

SAFETY DATA SHEET

Distributed by:
SAL Chemical
3036 Birch Drive
Weirton, WV 26062
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Occidental Chemical Corporation

A subsidiary of Occidental Petroleum Corporation

HYDROCHLORIC ACID (HCl) (ALL GRADES)

SDS No.: M34514
North America EN

Rev. Date: 17-Jun-2021

SECTION 1. CHEMICAL PRODUCT / COMPANY IDENTIFICATION

Company Identification:	Occidental Chemical Corporation 14555 Dallas Parkway, Suite 400 Dallas, Texas 75254-4300
24 Hour Emergency Telephone Number:	1-800-733-3665 (USA); CANUTEC (Canada): 1-613-996-6666; CHEMTREC (within USA and Canada): 1-800-424-9300; CHEMTREC (outside USA and Canada): +1 703-527-3887; CHEMTREC Contract No: CCN16186
To Request an SDS:	MSDS@oxy.com or 1-972-404-3245
Customer Service:	1-800-752-5151 or 1-972-404-3700
Product Identifier:	HYDROCHLORIC ACID (HCl) (ALL GRADES)
Trade Name:	Hydrochloric Acid (HCl) aqueous all grades Hydrochloric Acid Technical, 22 Degree Baume Hydrochloric Acid Technical, 20 Degree Baume
Synonyms:	Muriatic Acid; HCl Solution; Aqueous hydrogen chloride
Product Use:	The largest end uses for hydrochloric acid are steel pickling, oil well acidizing, food manufacturing, producing calcium chloride, and ore processing. In addition, aqueous hydrochloric acid is used in a variety of miscellaneous applications, such as catalyst regeneration, pH control, chemical production processing, deionization of water and as a reducing agent
Chemical Family:	Inorganic Acid

SECTION 2. HAZARDS IDENTIFICATION

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OSHA REGULATORY STATUS: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

EMERGENCY OVERVIEW:

Color: Colorless
Physical State: Liquid
Appearance: Clear
Odor: Pungent, irritating odor

Signal Word: **Danger**

MAJOR HEALTH HAZARDS: CAUSES SEVERE SKIN BURNS AND EYE DAMAGE. HARMFUL IF SWALLOWED. HARMFUL IF INHALED. CAUSES DAMAGE TO GASTROINTESTINAL SYSTEM WHEN INGESTED. CAUSES DAMAGE TO TEETH THROUGH PROLONGED OR REPEATED EXPOSURES. Exposure to hydrogen chloride gas or vapors can lead to Reactive Airway Dysfunction Syndrome (RADS), a chemically or irritant induced type of asthma.

PHYSICAL HAZARDS: MAY BE CORROSIVE TO METALS. Contact with metals may evolve flammable hydrogen gas. May spatter or generate heat when mixed with water.

AQUATIC TOXICITY: HARMFUL TO AQUATIC LIFE.

PRECAUTIONARY STATEMENTS: Do not get in eyes, on skin, or on clothing. Wear protective gloves, protective clothing, eye, and face protection. Do not breathe mist, vapors, or spray. Use outdoors or in a well-ventilated area. Wash thoroughly after handling. Do not eat, drink, or smoke when using this product. Keep separated from incompatible substances.

ADDITIONAL HAZARD INFORMATION: This material is corrosive to eyes, skin, and mucous membranes. To treat contacted tissue, flush with water to dilute. There is no specific antidote.

HAZARD CLASSIFICATION:

GHS: PHYSICAL HAZARDS:	Category 1 - May be corrosive to metals
GHS: CONTACT HAZARD - SKIN:	Category 1B - Causes severe skin burns and eye damage
GHS: CONTACT HAZARD - EYE:	Category 1 - Causes serious eye damage
GHS: ACUTE TOXICITY - INHALATION:	Category 4 - Harmful if inhaled
GHS: ACUTE TOXICITY - ORAL:	Category 4 - Harmful if swallowed
GHS: TARGET ORGAN TOXICITY (SINGLE EXPOSURE):	Category 1 - Causes damage to Gastrointestinal System
GHS: TARGET ORGAN TOXICITY (REPEATED EXPOSURE):	Category 1 - Causes damage to teeth through prolonged or repeated exposure

GHS SYMBOL: Corrosive, Health hazard, Exclamation mark

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GHS SIGNAL WORD: DANGER

GHS HAZARD STATEMENTS:

GHS - Physical Hazard Statement(s)

- May be corrosive to metals

GHS - Health Hazard Statement(s)

- Causes severe skin burns and eye damage
- Harmful if swallowed
- Harmful if inhaled
- Causes damage to gastrointestinal system when ingested
- Causes damage to teeth through prolonged or repeated exposure

Additional Hazards - GHS Hazards Not Otherwise Classified (HNO):

- ACUTE AQUATIC HAZARD - CATEGORY 3: Harmful to aquatic life

GHS - Precautionary Statement(s) - Prevention

- Keep only in original container
- Do not breathe mist, vapors, or spray
- Wash thoroughly after handling
- Do not eat, drink or smoke when using this product
- Use only outdoors or in a well-ventilated area
- Avoid release to the environment
- Wear protective gloves/protective clothing/eye protection/face protection

GHS - Precautionary Statement(s) - Response

- Absorb spillage to prevent material damage
- IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
- Specific treatment for oral ingestion (see First Aid information on product label and/or Section 4 of the SDS)
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
- IF INHALED: Call a POISON CENTER or doctor/physician if you feel unwell
- IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water/shower
- Wash contaminated clothing before reuse
- Specific treatment for skin contact (see First Aid information in Section 4 of the SDS)
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
- IF EXPOSED (skin/eye): Immediately call a POISON CENTER OR PHYSICIAN
- IF exposed: Call a POISON CENTER or doctor/physician
- IF EXPOSED: Get medical advice/attention if you feel unwell

GHS - Precautionary Statement(s) - Storage

- Store in a secure manner
- Store in a corrosive resistant container with a resistant inner liner

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GHS - Precautionary Statement(s) - Disposal

- Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations

Physical Hazards Not Otherwise Classified

- Contact with metals may evolve flammable hydrogen gas
- May spatter or generate heat when mixed with water

Hazard Not Otherwise Classified (HNOC)-Health

- Exposure to hydrogen chloride gas or vapors can lead to Reactive Airway Dysfunction Syndrome (RADS), a chemically or irritant induced type of asthma

See Section 11: TOXICOLOGICAL INFORMATION

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS Number	Percent [%]
Water	7732-18-5	63 - 90
Hydrochloric Acid [Hydrogen Chloride]	7647-01-0	10 - 37

SECTION 4. FIRST AID MEASURES

INHALATION: IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician. Give artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, oxygen should be administered by qualified personnel. Effects of contact or inhalation may be delayed. Ensure that medical personnel are aware of the material involved and take precautions to protect themselves.

SKIN CONTACT: If on skin or hair, immediately flush contaminated areas with water. Immediately remove all contaminated clothing, jewelry, and shoes. Rinse skin with large amounts of water. Wash contaminated clothing before reuse. The specific treatment is dilution with water. There is no antidote. GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT: Immediately rinse eyes cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Give large amounts of water. If vomiting occurs spontaneously, keep airway clear. Give more water when vomiting stops. Never give anything by mouth to an unconscious or convulsive person. GET MEDICAL ATTENTION IMMEDIATELY.

Most Important Symptoms/Effects (Acute and Delayed):

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Hydrochloric acid is corrosive to the eyes, skin, and mucus membranes. It may be corrosive to any tissue it comes in contact with. Depending on the concentration, duration, and nature of the exposure, it can cause serious burns and extensive tissue destruction.

Acute Symptoms/Effects:

Inhalation (Breathing): Hydrogen chloride gas and vapors are intensely irritating to the mucous membranes of the nose, throat, and respiratory tract. Brief exposure to 35 ppm causes throat irritation, and levels of 50 to 100 ppm are barely tolerable for 1 hour. The greatest impact is on the upper respiratory tract; exposure to high concentrations can rapidly lead to swelling and spasm of the throat and suffocation. Most seriously exposed persons have immediate onset of rapid breathing, blue coloring of the skin, and narrowing of the bronchioles. Patients who have massive exposures may develop an accumulation of fluid in the lungs. Exposure to hydrogen chloride can lead to Reactive Airway Dysfunction Syndrome (RADS), a chemically or irritant induced type of asthma. Children may be more vulnerable to corrosive agents than adults because of the relatively smaller diameter of their airways. Children may also be more vulnerable from exposure because of increased minute ventilation per kg and failure to evacuate an area promptly when exposed.

Skin: Exposure to hydrochloric acid can produce burns on the skin and mucous membranes, the severity of which is related to the concentration of the solution. Subsequently, ulceration may occur, followed by keloid and retractile scarring. Hydrochloric acid is corrosive to tissue, causing redness, irritation (possibly severe), burns, ulceration, scarring, and possible necrosis (tissue death). Sudden circulatory collapse can occur with shock if large areas of skin have been burned. Severe burns have been fatal.

Eye: Acute exposure to hydrochloric acid solutions (>9%) and gaseous hydrochloric acid can cause severe irritation with corneal injury which may result in permanent impairment of vision.

Ingestion (Swallowing): Harmful if swallowed. Acute ingestion of concentrated hydrochloric acid may cause nausea, vomiting, abdominal pain, diarrhea, gastrointestinal bleeding, perforation, necrosis, and scarring, acidosis, and sudden circulatory collapse.

Delayed Symptoms/Effects:

- Respiratory System Effects: Chronic occupational exposure to hydrochloric acid has been reported to cause chronic bronchitis
- Skin: Repeated and prolonged skin contact may cause a chronic dermatitis
- Eye: Blindness, resulting from corneal burns, damage/loss of internal contents of eye, and perforation of globe
- Gastrointestinal Effects: Chronic occupational exposure has been reported to cause gastritis
- Teeth: Prolonged exposure to low concentrations may also cause dental discoloration and erosion

Protection of First-Aiders: Hydrogen chloride gas and vapor is heavier than air and may cause asphyxiation in enclosed, poorly ventilated, or low-lying areas. Protect yourself by avoiding contact with this material. Avoid contact with skin and eyes. Do not breathe dust, fume, gas, mist, vapors, or spray. Do not ingest. Use personal protective equipment (PPE). Refer to Section 8 for specific PPE recommendations.

Notes to Physician: Treat as a corrosive substance. Do not attempt to neutralize pH with sodium bicarbonate. Treat via dilution. Water or milk may be used. There is no antidote. Severe burns have been fatal. Treatment is supportive care. Follow normal parameters for airway, breathing, and circulation.

Interaction with Other Chemicals Which Enhance Toxicity: None known.

Medical Conditions Aggravated by Exposure: May aggravate preexisting conditions such as eye disorders that decrease tear production or have reduced integrity of the eye; skin disorders that compromise the integrity of the skin; and respiratory conditions including asthma and other breathing disorders.

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SECTION 5. FIRE-FIGHTING MEASURES

Fire Hazard: Not combustible, but if involved in a fire decomposes to produce irritants and toxic gases.

Explosive properties: Hydrochloric acid and hydrogen chloride react violently with many metals, with the generation of highly flammable hydrogen gas, which may explode.

Extinguishing Media: Use media appropriate for surrounding fire.

Fire Fighting: Keep unnecessary people away, isolate hazard area and deny entry. Wear NIOSH approved positive-pressure self-contained breathing apparatus operated in pressure demand mode. Move container from fire area if it can be done without risk. Cool non-leaking containers with water. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

Component	Immediately Dangerous to Life/ Health (IDLH)
Hydrochloric Acid [Hydrogen Chloride] 7647-01-0	50 ppm IDLH

Hazardous Combustion Products: Hydrogen chloride; Chlorine; Hydrogen gas

Sensitivity to Mechanical Impact: Not sensitive.

Sensitivity to Static Discharge: Not sensitive.

Lower Flammability Level (air): Not flammable

Upper Flammability Level (air): Not flammable

Flash point: Not flammable

Auto-ignition Temperature: Not determined

GHS: PHYSICAL HAZARDS:

- Category 1 - May be corrosive to metals

Physical Hazards Not Otherwise Classified

- Contact with metals may evolve flammable hydrogen gas

- May spatter or generate heat when mixed with water

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Remove all ignition sources. Keep unnecessary and unprotected persons away. Isolate hazard area and deny entry. Stop spill/leak if no risk involved. Consider evacuation of personnel located downwind if

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material is leaking. Do not get in eyes, on skin or on clothing. Do not breathe dust, fume, gas, mist, vapors, or spray. Do not ingest. Wear appropriate personal protective equipment recommended in Section 8, Exposure Controls / Personal Protection, of the SDS.

Personal Protective Equipment: Wear protective gloves, protective clothing, eye, and face protection. For Unknown Concentrations or exposures above IDLH (Immediately Dangerous to Life or Health) - Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full facepiece. See Section 8 for information on personal protective equipment.

Emergency Procedures: Stop the release if it can be done safely from a distance. Restrict access to the area until cleanup is complete. Prevent material and runoff from entering sewers and waterways if it can be done safely well ahead of the release. Cleanup personnel must wear proper protective equipment. Notify all downstream water users of possible contamination. For other than minor leaks, immediately implement the facility's predetermined emergency response plan.

Environmental Precautions: Keep out of water supplies and sewers. This material is acidic and may lower the pH of the surface waters with low buffering capacity. Releases should be reported, if required, to appropriate agencies.

Methods and Materials for Clean-up :

Recovery: Shut off ventilation system if needed. Use water fog or spray to knock down and absorb vapors. Reuse, reprocess, recycle if possible. Completely contain spilled materials with dikes, sandbags, etc. Collect with appropriate absorbent and place into suitable container. Keep container tightly closed. Liquid material may be removed with a properly rated vacuum truck.

Neutralization: Due to the reactivity of hydrochloric acid, neutralization for disposal purposes should be avoided whenever possible. Hydrochloric acid neutralization procedures are available by contacting OxyChem Technical Service Department at 800-733-1165 option #1. Hydrochloric acid neutralization procedures must be carried out ONLY by properly trained personnel wearing appropriate personal protective equipment and ONLY after thoroughly reviewing the neutralization procedures with manufacturer.

Final Disposal: For waste disposal, see section 13.

SECTION 7. HANDLING AND STORAGE

Handling:

Precautions for Safe Handling: Avoid breathing vapor or mist. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Wear personal protective equipment as described in Exposure Controls/Personal Protection (Section 8) of the SDS. Use only equipment and hoses approved for this material. NEVER add water to this product. Always add product to large quantities of water. When mixing, slowly add to water to minimize heat generation and spattering. Water or caustic solutions should never be added directly to this product because of violent reaction and spattering.

Technical measures/precautions: Hydrochloric acid is corrosive to metals including the following: carbon steel, stainless steel, nickel, Monel®1, bronze, brass, copper, Inconel®1, and aluminum. These are commonly used industrial materials. Great care should be taken to avoid contact of these materials with hydrochloric acid. Consult OxyChem® Hydrochloric Acid Handbook for additional tank / equipment specifications.

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Other precautions: Use caution when diluting with water; DO NOT add water to acid, ALWAYS add acid to water while stirring to minimize release of heat, steam and fumes.

Storage:

Safe Storage Conditions: Store and handle in accordance with all current regulations and standards. Store in rubber-lined steel, acid-resistant plastic or glass containers. Keep container tightly closed. Store in a cool, dry area. Store in a well-ventilated area. Keep away from heat, sparks and open flames. Keep separated from incompatible substances (see below or Section 10 of the Safety Data Sheet). Do not store in aluminum container or use aluminum fittings or transfer lines. Protect from physical damage. Dike and vent storage tanks.

Technical measures: Hydrochloric acid should be stored either in rubber-lined steel storage tanks or in fiberglass-reinforced plastic storage tanks. Storage tanks should have a concrete containment dike coated with an acid-resistance coating to confine any spilled product. Storage tanks should be equipped with instrumentation to accurately measure tank inventory and provide notification if the storage tank is approaching an over-filled condition. Consult OxyChem® Hydrochloric Acid Handbook for additional tank / equipment specifications.

Incompatible Substances: Incompatible with acetic anhydride, acetylides of cesium and rubidium, aliphatic amines, alkalis, alkanolamines, alkylene oxides, aromatic amines, amides, 2-aminoethanol, ammonia, ammonium hydroxide, calcium phosphide, carbides of calcium, cesium, and rubidium, chlorosulfonic acid, ethylene diamine, ethyleneimine, epichlorohydrin, isocyanates, lithium silicide, metal acetylide, mercuric sulfate, oleum, organic anhydrides, perchloric acid, phosphides of calcium and uranium, 3-propiolactone, uranium phosphide, sulfuric acid, sodium hydroxide and other bases, strong oxidizers, vinyl acetate, vinylidene fluoride. Attacks most metals (can produce flammable hydrogen gas), and some plastics, rubber, and coatings

GHS: PHYSICAL HAZARDS:

- Category 1 - May be corrosive to metals

Physical Hazards Not Otherwise Classified

- Contact with metals may evolve flammable hydrogen gas
- May spatter or generate heat when mixed with water

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

REGULATORY EXPOSURE LIMIT(S):

Listed below for the product components that have non-regulatory occupational exposure limits (OELs).

Component	OSHA Final PEL TWA	OSHA Final PEL STEL	OSHA Final PEL Ceiling
Hydrochloric Acid [Hydrogen Chloride] 7647-01-0 (10 - 37 %)	-----	-----	5 ppm 7 mg/m ³

OEL: Occupational Exposure Limit; OSHA: United States Occupational Safety and Health Administration; PEL: Permissible Exposure Limit; TWA: Time Weighted Average; STEL: Short Term Exposure Limit
OSHA Ceiling values indicate the exposure limit, which at no time shall be exceed. Instantaneous monitoring is the preferred method to determine compliance with OSHA Ceiling values. If instantaneous monitoring is not feasible, then the ceiling shall be assessed as a 15-minute time weighted average exposure

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which shall not be exceeded at any time during the working day [29CFR1910.1000(a)(1)]

Component	Canada - TWAs	Canada - STELs	Canada - Ceilings
Hydrochloric Acid [Hydrogen Chloride] 7647-01-0 (10 - 37 %)	-----	-----	Ontario - 2 ppm (Ceiling)

NON-REGULATORY EXPOSURE LIMIT(S):

Listed below for the product components that have non-regulatory occupational exposure limits (OELs).

Component	ACGIH TWA	ACGIH STEL	ACGIH Ceiling	Skin Absorption - ACGIH	OSHA TWA (Vacated)	OSHA STEL (Vacated)	OSHA Ceiling (Vacated)
Hydrochloric Acid [Hydrogen Chloride] 7647-01-0 (10 - 37 %)	-----	-----	2 ppm	-----	-----	-----	5 ppm 7 mg/m ³

- The Non-Regulatory United States Occupational Safety and Health Administration (OSHA) limits, if shown, are the Vacated 1989 PEL's (vacated by 58 FR 35338, June 30, 1993). OSHA Ceiling values indicate the exposure limit, which at no time shall be exceeded. Instantaneous monitoring is the preferred method to determine compliance with OSHA Ceiling values. If instantaneous monitoring is not feasible, then the ceiling shall be assessed as a 15-minute time weighted average exposure which shall not be exceeded at any time during the working day [29CFR1910.1000(a)(1)]

- The American Conference of Governmental Industrial Hygienists (ACGIH) is a voluntary organization of professional industrial hygiene personnel in government or educational institutions in the United States. The ACGIH develops and publishes recommended occupational exposure limits each year called Threshold Limit Values (TLVs) for hundreds of chemicals, physical agents, and biological exposure indices.

ENGINEERING CONTROLS: Use closed systems when possible. Provide local exhaust ventilation where vapor or mist may be generated. Ensure compliance with applicable exposure limits. Provide physical barriers for personnel splash protection at points in system that have potential for failure. A fume scrubber should be utilized as part of the storage system to eliminate the release of irritating and corrosive vapors into the workplace and atmosphere, both during unloading operations and during "static" storage conditions. Many localities require the use of a fume scrubber.

PERSONAL PROTECTIVE EQUIPMENT:

Eye Protection: Wear chemical safety goggles with a face shield to protect against eye and skin contact when appropriate. Provide an emergency eyewash fountain and quick drench shower in the immediate work area.

Skin and Body Protection: Wear chemical resistant clothing and rubber boots when potential for contact with the material exists. Always place pants legs over boots.

Hand Protection: Wear appropriate chemical resistant gloves. Consult a glove supplier for assistance in selecting an appropriate chemical resistant glove.

Protective Material Types: Nitrile, Neoprene, Butyl rubber, Polyvinyl chloride (PVC), Responder®, Trelchem®

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HPS, Tychem®

Respiratory Protection: Where vapor or mist concentration exceeds or is likely to exceed applicable exposure limits, a NIOSH approved respirator with acid gas cartridges (appropriate for hydrogen chloride) is required. When an air-purifying respirator is not adequate, for exposures above the IDLH or for spills and/or emergencies of unknown concentrations, a NIOSH approved self-contained breathing apparatus or airline respirator with a full-face piece and with an auxiliary self contained escape pack is required. A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

Component	Immediately Dangerous to Life/ Health (IDLH)
Hydrochloric Acid [Hydrogen Chloride] 7647-01-0 (10 - 37 %)	50 ppm IDLH

Other Protective Equipment: Provide an emergency eyewash fountain and quick drench shower in the immediate work area.

HYGIENE MEASURES: Do not get in eyes, on skin, or on clothing. Wear protective gloves, protective clothing, eye, and face protection. Do not breathe gas, fumes, vapor, mist, or spray. Use outdoors or in a well-ventilated area. Wash thoroughly after handling. When handling this material, do not eat, drink, or smoke.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Appearance:	Clear liquid
Color:	Colorless
Odor:	Pungent, irritating odor
Molecular Weight:	36.46
Molecular Formula:	HCl
Chemical Family:	Inorganic Acid
pH:	0.10 (1.0 N HCl); 1.10 (0.1 N HCl); 2.02 (0.01 N HCl); 3.02 (0.001 N HCl); 4.01 (0.0001 N HCl)
Melting Point/Range:	-25.4 °C (-13.7° F) for a 39.17% w/w solution
Freezing Point/Range:	-17.14 °C (10.81% solution); -62.25 °C (20.69%); -46.2 °C (31.24%); -25.4 °C (39.17%)
Flash point:	Not flammable
Vapor Pressure:	413.6 mm Hg
Vapor Density (air=1):	1.268
Relative Density/Specific Gravity (water=1):	1.05 - 1.18
Density:	Density (15 °C): 1.05 (10.17% w/w solution); 1.010 (20%); 1.15 (29.57%); 1.20 (39.11%)
Water Solubility:	82.3 g/100 g water at 0 °C; 67.3 g/100 g water at 30 °C; 63.3 g/100 g water at 40 °C; 59.6 g/100 g water at 50 °C; 56.1 g/100 g water at 60 °C 1.2 @ 25° C(gm/100gm H2O)
Partition Coefficient (n-octanol/water):	No data available
Auto-ignition Temperature:	Not determined

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Odor Threshold [ppm]:	0.255 to 10.06 ppm
Evaporation Rate (ether=1):	< 1.00 (butyl acetate = 1)
Volatility:	9 - 36% by volume
Flammability (solid, gas):	Not flammable
Lower Flammability Level (air):	Not flammable
Upper Flammability Level (air):	Not flammable
Viscosity:	0.405 cP (liquid at 118.16 K); 0.0131 cP (vapor at 273.06 K); 0.0253 cP (vapor at 523.2 K)
Surface tension:	23 mN/cm at 118.16 K

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability: Stable at normal temperatures and pressures.

Reactivity: Hydrochloric acid reacts vigorously with alkalis and with many organic materials. Reacts with strong oxidizing materials causing the release of chlorine.

Possibility of Hazardous Reactions: Avoid heat, flames, sparks, and other sources of ignition. Mixing with water may cause splattering and release of large amounts of heat. Will react with some metals forming flammable hydrogen gas. Hydrogen chloride may react with cyanide, forming lethal concentrations of hydrocyanic acid. Avoid contact with incompatible materials.

Conditions to Avoid (e.g., static discharge, shock, or vibration): Attacks many metals in the presence of water forming flammable explosive hydrogen gas. Reacts violently with oxidants forming toxic chlorine gas. Avoid all incompatible substances.

Incompatible Substances: Incompatible with acetic anhydride, acetylides of cesium and rubidium, aliphatic amines, alkalis, alkanolamines, alkylene oxides, aromatic amines, amides, 2-aminoethanol, ammonia, ammonium hydroxide, calcium phosphide, carbides of calcium, cesium, and rubidium, chlorosulfonic acid, ethylene diamine, ethyleneimine, epichlorohydrin, isocyanates, lithium silicide, metal acetylide, mercuric sulfate, oleum, organic anhydrides, perchloric acid, phosphides of calcium and uranium, 3-propiolactone, uranium phosphide, sulfuric acid, sodium hydroxide and other bases, strong oxidizers, vinyl acetate, vinylidene fluoride. Attacks most metals (can produce flammable hydrogen gas), and some plastics, rubber, and coatings.

Hazardous Decomposition Products: Chlorine, Hydrogen chloride, hydrogen gas.

Hazardous Polymerization: Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS:

TOXICITY:

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Hydrochloric acid is corrosive to skin, eyes, and mucus membranes and causes immediate, severe irritation and corrosion of exposed tissue. Prolonged exposures may cause discoloration and erosion of teeth, gastritis, photosensitization, and bronchitis. Swallowing this material may be harmful.

ACUTE TOXICITY:

Eye contact: Causes serious eye damage. Eye exposure may cause irritation and burns to the eye lids, conjunctivitis, corneal edema, and corneal burn.

Skin contact: Can cause severe skin burns. Concentrated hydrochloric acid is corrosive to tissue, causing redness, irritation (possibly severe), burns, ulceration, scarring, and possible necrosis (tissue death).

Inhalation: Inhalation of this material may cause: irritation of the respiratory tract with sore throat, coughing, shortness of breath, hoarseness, laryngeal spasms, upper respiratory tract edema, inflammation and ulceration, hemorrhage, chest pain, and pulmonary edema.

Ingestion: Ingestion of concentrated hydrochloric acid can cause nausea, vomiting, abdominal pain, diarrhea, gastrointestinal bleeding, perforation, necrosis and scarring, acidosis, and sudden circulatory collapse. Harmful if swallowed.

CHRONIC TOXICITY:

Chronic Effects: Repeated or prolonged skin exposure to dilute solutions may result in dermatitis.

Photosensitization has been reported in chronic occupational skin exposures. Discoloration and erosion of the teeth may occur as a result of long term exposure. Chronic occupational inhalation exposure to hydrochloric acid has been reported to cause chronic bronchitis.

SIGNS AND SYMPTOMS OF EXPOSURE:

Inhalation (Breathing): Hydrogen chloride gas and vapors are intensely irritating to the mucous membranes of the nose, throat, and respiratory tract. Brief exposure to 35 ppm causes throat irritation, and levels of 50 to 100 ppm are barely tolerable for 1 hour. The greatest impact is on the upper respiratory tract; exposure to high concentrations can rapidly lead to swelling and spasm of the throat and suffocation. Most seriously exposed persons have immediate onset of rapid breathing, blue coloring of the skin, and narrowing of the bronchioles. Patients who have massive exposures may develop an accumulation of fluid in the lungs. Exposure to hydrogen chloride can lead to Reactive Airway Dysfunction Syndrome (RADS), a chemically or irritant induced type of asthma. Children may be more vulnerable to corrosive agents than adults because of the relatively smaller diameter of their airways. Children may also be more vulnerable from exposure because of increased minute ventilation per kg and failure to evacuate an area promptly when exposed.

Skin: Exposure to hydrochloric acid can produce burns on the skin and mucous membranes, the severity of which is related to the concentration of the solution. Subsequently, ulceration may occur, followed by keloid and retractile scarring. Hydrochloric acid is corrosive to tissue, causing redness, irritation (possibly severe), burns, ulceration, scarring, and possible necrosis (tissue death). Sudden circulatory collapse can occur with shock if large areas of skin have been burned. Severe burns have been fatal.

Eye: Acute exposure to hydrochloric acid solutions (>9%) and gaseous hydrochloric acid can cause severe irritation with corneal injury which may result in permanent impairment of vision.

Ingestion (Swallowing): Harmful if swallowed. Acute ingestion of concentrated hydrochloric acid may cause nausea, vomiting, abdominal pain, diarrhea, gastrointestinal bleeding, perforation, necrosis, and scarring, acidosis, and sudden circulatory collapse.

Interaction with Other Chemicals Which Enhance Toxicity: None known.

GHS HEALTH HAZARDS:

GHS: CONTACT HAZARD - SKIN: Category 1B - Causes severe skin burns and eye damage

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GHS: CONTACT HAZARD - EYE: Category 1 - Causes serious eye damage**GHS: ACUTE TOXICITY - ORAL:** Category 4 - Harmful if swallowed**GHS: ACUTE TOXICITY - INHALATION:** Category 4 - Harmful if inhaled**GHS: TARGET ORGAN TOXICITY (SINGLE EXPOSURE):**

Category 1 - Causes damage to Gastrointestinal System

GHS: TARGET ORGAN TOXICITY (REPEATED EXPOSURE):

Category 1 - Causes damage to teeth through prolonged or repeated exposure

TOXICITY DATA:**PRODUCT TOXICITY DATA:**

LD50 Oral: 700 mg/kg (Rat)	LD50 Dermal: >5010 mg/kg (Rabbit)	LC50 Inhalation: 3124 ppm (1 hr - Rat), converted to 1562 ppm (4 hr - Rat)
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COMPONENT TOXICITY DATA:

The component toxicity data is populated by the LOLI database and may differ from the product toxicity data given.

Component	Oral LD50	Dermal LD50	Inhalation LC50
Hydrochloric Acid [Hydrogen Chloride]	238 - 277 mg/kg (Rat)	>5010 mg/kg (Rabbit)	1.68 mg/L (1-h Rat)

Eye Irritation/Corrosion: Acute exposure to hydrochloric acid solutions (>9%) and gaseous hydrochloric acid can cause severe irritation with corneal injury which may result in permanent impairment of vision.

Skin Irritation/Corrosion: Exposure to hydrochloric acid can produce burns on the skin and mucous membranes, the severity of which is related to the concentration of the solution. Subsequently, ulceration may occur, followed by keloid and retractile scarring.

Skin Absorbent / Dermal Route: NO.

Although direct skin contact can cause severe burns if the acid is not quickly rinsed away with copious amounts of water, there is no indication that skin contact with hydrogen chloride can elicit systemic poisoning.

RESPIRATORY OR SKIN SENSITIZATION: Exposure to hydrogen chloride can lead to Reactive Airway Dysfunction Syndrome (RADS), a chemically- or irritant induced type of asthma. No evidence of skin sensitization was seen in either human or laboratory animal exposure studies to hydrochloric acid.

CARCINOGENICITY: There is inadequate evidence for the carcinogenicity in both humans and animals of hydrochloric acid. This product is not classified as a carcinogen by NTP, IARC or OSHA.

SPECIFIC TARGET ORGAN TOXICITY (Single Exposure): Histopathological changes noted in mice, killed 24 hr. after exposure to hydrochloric acid gas, revealed that the target organs included the upper respiratory tract and the eyes, with secondary changes and passive congestion in the lungs, intestine, liver, and kidneys. Therefore, classified as GHS category 1 to respiratory tract and category 2 to gastrointestinal tract, liver, and kidney.

SPECIFIC TARGET ORGAN TOXICITY (Repeated or Prolonged Exposure): Long-term exposure in humans has caused yellowing and erosion of the teeth; therefore, classified as GHS category 1 for specific target organ toxicity - repeat or prolonged exposure.

INHALATION HAZARD: Acute inhalation exposure may cause coughing, hoarseness, inflammation and ulceration

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of the respiratory tract, chest pain, and pulmonary edema in humans. Histopathological changes noted in mice, killed 24 hr. after exposure to hydrochloric acid gas, revealed that the target organs included the upper respiratory tract and the eyes, with secondary changes and passive congestion in the lungs, intestine, liver, and kidneys.

GERM CELL/IN-VITRO MUTAGENICITY: No data from in-vivo tests are found, except for positive results in sex-linked recessive lethal tests using drosophila. Although there are positive results from some in-vitro mutagenicity tests, these results are considered as insufficient to be the basis for mutagenesis in human germ cells.

REPRODUCTIVE TOXICITY: No information is available on the reproductive or developmental effects of hydrochloric acid in humans. In rats exposed to hydrochloric acid by inhalation, severe dyspnea, cyanosis, and altered estrus cycles have been reported in dams, and increased fetal mortality and decreased fetal weight have been reported in the offspring (Pavlova, 1976). However, it should be noted hydrogen chloride dissociates entirely in aqueous media; therefore, any fetal exposures will be only to hydrogen and chloride ions, both of which are physiological electrolytes. While it is possible that an excess of hydrogen ions might alter pH sufficiently to affect the fetus, the results of Pavlova (1976) suggest such findings are in practice inseparable from maternal toxicity. Hydrochloric acid inhalation caused adverse effects on fetal rat development at exposure levels that were maternally toxic.

TOXICOKINETICS: The biological activity of hydrogen chloride is associated with its high solubility in water i.e., 23 moles/L at 0 deg C. The hydrogen chloride in water dissociates almost completely, with the hydrogen ion captured by the water molecules to form the hydronium ion. The hydronium ion becomes a donor of a proton that possesses catalytic properties and thus is capable of reacting with organic molecules. This may explain the ability of hydrogen chloride to induce cellular injury and necrosis.

METABOLISM: A rare and unusual complication of ingestion of high levels of hydrogen chloride is an increase in the concentration of chloride ions in the blood, causing an acid-base imbalance. Because of their higher metabolic rates, children may be more vulnerable to toxicants interfering with basic metabolism.

ENDOCRINE DISRUPTOR: This product does not contain any known or suspected endocrine disruptors.

NEUROTOXICITY: No relevant information available.

IMMUNOTOXICITY: No relevant information available.

Hazard Not Otherwise Classified (HNOC)-Health

- Exposure to hydrogen chloride gas or vapors can lead to Reactive Airway Dysfunction Syndrome (RADS), a chemically or irritant induced type of asthma

SECTION 12. ECOLOGICAL INFORMATION**ECOTOXICITY (EC, IC, and LC):**

Component:	Freshwater Fish:	Invertebrate Toxicity:	Algae Toxicity:	Other Toxicity:
Hydrochloric Acid [Hydrogen Chloride] 7647-01-0 (10 - 37 %)	282 mg/L LC50 96 h Gambusia affinis	56 mg/L EC50 72h Daphnia	No data available	No data available

Invertebrate Toxicity:

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LC50 Shrimp: 100 - 330 mg/L
72-hour EC50=56 mg/L for Crustacea (Daphnia magna)

FATE AND TRANSPORT:

PERSISTENCE: TERRESTRIAL FATE: If released to soil, hydrogen chloride will evaporate from dry soil surfaces and dissociate into chloride and hydronium ions in moist soil. AQUATIC FATE: If released to water, hydrogen chloride dissociates readily in water to chloride and hydronium ions. The dissociation results in a decrease of the pH of the water. Volatilization from water surfaces is not expected based upon a Henry's Law constant of 4.90×10^{-10} atm-cu m/mole. Hydrogen chloride does not build up in aquatic organisms. ATMOSPHERIC FATE: Anhydrous hydrogen chloride released into the air will be in the vapor form. Once released to the environment it will react with atmospheric moisture and standing water to form hydrochloric acid. Hydrogen chloride is removed from air by wet deposition as chloride salts with an atmospheric lifetime of 1-5 days.

BIODEGRADATION: This material is inorganic and not subject to biodegradation.

BIOCONCENTRATION: This material is not expected to bioconcentrate in organisms.

BIOACCUMULATIVE POTENTIAL: Hydrogen chloride dissociates readily in water to chloride and hydronium ions. Therefore, hydrogen chloride does not accumulate in the aquatic organisms.

MOBILITY IN SOIL: Hydrogen chloride dissociates into chloride and hydronium ions in moist soil.

ADDITIONAL ECOLOGICAL INFORMATION: This material has exhibited toxicity to terrestrial organisms. May decrease pH of waterways and adversely affect aquatic life. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product into sewer systems without previously notifying the sewage treatment plant authority. For guidance, contact your local or regional regulatory water boards and/or other appropriate regulatory offices.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste from material:

Reuse or reprocess, if possible. May be subject to disposal regulations. Dispose in accordance with all applicable regulations. Generators of waste (equal to or greater than 100 kg/mg) containing this contaminant, EPA hazardous waste number D002, must conform with USEPA regulations in storage, transportation, treatment and disposal of waste. 40 CFR 240-280, 300-306, 702-799 (USEPA).

Container Management:

Dispose of container in accordance with applicable local, regional, national, and/or international regulations. Container rinsate must be disposed of in compliance with applicable regulations.

Contaminated Material:

Contaminated packaging must be disposed of as unused product by a licensed / permitted waste disposal service.

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SECTION 14. TRANSPORT INFORMATION

IMPORTANT: The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

LAND TRANSPORT**U.S. DOT 49 CFR 172.101:**

UN NUMBER: UN1789
PROPER SHIPPING NAME: Hydrochloric acid solution
HAZARD CLASS/ DIVISION: 8
PACKING GROUP: II
LABELING REQUIREMENTS: 8
RQ (Lbs.): RQ 5,000 Lbs. (Hydrochloric acid)

ADDITIONAL INFORMATION: Emergency Response Guide Number 157.

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

UN NUMBER: UN1789
SHIPPING NAME: Hydrochloric acid solution
CLASS OR DIVISION: 8
PACKING/RISK GROUP: II
LABELING REQUIREMENTS: 8

MARITIME TRANSPORT (IMO / IMDG)

UN NUMBER: UN1789
PROPER SHIPPING NAME: Hydrochloric acid solution
HAZARD CLASS / DIVISION: 8
Packing Group: II
LABELING REQUIREMENTS: 8

AIR TRANSPORT (ICAO / IATA)

Special Instructions CAO: IATA Certificate for shipping personnel is required

SECTION 15. REGULATORY INFORMATION

U.S. REGULATIONS**OSHA REGULATORY STATUS:**

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):

If a release is reportable under CERCLA section 103, notify the state emergency response commission and local

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emergency planning committee. In addition, notify the National Response Center at (800) 424-8802 or (202) 426-2675.

Component	U.S. DOT Hazardous Substances/ RQs	CERCLA Hazardous Substances / RQs	CERCLA Section 302 EHS EPCRA RQs	Section 302 Threshold Planning Quantity (TPQ)
Hydrochloric Acid [Hydrogen Chloride] 7647-01-0 (10 - 37)	5000 lbs(RQ)	5000 lbs.RQ	5000 lbs.(EPCRA RQ)	500 lb TPQ

SARA EHS Chemical (40 CFR 355.30)

If a release is reportable under EPCRA, notify the state emergency response commission and local emergency planning committee. If the TPQ is met, facilities are subject to reporting requirements under EPCRA Sections 311 and 312.

EPCRA SECTIONS 311/312 HAZARD CATEGORIES (40 CFR 370.10):

Acute Health Hazard, Reactive Hazard, Chronic Health Hazard, Extremely Hazardous

SARA HAZARD CATEGORIES ALIGNED WITH GHS (2018):

Health Hazard - Acute Toxin (any route of exposure)
 Health Hazard - Skin Corrosion or Irritation
 Health Hazard - Serious eye damage or eye irritation
 Health Hazard - Specific Target Organ Toxicity (STOT) Repeat Exposure (RE)
 Health Hazard - Specific Target Organ Toxicity (STOT) Single Exposure (SE)

EPCRA SECTION 313 (40 CFR 372.65):

The following chemicals are listed in 40 CFR 372.65 and may be subject to Community Right-to Know Reporting requirements.

Component	SARA 313 - Emission Reporting	SARA 313 PBT
Hydrochloric Acid [Hydrogen Chloride] 7647-01-0 (10 - 37)	1.0% (de minimis concentration)	Not Listed

DEPARTMENT OF HOMELAND SECURITY (DHS)- Chemical Facility Anti-Terrorism Standards (6 CFR 27):

This product is regulated under the U.S. Department of Homeland Security (DHS) Chemical Facility Anti-Terrorism Standards (CFATS) as follows:

Component	DHS - Security Issues	DHS-Sabotage Screening Threshold Qnty.	DHS-Sabotage Min. Conc.	DHS-Theft Screening Threshold Qnty.	DHS-Theft Min. Conc.	DHS-Release Screening Threshold Qnty.	DHS-Release Min. Conc.	CWC Toxic Chemicals:
Hydrochloric Acid [Hydrogen Chloride] 7647-01-0 (10 - 37)	Release - Toxic (concentration >=37%); Release - Toxic (anhydrous); Theft - Weapons of Mass Effect (anhydrous)	Not Listed	Not Listed	500 lbs. STQ (anhydrous)	a commercial grade; anhydrous	15000 lbs. STQ (concentration >=37%); 5000 lbs. STQ (anhydrous)	37.0% Minimum Concentration 1.0 %Minimum Concentration	Not Listed

OSHA PROCESS SAFETY (PSM) (29 CFR 1910.119):

Regulated.

Component	EPA RMP Toxic or Flammable TPQ	PSM - Highly Hazardous Substances, Toxics and Reactives	Flash Point
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Hydrochloric Acid [Hydrogen Chloride] 7647-01-0 (10 - 37)	Toxic (15000 lbs. threshold quantity) Toxic (5000 lbs. threshold quantity)	5000 lb TQ; 5000 lb TQ (anhydrous)	
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FDA: This material has Generally Recognized As Safe (GRAS) status under specific U.S. Food and Drug Administration (FDA) regulations. Additional information is available from the Code of Federal Regulations, which is accessible on the FDA's website. Occidental Chemical Corporation's (OxyChem's) food grade product is guaranteed to be produced under all current Good Manufacturing Practices (cGMP) requirements as defined by the FDA. Food grade product is produced in a facility that is accredited as a Safe Quality Food (SQF) Level 2 Facility, certified under the Global Food Safety Initiative (GFSI), and meets the Food Chemical Codex (FCC) requirements.

EPA'S CLEAN WATER AND CLEAN AIR ACTS:

Regulated as noted in table below.

Component	Clean Water Act - Priority Pollutants	CAA - ODS CLASS 1 AND CLASS 2	CAA - Volatile Organic Compounds (VOCs) in SOCM	CAA - HON Rule - Organic HAPs	CAA - Hazard Air Pollutants	CAA - Urban HAPs List (Integrated Urban Strategy)	SNAP - Substitutes for ODS	EPA RMP Toxic or Flammable TPQ
Hydrochloric Acid [Hydrogen Chloride] 7647-01-0 (10 - 37 %)	Not Listed	Not Listed	Not Listed	Not Listed	Present	Not Listed	Not Listed	Toxic (15000 lbs. threshold quantity) Toxic (5000 lbs. threshold quantity)

NATIONAL INVENTORY STATUS**U.S. INVENTORY STATUS: Toxic Substance Control Act (TSCA):**

Component	TSCA Inventory	TSCA ACTIVE LIST	TSCA 12(b)	TSCA/Section 4	TSCA/Section 5	TSCA/Section 6	TSCA/Section 8
Hydrochloric Acid [Hydrogen Chloride] 7647-01-0 (10 - 37 %)	Listed	ACTIVE	Not Listed	Not listed	Not Listed	Not listed	Not listed

CANADIAN CHEMICAL INVENTORY: All components of this product are listed on either the DSL or the NDSL.

Component	DSL	NDSL
Hydrochloric Acid [Hydrogen Chloride] 7647-01-0 (10 - 37)	Listed	Not Listed

STATE REGULATIONS**California Proposition 65:**

This product is not listed on the California Governor's current list of Carcinogens, Reproductive Toxicants, and/or Candidate Carcinogens (Proposition 65), but it may contain trace amounts of impurities that are listed. For additional information, contact OxyChem Customer Relations.

Component	California Proposition 65 Cancer WARNING:	California Proposition 65 CRT List - Male reproductive toxin:	California Proposition 65 CRT List - Female reproductive toxin:	Massachusetts Right to Know Hazardous Substance List	Rhode Island Right to Know Hazardous Substance List
Hydrochloric Acid [Hydrogen Chloride]	Not Listed	Not Listed	Not Listed	Listed	Listed

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7647-01-0 (10 - 37 %)							
Component	New Jersey Right to Know Hazardous Substance List	New Jersey Special Health Hazards Substance List	New Jersey - Environmental Hazardous Substance List	Pennsylvania Right to Know Hazardous Substance List	Pennsylvania Right to Know Special Hazardous Substances	Pennsylvania Right to Know Special Hazardous Substances	Pennsylvania Right to Know Environmental Hazard List
Hydrochloric Acid [Hydrogen Chloride]	1012	corrosive	Listed	Listed	Not Listed	Not Listed	Present

CANADIAN REGULATIONS

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

Component	Canada - CEPA - Schedule I - List of Toxic Substances	Canada - NPRI	Canada - CEPA - 2010 Greenhouse Gases (GHG) Subject to Mandatory Reporting	CANADIAN CHEMICAL INVENTORY:	NDSL:
Hydrochloric Acid [Hydrogen Chloride] 7647-01-0 (10 - 37)	Not listed	Part 1, Group 1 Substance	Not Listed	Listed	Not Listed

SECTION 16. OTHER INFORMATION

Prepared by: Occidental Chemical Corporation - HES&S Product Stewardship Department

Rev. Date: 17-Jun-2021

Reason for Revision:

- Change of company physical address: SEE SECTION 1
- Updated 24 Hour Emergency Telephone Number: SEE SECTION 1
- Trade Name has been added: SEE SECTION 1
- Updated Product Use information: SEE SECTION 1
- Emergency Overview was revised: SEE SECTION 2
- Revised GHS Information: SEE SECTION 2
- Added Hazards Not Otherwise Classified (HNOC): SEE SECTION 2
- The formulation has been revised: SEE SECTION 3
- FIRST AID MEASURES (SECTION 4)
- FIRE FIGHTING MEASURES (SECTION 5)
- Revised Accidental Release Measures: SEE SECTION 6
- Revised Handling and Storage Recommendations: SEE SECTION 7
- Added an explanation statement for "Ceiling Value" exposure levels: SEE SECTION 8
- Added Canadian exposure levels: SEE SECTION 8
- Revised Exposure Controls/Personal Protection information: SEE SECTION 8
- Updated Physical and Chemical Properties. SEE SECTION 9
- Stability and Reactivity recommendations: SEE SECTION 10
- SDS format change / enhancement to Section 11: Toxicological Information

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- Ecological Information has been modified: SEE SECTION 12
 - Updated Disposal Considerations. SEE SECTION 13
 - Added air transport certificate requirements for shipping personnel: SEE SECTION 14
 - Updated FDA Statement: SEE SECTION 15
 - Added LOLI tables such as EPA'S Clean Water / Air Act, TSCA status, DHS, PSM, EPCRA, CERCLA, Federal Canadian: SEE SECTION 15
 - Added Department of Homeland Security Anti-Terrorism Information: SEE SECTION 15
 - Modified SARA Hazard Categories Aligned with GHS (2018): SEE SECTION 15
 - Updated TSCA Status Table: SEE SECTION 15
 - WHMIS Classifications were removed from format: SEE SECTION 15
 - Removed NFPA/HMIS ratings from format: SEE SECTION 16
 - Revised company name in disclaimer statement to be full legal name: SEE SECTION 16

IMPORTANT:

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OSHA Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Safety Data Sheet available to your employees.

End of Safety Data Sheet