO CHEMICAL CORPORATION

Manufacturers of ACS Reagents and Semiconductor Grade Chemicals

SAFETY DATA SHEET
Hydrochloric Acid, 37%

1. Identification

Product identifier: HYDROCHLORIC ACID, 37%, REAGENT (ACS)

Product Code Number: 400

Company Identification:

Corco Chemical Corporation
299 Cedar Lane
Fairless Hills, PA 19030
Phone: 215-295-5006
Fax: 215-295-0781

24 Hour Emergency Telephone Number:

CHEMTREC (U.S.): 1-800-424-9300;
CHEMTREC (outside U.S.): +1 703-527-3887

Trade Name: Hydrochloric Acid (HCl) aqueous all grades
Synonyms: Muriatic Acid, HCl Solution, Aqueous hydrogen chloride
Product Use: Process chemical, Laboratory reagent and scientific research and Development

2. Hazards Identification

Physical hazards Not classified.

Health hazards	**Acute toxicity, oral**	**Category 4**
	Skin corrosion/irritation	**Category 1**
	Serious eye damage/eye irritation	**Category 1**
	Sensitization, respiratory	**Category 1**
	Specific target organ toxicity, single exposure `	**Category 3**

Label elements:
Hazard symbol:

Signal word:	**Danger**
Hazard statement:	**Harmful if swallowed. Causes severe skin burns and eye damage. Causes serious eye damage. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Causes damage to organs (respiratory system). Causes damage to organs (respiratory system, teeth) through prolonged or repeated exposure. Very toxic to aquatic life.**
Precautionary statement:	
Prevention	**Do not breathe mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection. In case of inadequate ventilation wear respiratory protection.**
Response	**IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Rinse mouth.**
Storage	**Store locked up.**
Disposal	**Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.**

Hazard(s) not otherwise classified (HNOC)	**Not classified.**
Environmental hazard	**Hazardous to the aquatic environment, acute Category1 Hazard.**

Supplemental information

Precautionary statement

Prevention	**Avoid release to the environment.**
Response	**Collect spillage.**
Disposal	**Dispose of contents/container in accordance with Local/regional/national/international regulations.**

3. Composition/information on ingredients

Mixtures

Hazardous components Chemical name	CAS number	%
Hydrogen Chloride	7647-01-0	37

Non-hazardous components Chemical name	CAS number	%
Water	7732-18-5	63

***Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.**

4. First-aid measures

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if Needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician or poison control center immediately.

Skin Contact: Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. For minor treatment needed provide general supportive measures and treat symptomatically.

Eye Contact Rinse skin contact with water for several minutes, avoid spreading material on unaffected skin. Get medical attention and keep victim under observation. Symptoms may be delayed. Cautiously remove contact lenses, if present and easy to do. Continue rinsing. Keep victim warm.
Call a physician or poison control center immediately.

Ingestion: Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Irritation of eyes and mucous membranes. May cause temporary blindness and severe eye damage. Symptoms may be and delayed include stinging, tearing, redness, swelling, and blurred vision. May cause allergic respiratory reaction. Prolonged exposure may cause chronic effects.

Indication of immediate: In case of shortness of breath, give oxygen.

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media: Use extinguishing agent suitable for type of surrounding fire. Water. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO_2).

Unsuitable extinguishing media: Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical: Irritating, corrosive and/or toxic gases or fumes will be released during a fire.

Special protective equipment and precautions for firefighters:
Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.
Fire-fighting equipment/instructions: Water runoff can cause environmental damage.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedure:

Keep unnecessary personnel away. Local authorities should be advised if significant spillages cannot be contained. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak. Keep upwind. Keep out of low areas. Ensure adequate ventilation. Avoid inhalation of vapors or mists. Wear appropriate personal protective equipment.

Methods and materials for containment and cleaning up: Material should not be released into the environment. This product is miscible in water. Prevent entry into waterways, sewers, basements or confined areas.

Large Spills: Stop leak if you can do so without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Neutralize with lime or soda ash. Following product recovery, flush area with water. Clean up in accordance with all applicable regulations.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. This material is classified as a water pollutant under the Clean Water Act and should be prevented from contaminating soil or from entering sewage and drainage systems which lead to waterways.
Never return spills in original containers for re-use. For waste disposal, see section 13 of the SDS. Neutralize the spilled material before disposal.

Environmental precautions: Contact local authorities in case of spillage to drain/aquatic environment. Avoid discharge into drains, water courses or onto the ground. Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water.

7. Handling and Storage

Precautions for Safe Handling: In case of insufficient ventilation, wear suitable respiratory equipment. Do not breathe mist or vapor. Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not taste or swallow. Do not get this material on clothing. Avoid prolonged exposure. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Avoid release to the environment. Do not empty into drains.

Conditions for safe Storage: Store locked up. Store in well-ventilated place. Keep Out of the reach of children. Store in a cool, dry place , dry place out of direct sunlight out of direct sunlight.

8. Exposure controls / personal protection

Occupational exposure limits:

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Hydrogen Chloride	Ceiling	7 mg/m3
CAS 7647-01-0		5 ppm

US. ACGIG Threshold Limit Values

Components	Type	Value
Hydrogen Chloride	Ceiling	2 ppm
CAS 7647-01-0		

US. NOISH: Pocket Guide to Chemical Hazards

Components	Type	Value
Hydrogen Chloride	Ceiling	7 mg/m3
CAS 7647-01-0		5 ppm

Biological Limits values — **No biological exposure limits noted for the Ingredient(s).**

Appropriate engineering Controls — Good general ventilation (typically 10 air changes per hour) Should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or Other engineering controls to maintain airborne levels below Recommended exposure limits. If exposure limits have not been Established, maintain airborne levels to an acceptable level. Provide eyewash station.

Individual protective measures, such as personal equipment

Eye / face protection: — **Wear eye/face protection. Chemical goggles are recommended. Provide an emergency eye wash station and quick drench shower in the immediate work area.**

Skin/Hand protection: — **Wear protective gloves. Wear appropriate chemical resistant clothing. It may provide little or no thermal protection.**

Respiratory protection — **Use a chemical cartridge respirator for concentrations exceeding occupational exposure limit.**

Thermal hazards — **Not available.**

General hygiene — Provide eyewash station and safety shower. When using, do not Eat, drink, or smoke. Do not get in eyes. Do not get this material

On clothing. Wash hands before breaks and immediately after Handling the product. Handle in accordance with good industrial Hygiene and safety practice.

9. Physical and chemical properties

Appearance: Clear
Physical state: Liquid
Form: Aqueous solution
Color: Colorless
Odor: Pungent
Odor threshold: Not available
pH for Hcl solutions: 0.1 (1.0 N), 1.1 (0.1N), 2.02 (0.01 N)
% Volatiles by volume @ 21C (70F): 100
Melting point: -74C (101F)
Boiling point / Boiling range: 53C (127F) Azoetrope (20.2%) boils at 109C (228F)
Flash point: Not available
Evaporation rate (BuAC=1): Not determined
Flammability: Not applicable
Upper / Lower flammability or Explosive Limits: Not applicable
Vapor Pressure (mm Hg): 190 @ 25C (77F)
Vapor Density (Air=1): No information found
Relative Density: 1.2g/cm3 at 25C (77F)
Solubility: Soluble
Partition Coefficient: n-octanol water: No data available
Auto-ignition Temperature: No data available
Decomposition Temperature: No data available
Viscosity: 2.3 mPa.s at 15C (59 F)

10. Stability and reactivity

Reactivity and / or chemical stability: Stable under ordinary conditions of use and Storage. Containers may burst when heated.

Possibility of Hazardous Reactions and Conditions to Avoid: No dangerous reactions known.

Incompatible Materials: A strong mineral acid, concentrated hydochloric acid is highly reactive with strong bases, metals, metal oxides, hydroxides, amines, carbonates and other alkaline materials. Incompatible with materials such as cyanides, sulfides, sulfites, and formaldehyde.

Hazardous Decomposition Products: Thermal oxidative decomposition produces toxic chlorine fumes and explosive hydrogen gas.

11. Toxicological Information

Emergency Overview: POISON! DANGER! CORROSIVE LIQUID AND MIST CAUSES SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. INHALATION MAY CAUSE LUNG DAMAGE.

Potential Health Effects:

Inhalation: Corrosive! Inhalation of vapors can cause coughing, choking, Inflammation of the nose, throat, and upper respiratory tract, and in severe Cases, pulmonary edema, circulatory failure, and death.

Ingestion: Corrosive! Swallowing Hydrochloric Acid can cause immediate Pain and burns of the mouth, throat, esophagus and gastrointestinal tract. May cause nausea, vomiting, and diarrhea. Swallowing may be fatal.

Skin Contact: Corrosive! Can cause redness, pain, and severe skin burns. Concentrated solutions cause deep ulcers and discolor skin.

Eye Contact: Corrosive! Vapors are irritating and may cause damage to the Eyes. Contact may cause severe burns and permanent eye damage.

Chronic Exposure: Long-term exposure to concentrated vapors may cause Erosion of teeth. Long-term exposure seldom occur due to the corrosive Properties of the acid.

Aggravation of Pre-existing Conditions: Persons with pre-existing skin Disorders or eye disease may be more susceptible to the effects of this Substance.

Specific Target Organ Toxicity – Single Exposure (Globally Harmonized System:) The substance or mixture is classified as specific target organ toxicant, single exposure, Category 3 with respiratory tract irritation.

Specific Target Organ Toxicity – Repeated Exposure (Globally Harmonized System:) No data available.

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

IARC Monographs: Overall Evaluation of Carcinogenicity

Hydrogen chloride (CAS 7647-01-0): 3 Not classifiable as a Carcinogenicity to humans.

Repoductive toxicity: Due to lack of data the classification is not possible.

Acute Toxicity: Hydrochloric Acid – Inhalation rat LC50: 3124 ppm / 1 h; Oral rabbit LD50: 900 mg/kg. Investigated as a tumorigen, mutagen, Reproductive effecter.

12. Ecological Information

Exotoxicity: This material is expected to be toxic to aquatic life. LC50 862 mg/l (Orfe, golden (Leuciscus Idus).

Persistence and Degradability: When released into the soil, this material Is not expected to biodegrade.

Bioaccumulative Potential: No further relevant information available.

Mobility in Soil: When released into the soil, this material may leach into Groundwater.

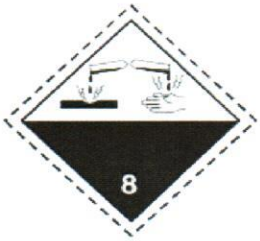
Other adverse effects: US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for US Coast Guard National Response Center is 800-424-8802.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state, and local requirements.

14. Transport Information

UN Number: UN1789
UN Proper Shipping Name: Hydrochloric Acid
Packaging Group II



DOT **IMDG IATA**

Land Transport ADR/RID and GGVS/GGVE (Cross Borders/Domestic)
Transport Hazard Class(es): 8 (C1) Corrosive substances

Maritime Transport IMDG/GGVSea
Transport Hazard Class(es): 8
Marine Pollutant: No

Air Transport ICATO-TI and IATA-DGR
Transport Hazard Class(es): 8

Transport in Bulk (According to Annex II of MARPOL 73/78 And the ICB Code): Not Applicable

Special Precautions for User: Warning: Corrosive Substances. Read safety instructions, SDS and emergency procedures before handling.

15. Regulatory Information

US Federal Regulations – All components are on the US EPA TSCA list.

TSCA Section 12(b) Export Notification (40 CFR, Subpt. D)
Not regulated

US OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not on regulatory list

CERCLA Hazardous Substance List (40 CFR 302.4)
Hydrogen Chloride (CAS 7647-01-0) - LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories **Immediate Hazard - Yes**
Delayed Hazard - Yes
Fire Hazard - No

	Pressure Hazard - No **Reactivity Hazard - No**
SARA 302 Extremely hazardous substance	**No**
SARA 311/312 Hazardous chemical	**No**

Other federal regulations:

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
HYDROGEN CHLORIDE (CAS 7647-01-0)
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
HYDROGEN CHLORIDE (CAS 7647-01-0)
Safe Drinking Water Act (SDWA): Not regulated
Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number
HYDROGEN CHLORIDE (CAS 7647-01-0) 6545
Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c)
HYDROGEN CHLORIDE (CAS 7647-01-0) 20 %WV
DEA Exempt Chemical Mixtures Code Number
HYDROGEN CHLORIDE (CAS 7647-01-0) 6545
Food and Drug Administration (FDA) - Not regulated

US state regulations - California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

State Right To Know Act – Rhode Island (RTK), Massachusetts (substance list), Pennsylvania (Hazardous Substances), and New Jersey (Worker and Community Right-to-know Act) – 500 LBS
HYDROGEN CHLORIDE (CAS 7647-01-0)

International Inventories

Country(s) or Region	Inventory Name	On Inventory (Yes / No)
Australian	**Australian Inventory of Chemical Substances (AICS)**	**Yes**
Canada	**Canada – Domestic Substances List (DSL)**	**Yes**
Canada	**Canada - Non-Domestic Substances List (NDSL)**	**No**
China	**China – Inventory of Existing Chemical Substances in China (IECSC)**	**Yes**

Europe - European Inventory of Existing Commercial Chemicals Substances (IECSC)	**Yes**
Europe – European List of Notified Chemical Substances (ELINCS)	**No**
Japan – Inventory of Existing and New Chemical Substances (ENCS)	**Yes**
Korea – Existing Chemicals List (ECL)	**Yes**
New Zealand – New Zealand Inventory	**No**
Philippines – Philippine Inventory of Chemicals and Substances (PICCS)	**Yes**
USA and Puerto Rico – Toxic Substance Control Act (TSCA)	**Yes**

16. **Other Information**

The information in the SDS is based on the data available at the time. While believed to be accurate, Corco does not claim it to be all inclusive. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. It is not intended to provide product performance or applicability information, and no express or implied warranty of any kind is made with respect to the product, the underlying product data, or the information contained herein. We will not provide advice on such matters, or be responsible for any injury or damage resulting from the use of the product described herein.

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