SAFETY DATA SHEET

1. Identification of the Substance / Preparation and of the Company / Undertaking

Product Name: CD-9110
UN/ID No: UN1789
Synonyms: Muriatic acid
Recommended Use: Industrial, Manufacturing or Laboratory use.

Manufacturer
Anderson Chemical Company, 325 South Davis Avenue, Litchfield, MN 55355 (320-693-2477)
Emergency Telephone:
CHEMTREC (US): 1-800-424-9300

2. Hazards Identification

GHS - Classification

Acute toxicity - Oral Category 3
Acute toxicity - Inhalation (Gases) Category 3
Acute toxicity - Inhalation (Dusts/Mists) Category 1
Skin corrosion/irritation Category 1 Sub-category A
Serious eye damage/eye irritation Category 1
Respiratory sensitization Category 1A
Specific target organ toxicity (single exposure) Category 1
Specific target organ toxicity (repeated exposure) Category 1

Signal Word: Danger

Hazard Statements:
• Toxic if swallowed
• Fatal if inhaled
• Causes severe skin burns and eye damage
• May cause allergy or asthma symptoms or breathing difficulties if inhaled
• Causes damage to organs
• Causes damage to organs through prolonged or repeated exposure

Physical Hazards
Corrosive to metals Category 1

Precautionary Statements:
• May be corrosive to metals

Precautionary Statements:
• Do not breathe dust/fume/gas/mist/vapors/spray
• Avoid breathing dust/fume/gas/mist/vapors/spray
• Wash face, hands and any exposed skin 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
3. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS No.</th>
<th>Weight-%</th>
<th>EC No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric acid</td>
<td>7647-01-0</td>
<td>9-11</td>
<td>231-595-7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS No.</th>
<th>Weight-%</th>
<th>EC No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>Balance</td>
<td>231-791-2</td>
</tr>
</tbody>
</table>

4. First Aid Measures

Description of first aid measures

General advice
Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Inhalation
Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. 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, (trained personnel should) give oxygen. Delayed pulmonary edema may occur. Get immediate medical advice/attention. May cause allergic respiratory reaction. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Use personal protective equipment as required. See section 8 for more information.

Eye contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get immediate medical advice/attention.

Skin contact
Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get immediate medical advice/attention. May cause an allergic skin reaction.

Ingestion
Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Get immediate medical advice/attention. May produce an allergic reaction.

Self-protection of the first aider
Avoid contact with skin, eyes or clothing. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Use personal protective equipment as required. See section 8 for more information.

Most important symptoms and effects, both acute and delayed
Symptoms
Burning sensation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Coughing and/ or wheezing. Itching. Rashes. Hives.

Indication of any immediate medical attention and special treatment needed
Note to physicians

Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. May cause sensitization in susceptible persons. Treat symptomatically.

5. Fire-fighting Measures

Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Large Fire
CAUTION: Use of water spray when fighting fire may be inefficient.

Unsuitable extinguishing media
Do not scatter spilled material with high pressure water streams.

Specific hazards arising from the chemical
The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors. Product is or contains a sensitizer. May cause sensitization by inhalation and skin contact.

Explosion Data
Sensitivity to mechanical impact None.
Sensitivity to static discharge None.

Special protective equipment for fire-fighters
Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Personal precautions
Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Attention! Corrosive material. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Other information
Refer to protective measures listed in Sections 7 and 8.

Methods and material for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Pick up and transfer to properly labeled containers.

7. Handling and Storage

Precautions for safe handling
Advice on safe handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Provide extract ventilation to points where emissions occur. Remove contaminated clothing and shoes.

Conditions for safe storage, including any incompatibilities
Storage Conditions
Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Store locked up. Keep out of the reach of children. Store away from other materials.

8. Exposure Controls / Personal Protection

Control parameters
Exposure Limits
The following ingredients are the only ingredients of the product above the cut-off level (or level that contributes to the hazard classification of the mixture) which have an exposure limit applicable in the region for which this safety data sheet is intended or other recommended limit. At this time, the other relevant constituents have no known exposure limits from the sources listed here.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric acid</td>
<td>Ceiling: 2 ppm</td>
<td>5 ppm Ceiling</td>
<td>IDLH: 50 ppm</td>
</tr>
<tr>
<td>7647-01-0</td>
<td></td>
<td>5 ppm Ceiling</td>
<td>Ceiling: 5 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7 mg/m³ Ceiling</td>
<td>Ceiling: 7 mg/m³</td>
</tr>
</tbody>
</table>
Exposure Guidelines
Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Appropriate engineering controls

Engineering controls
Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection
Face protection shield.

Hand protection
Wear suitable gloves. Impervious gloves.

Skin and body protection
Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron.

Respiratory protection
No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

General hygiene considerations
Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Regular cleaning of equipment, work area and clothing is recommended. Avoid contact with skin, eyes or clothing. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Wash hands before breaks and immediately after handling the product.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks • Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State:</td>
<td>Liquid</td>
<td></td>
</tr>
<tr>
<td>Appearance:</td>
<td>Aqueous solution</td>
<td></td>
</tr>
<tr>
<td>Color:</td>
<td>Clear Colorless</td>
<td></td>
</tr>
<tr>
<td>Odor:</td>
<td>Pungent</td>
<td></td>
</tr>
<tr>
<td>Odor Threshold:</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>pH:</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>“Salt Out” Point (°F):</td>
<td>-15 °C / 5 °F</td>
<td>No information available</td>
</tr>
<tr>
<td>Melting Point/Freezing Point:</td>
<td>-15 °C / 5 °F</td>
<td>No information available</td>
</tr>
<tr>
<td>Boiling Point/Boiling Range:</td>
<td>100 °C / 212 °F</td>
<td>No information available</td>
</tr>
<tr>
<td>Flash Point:</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Evaporation Rate (BuAc=1):</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Flammability (solid, gas):</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Flammability Limits in Air:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Flammability Limit:</td>
<td></td>
<td>Lower Flammability Limit:</td>
</tr>
<tr>
<td>Vapor Pressure (mm Hg) :</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Vapor density (Air =1)</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Specific Gravity (H₂O=1):</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Specific Gravity (2nd value):</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Water Solubility:</td>
<td>100% soluble in water</td>
<td>No information available</td>
</tr>
<tr>
<td>Solubility(ies):</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Partition Coefficient</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>(n-octanol/water)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autoignition Temperature:</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Decomposition Temperature:</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Kinematic Viscosity:</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Dynamic Viscosity:</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Oxidizing Properties:</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Explosive Properties:</td>
<td></td>
<td>Not considered to be an explosion hazard</td>
</tr>
</tbody>
</table>

9.2. Other information

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks • Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Softening Point:</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Molecular Weight:</td>
<td>36.46</td>
<td></td>
</tr>
<tr>
<td>VOC Content(%)</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Liquid Density</td>
<td>1.05</td>
<td></td>
</tr>
<tr>
<td>Bulk density</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>% Volatiles by Volume @ 21°C (70°F):</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
10. Stability and Reactivity

Reactivity
No information available.

Chemical stability
Stable under normal conditions.

Possibility of hazardous reactions
None under normal processing.

Conditions to avoid
Exposure to air or moisture over prolonged periods.

Incompatible Materials

Hazardous decomposition products
Thermal decomposition can lead to release of irritating and toxic gases and vapors.

11. Toxicological Information

Information on likely routes of exposure

Product Information

Inhalation
Specific test data for the substance or mixture is not available. Corrosive by inhalation.
(based on components). Inhalation of corrosive fumes/gases may cause coughing, choking,
headache, dizziness, and weakness for several hours. Pulmonary edema may occur with
tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and
increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs.
Pulmonary edema can be fatal. May cause sensitization in susceptible persons.

Eye contact
Specific test data for the substance or mixture is not available. Causes burns. (based on
components). Corrosive to the eyes and may cause severe damage including blindness.
Causes serious eye damage. May cause irreversible damage to eyes.

Skin contact
Specific test data for the substance or mixture is not available. May cause irritation.
Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.
(based on components).

Ingestion
Specific test data for the substance or mixture is not available. Causes burns. (based on
components). Ingestion causes burns of the upper digestive and respiratory tracts. May
cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark
blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the
mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung
damage if swallowed. May be fatal if swallowed and enters airways. May cause additional
affects as listed under "Inhalation".

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms
Redness. Burning. May cause blindness. Coughing and/ or wheezing. Symptoms of allergic
reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and
feet, dizziness, lightheadedness, chest pain, muscle pain, or flushing.

Numerical measures of toxicity
No information available

Acute Toxicity:
The following values are calculated based on chapter 3.1 of the GHS document.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Oral LD₅₀ :</th>
<th>Dermal LD₅₀ :</th>
<th>LC₂₀ (Lethal Concentration):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric acid</td>
<td>238 - 277 mg/kg ( Rat)</td>
<td>&gt; 5010 mg/kg ( Rabbit )</td>
<td>= 1.68 mg/L ( Rat ) 1 h</td>
</tr>
<tr>
<td>7647-01-0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>&gt; 90 mL/kg ( Rat )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7732-18-5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation  May cause skin irritation.

Serious eye damage/eye irritation  Classification based on data available for ingredients. Causes burns. Risk of serious damage to eyes.

Respiratory or skin sensitization  May cause sensitization by inhalation.

Germ cell mutagenicity  No information available.

Carcinogenicity  No information available.

The table below indicates whether each agency has listed any ingredient as a carcinogen.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric acid</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Reproductive toxicity  No information available.

STOT - single exposure  Based on the classification criteria of the Globally Harmonized System as adopted in the country or region with which this safety data sheet complies, this product has been determined to cause systemic target organ toxicity from acute exposure. (STOT SE). Causes damage to organs if swallowed.

STOT - repeated exposure  Causes damage to organs through prolonged or repeated exposure.

Target Organ Effects: Respiratory system, Eyes, Skin.

Other Adverse Effects: No information available.

Aspiration hazard  No information available.

12. Ecological Information

Ecotoxicity

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Toxicity to algae</th>
<th>Toxicity to fish</th>
<th>Toxicity to microorganisms</th>
<th>Toxicity to daphnia and other aquatic invertebrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric acid</td>
<td>-</td>
<td>282: 96 h Gambusia affinis mg/L LC50 static</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Persistence and Degradability:  No information available.

Bioaccumulation:  There is no data for this product.

Other Adverse Effects:  No information available.

13. Disposal Considerations

Waste treatment methods

Waste from residues/unused products  Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging  Do not reuse empty containers.

US EPA Waste Number  D002.

14. Transport Information

DOT  Proper shipping name  HYDROCHLORIC ACID
Hazard Class 8
UN/ID No UN1789
Packing Group II
Description UN1789, HYDROCHLORIC ACID, 8, PG II

15. Regulatory Information

International Inventories
All of the components in the product are on the following Inventory lists: TSCA (United States); Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Australia (AICS), South Korea (KECL); China (IECSC), ENCS (Japan); Philippines (PICCS).

This product contains a substance not listed on international inventories - it is for research and development use only.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>AICS</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>ENCS</th>
<th>IECSC</th>
<th>KECL</th>
<th>PICCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric acid</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
<td>(1)-215</td>
<td>Listed</td>
<td>KE-20189</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
<td>-</td>
<td>Listed</td>
<td>KE-35400</td>
<td>Present</td>
<td></td>
</tr>
</tbody>
</table>

Inventory Legend
AICS - Australian Inventory of Chemical Substances
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances

RESTRICTIONS - REACH TITLE VII
No information available

US Federal Regulations

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Hazardous Substances RQs</th>
<th>Extremely Hazardous Substances RQs</th>
<th>SARA Extremely Hazardous Substances TPQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric acid</td>
<td>5000 lb</td>
<td>5000 lb EPCRA RQ (gas only)</td>
<td>500 lb TPQ</td>
</tr>
</tbody>
</table>

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>SARA 313 - Threshold Values %</th>
</tr>
</thead>
</table>
Hydrochloric acid 1.0

SARA 311/312 Hazard Categories
- Acute health hazard: Yes
- Chronic health hazard: Yes
- Fire hazard: No
- Sudden release of pressure hazard: No
- Reactive hazard: No

U.S. State Right-to-Know Regulations

California Proposition 65:
This product does not contain any Proposition 65 chemicals

16. Other Information

National Fire Protection Association (NFPA) Ratings

![NFPA Rating 3-0-0](image)

Prepared By: Imt
Issue Date: 02-Aug-2018
Revision Date: 02-Aug-2018

Disclaimer:
PLEASE BE ADVISED THAT IT IS YOUR RESPONSIBILITY TO INFORM YOUR EMPLOYEES OF THE HAZARDS OF THIS SUBSTANCE, TO ADVISE THEM OF WHAT THESE PROPERTIES MEAN AND BE SURE THEY UNDERSTAND EXPOSURE INFORMATION. THE INFORMATION PROVIDED IN THIS SAFETY DATA SHEET IS CORRECT TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF AT THE DATE OF ITS PUBLICATION.

THE INFORMATION PRESENTED HEREIN, WHILE NOT GUARANTEED, WAS PREPARED BY COMPETENT TECHNICAL PERSONNEL AND IS TRUE AND ACCURATE TO THE BEST OF OUR KNOWLEDGE. NO WARRANTY OR GUARANTY, EXPRESS OR IMPLIED, IS MADE REGARDING PERFORMANCE, STABILITY, OR OTHERWISE. THIS INFORMATION IS NOT INTENDED TO BE ALL-INCLUSIVE AS TO THE MANNER AND CONDITIONS OF USE, HANDLING, AND STORAGE. OTHER FACTORS MAY REQUIRE ADDITIONAL SAFETY OR PERFORMANCE CONSIDERATIONS. WHILE OUR TECHNICAL PERSONNEL WILL BE HAPPY TO RESPOND TO QUESTIONS REGARDING SAFE HANDLING AND USE PROCEDURES, THE HANDLING AND USE REMAINS THE RESPONSIBILITY OF THE CONSUMER. NO SUGGESTIONS ARE INTENDED AS, AND SHOULD NOT BE CONSTRUCTED AS, A RECOMMENDATION TO INFRINGE ON ANY EXISTING PATENTS OR TO VIOLATE ANY FEDERAL, STATE, OR LOCAL LAWS.

End of Safety Data Sheet