Advance Chemicals Ltd.

Safety Data Sheet

Section 01 - Identification

Product Identifier	Muriatic Acid 10.4%
Other Means of Identification	Aqueous hydrogen chloride, muriatic acid, hydrogen chloride, HCl, chlorohydric acid.
Product Use and Restrictions on Use	Acidizing (activation) of petroleum wells, scale removal, ore reduction, metal cleaning, pH adjustment, industrial acidizing, generation of chlorine dioxide, regeneration of ion exchange resins.
Initial Supplier Identifier	Advance Chemicals Ltd. 1500 Quebec Avenue Saskatoon, SK. Canada S7K 1V7
Prepared By	ClearTech Industries Inc. Technical Writer Phone: 1 (800) 387-7503
24-Hour Emergency Phone	Phone: 1 (306) 664 – 2522

Section 02 - Hazard Identification

GHS-Classification

Skin Corrosion/Irritation	Category 1B
Serious Eye Damage/Irritation	Category 1
STOT-Single Exposure	Category 3

Physical Hazards

Corrosive to Metals	Category 1

Danger

Hazards Statements

H314 – Causes severe skin burns and eye damage.
H335 – May cause respiratory irritation
H290 – May be corrosive to metals

Pictograms

Precautionary Statements
P234 – Keep only in original container
P260 – Do not breathe dust, fume, gas, mist, vapours, or spray.
P264 – Wash hands thoroughly after handling.
P301 +P330 + P331 – IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 – IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin.
P271 – Use only outdoors or in a well-ventilated area
P280 – Wear protective gloves, protective clothing, eye protection, face protection.
P390 – Absorb spillage to prevent material damage
P363 – Wash contaminated clothing before reuse
P305 + P351 + P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304 + P340 – IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P310 – Immediately call a POISON CENTER or doctor/physician.
P405 – Store locked up
P403 + P233 – Store in a well-ventilated place. Keep container tightly closed
P501 – Dispose of contents/container in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

Section 03 - Composition / Information on Ingredients

Chemical Name	CAS Number	Weight %	Unique Identifiers
Hydrochloric Acid	7647-01-0	10.4%	
Water	7732-18-5	89.6%	

Section 04 - First Aid Measures

Inhalation
Remove victim to fresh air. Give artificial respiration only if breathing has stopped. If breathing is difficult, give oxygen. Seek medical attention.

Skin Contact / Absorption
Remove contaminated clothing. Wash affected area with lukewarm water for at least 30 minutes. Seek immediate medical attention. Completely decontaminate clothing, shoes and leather goods before reuse or discard.

Eye Contact
Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes, while holding the eyelid(s) open. If a contact lens is present, remove only if easy to do so. Neutral saline solution may be used as soon as it is available. Seek immediate medical attention.

Ingestion
NEVER give anything by mouth if victim is rapidly losing consciousness, is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. If vomiting occurs naturally, have victim rinse mouth with water again. Quickly transport victim to an emergency care facility.

Additional Information
This chemical is very toxic. Take proper precautions to ensure your own safety before assisting others. Any skin or eye contact will also involve significant inhalation exposure.

Section 05 - Fire Fighting Measures

Suitable Extinguishing Media
Extinguish fire using agent suitable for surrounding fire. Use water in flooding quantities as fog. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use water spray to knock-down vapours.

Unsuitable Extinguishing Media
Not Available

Specific Hazards Arising From the Chemical
Contact with common metals produces extremely flammable hydrogen gas. When heated or in a fire, toxic and corrosive hydrogen chloride gas is released. Hydrogen chloride is thermally stable up to approximately 1500°C (2732°F). Above this temperature, hydrogen chloride begins to dissociate into extremely flammable hydrogen

	gas and very toxic and corrosive chlorine gas. Heat from a fire can cause a rapid build-up of pressure inside closed containers, which may cause explosive rupture and a sudden release of large amounts of flammable and corrosive gases.
Special Protective Equipment and Precautions for Fire-Fighters	CAUTION: Very toxic and corrosive chemical and vapours. Wear NIOSH-approved self-contained breathing apparatus and protective clothing. Evacuate area and fight fire from a safe distance or protected location. Approach fire from upwind to avoid corrosive and very toxic hydrogen chloride and chlorine gases.
Further Information	Hydrochloric acid solutions will not accumulate static charge, since they have very high electrical conductivities. They will not be ignited by a static discharge, since they are not combustible.

Section 06 - Accidental Release Measures

Personal Precautions / Protective Equipment / Emergency Procedures	Wear appropriate personal protective equipment. Ventilate area. Only enter area with PPE. Stop or reduce leak if safe to do so. Flush with water to remove any residue.
Environmental Precautions	Prevent material from entering sewers and waterways.
Methods and Materials for Containment and Cleaning Up	SMALL SPILLS: Contain and soak up spill with absorbent material which does not react with spilled chemical. Put material in suitable, covered, labeled containers. Flush area with water. Do not get water inside containers. Contaminated absorbent material may pose the same hazards as the spilled product. LARGE SPILLS: Contact fire and emergency services and supplier for advice.

Section 07 - Handling and Storage

Precautions for Safe Handling	This material is VERY TOXIC (INHALATION HAZARD, may be fatal). It is also a SKIN CONTACT HAZARD and CORROSIVE to the eyes and skin. Use proper equipment for lifting and transporting all containers. Use sensible industrial hygiene and housekeeping practices. Wash thoroughly after handling. Avoid all situations that could lead to harmful exposure.
Conditions for Safe Storage	Store in a cool, dry, well-ventilated area, out of direct sunlight and away from heat sources. Keep quantity stored as small as possible. Drums should be vented when received and then at least weekly to relieve internal pressure. Store away from incompatible materials, such as oxidizing agents, reducing agents, bases and metals.
Incompatibilities	Metals, sodium, bases, formaldehyde, oxidizing agent, reducing agents, perchloric acid, sulfuric acid. Potassium permanganate, aldehydes, epoxides, fluorine, acetylides, bories, carbides, phosphide, silicides, hexalithium disilicide.

Section 08 - Exposure Controls and Personal Protection

Exposure Limit(s)

Component	Regulation	Type of Listing	Value
Hydrochloric Acid	ACGIH	TLV-C	2ppm
	OSHA	PEL-T-C	5ppm (7mg/m^3)

Engineering Control(s)

Ventilation Requirements	Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions must be provided in accordance with all fire codes and regulatory requirements. Supply sufficient replacement air to make up for air removed by exhaust systems.
Other	Emergency shower and eyewash must be available and tested in accordance with regulations and be in close proximity.

Protective Equipment

Eyes/Face	Gas tight chemical goggles, full-face shield, or a full-face respirator is to be worn at all times when product is handled. Contact lenses should never be worn; they may contribute to severe eye injury.
Hand Protection	Impervious gloves of chemically resistant material should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse. Recommendations are NOT valid for very thin natural rubber, neoprene, nitrile and pvc gloves (0.3 mm or less).
Skin and Body Protection	Guidelines for hydrochloric acid, less than 30% : RECOMMENDED (resistance to breakthrough longer than 8 hours): Butyl rubber, natural rubber, neoprene rubber, nitrile rubber, Viton(TM), Viton(TM)/Butyl rubber, Barrier (PE/PA/PE), Trellchem(TM) HPS, Trellchem(TM) VPS, Tychem(TM) SL (Saranex(TM)), Tychem(TM) CPF 3, Tychem(TM) F, Tychem(TM) BR/LV, Tychem(TM) Responder(TM), Tychem(TM) TK. RECOMMENDED (resistance to breakthrough longer than 4 hours): Polyvinyl chloride, Silver Shield/4H(TM) (polyethylene/ethylene vinyl alcohol). CAUTION, use for short periods only (resistance to breakthrough within 1 to 4 hours): Polyethylene. NOT RECOMMENDED for use (resistance to breakthrough less than 1 hour): Polyvinyl alcohol.
Respiratory Protection	NIOSH/OSHA RECOMMENDATIONS FOR HYDROGEN CHLORIDE (GAS) CONCENTRATIONS IN AIR: UP TO 50 ppm: Chemical cartridge respirator with cartridge(s)* to protect against hydrogen chloride; or gas mask with canister to protect against hydrogen chloride; or powered air-purifying respirator with cartridge(s)* to protect against hydrogen chloride; or SAR; or full-facepiece SCBA. Above this level, a full face self-contained breathing apparatus is required. *NIOSH approved acid gas or organic vapour cartridge(s) are required. EMERGENCY OR PLANNED ENTRY INTO UNKNOWN CONCENTRATION OR IDLH CONDITIONS: Positive pressure, full-facepiece SCBA; or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA. ESCAPE: Gas mask with acid gas canister; or escape-type SCBA. Recommendations apply only to NIOSH approved respirators. Air-purifying respirators do not protect against oxygen-deficient atmospheres.
Thermal Hazards	Not Available

Section 09 - Physical and Chemical Properties

Appearance

Physical State	Fuming liquid
Colour	Colourless or slightly yellow
Odour	Pungent
Odour Threshold	Detectable at 1-5ppm

Property

pH	<1
Melting Point/Freezing Point	-17.4°C (0.7°F)

Initial Boiling Point and Boiling Range	108.6°C (227.4°C)
Flash Point	Not Applicable
Evaporation Rate	Not Available
Flammability	Non-flammable
Upper Flammable Limit	Not Applicable
Lower Flammable Limit	Not Applicable
Vapour Pressure (mm Hg, 20°C)	0.004
Vapour Density (Air=1)	1.3
Relative Density	Not Available
Solubility(ies)	Soluble in water. Soluble in ethanol, methanol, dioxane and tetrahydrofuran; insoluble in hydrocarbons.
Partition Coefficient: n-octanol/water	Log P_{ow} = 0.3
Auto-ignition Temperature	Not Applicable
Decomposition Temperature	Not Available
Viscosity	1.16 mPa·s
Explosive Properties	Normally none, but when in contact with metals explosive hydrogen gas may be evolved.
Specific Gravity (Water=1)	1.047
% Volatiles by Volume	Not Available
Formula	HCl
Molecular Weight	36.46

Section 10 - Stability and Reactivity

Reactivity	Contact with hypochlorites liberates chlorine gas. May react violently with incompatible substances. Large amounts of heat can be released when concentrated hydrochloric acid is mixed with water or with organic solvents.
Stability	Stable, heat and contamination could cause decomposition.
Possibility of Hazardous Reactions	Hazardous polymerization does not occur.
Conditions to Avoid	High temperatures. Incompatibles.
Incompatible Materials	Metals, sodium, bases, formaldehyde, oxidizing agent, reducing agents, perchloric acid, sulfuric acid. Potassium permanganate, aldehydes, epoxides, fluorine, acetylides, bories, carbides, phosphide, silicides, hexalithium disilicide.
Hazardous Decomposition Products	Contact with hypochlorites liberates chlorine gas. May react violently with incompatible substances. May release toxic and/or flammable gases such as hydrogen and phosphine gas. Considerable amounts of heat may be evolved.

Section 11 - Toxicological Information

Acute Toxicity

Component	Oral LD_{50}	Dermal LD_{50}	Inhalation LC_{50}
Hydrochloric Acid (10%)	2.38-2.77 g/kg (rat)	14.5 g/kg (mouse)	4,750 ppm (guinea pig, 4hr)

Chronic Toxicity – Carcinogenicity

Component	IARC
Hydrochloric Acid	Carcinogenicity designation A4 (hydrogen chloride); not classifiable as a human carcinogen.

Skin Corrosion/Irritation	Corrosive. Capable of producing severe burns, blisters, ulcers and permanent scarring.
Ingestion	Can cause burns to the lips, tongue and stomach; abdominal pain; nausea; vomiting; diarrhea and death.
Inhalation	Hydrochloric acid solutions can readily release high concentrations of hydrogen chloride gas, which is very toxic and corrosive and poses a serious inhalation hazard. Inhalation of even low concentrations is irritating and can cause coughing, pain, inflammation and swelling in the upper respiratory tract.
Serious Eye Damage/Irritation	Hydrochloric acid is corrosive to the eyes. Low concentrations of vapour or mist can be irritating, causing redness. Concentrated vapour, mist or splashed liquid can cause severe irritation and damage, burns and permanent blindness.
Respiratory or Skin Sensitization	Hydrochloric acid is not considered an occupational respiratory or skin sensitizer.
Germ Cell Mutagenicity	The available evidence does not indicate that hydrochloric acid is a mutagen.
Reproductive Toxicity	The limited evidence available does not indicate that hydrochloric acid is a developmental toxin.
STOT-Single Exposure	Hydrochloric acid solutions release hydrogen chloride, a corrosive gas. Causes respiratory irritation.
STOT-Repeated Exposure	Prolonged exposure can cause erosion and discolouration of teeth and chronic inflammation of nose, throat, and airways. In general, long-term skin contact with low concentrations of corrosive materials can cause dry, red, cracked skin (dermatitis).
Aspiration Hazard	Severe exposure can result in pulmonary edema and corrosion of tissues in the nose and throat.
Synergistic Materials	Not Available

Section 12 – Ecological Information

Ecotoxicity

Component	Toxicity to Algae	Toxicity to Fish	Toxicity to Daphnia and Other Aquatic Invertebrates
Hydrochloric Acid	EC_{50}(Green algae, 72hr): 0.0492 mg/L	LC_{50}(Cyprinus carpio (Common carp), 96 hr): 4.92 mg/L	LC_{50}(Shrimp, 48hr): 100-300 ppm

Biodegradability	Not Applicable - hydrochloric acid disassociates in water.
Bioaccumulation	Hydrogen chloride does not accumulate in the food chain.
Mobility	Hydrogen chloride dissociates into chloride and hydronium ions in moist soil.
Other Adverse Effects	Extremely toxic to aquatic life by lowering the pH below 5.5. Dissociates in water and will be neutralized by naturally occurring alkalinity and carbon dioxide. Acid will permeate soil, dissolving soil material and will be neutralized somewhat.

Section 13 – Disposal Considerations

Waste From Residues/Unused Products	Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.
Contaminated Packaging	Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

Section 14 – Transport Information

UN Number	UN1789
UN Proper Shipping Name	HYDROCHLORIC ACID
Transport Hazard Class(es)	8
Packaging Group	II
Environmental Hazards	Not listed as a marine pollutant under Canadian TDG Regulations, schedule III.
Special Precautions	Not Available
Transport in Bulk	Not Available

Additional Information

Packing Group	Limited Quantity Index
II	1 L
III	5 L

TDG

Other

Secure containers (full and/or empty) with suitable hold down devises during shipment and ensure all caps, valves, or closures are secured in the closed position.

TDG PRODUCT CLASSIFICATION: This product has been classified on the preparation date specified at section 14 of this MSDS / SDS, for transportation in accordance with the requirements of part 2 of the Transportation of Dangerous Goods Regulations. If applicable, testing and/or published test data regarding the classification of this product are listed in the references at section 16 of this MSDS / SDS.

Section 15 – Regulatory Information

NOTE: THE PRODUCT LISTED ON THIS SDS HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CANADIAN CONTROLLED PRODUCTS REGULATIONS. THIS SDS CONTAINS ALL INFORMATION REQUIRED BY THOSE REGULATIONS.

Section 16 – Other Information

Preparation Date November 12, 2015

Note: The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations.

Attention: Receiver of the chemical goods / SDS coordinator

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If you have any questions or concerns please call our customer service center.

References:

1) CHEMINFO
2) eChemPortal
3) TOXNET
4) Transportation of Dangerous Goods Canada
5) HSDB
6) ECHA
7) PAN

Advance Chemicals Ltd. - Locations

Corporate Head Office: 1500 Quebec Avenue, Saskatoon, SK, S7K 1V7
Phone: 1(306) 664 – 2522
Fax: 1(888) 281-8109

www.cleartech.ca

24 Hour Emergency Number - All Locations – 1(306) 664-2522