



Solve 10K

Material Safety Data Sheet

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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **SOLVE 10K**
CHEMICAL FAMILY: Aluminum Chloride Solution
Molecular Formula: $AlCl_3$
Molecular Weight: No data.

COMPANY: **WaterSolve, LLC, 4964 Starr ST. SE, Grand Rapids, MI 49546, USA**
For Product information call **616-575-8693**.

EMERGENCY PHONE: For emergency involving spill, leak, fire, exposure or accident call
CHEMTREC: 1-800-424-9300. Outside the USA and Canada call 703-527-3887.

2. COMPOSITION/INFORMATION ON INGREDIENTS

OSHA Regulated Components

Component	CAS NO.	% (w/w)	AGGIH (TWA)
Aluminum chloride	7446-70-0	15-30	2 mg/m ³ (as Al)
Hydrochloric Acid	7647-01-0	1-5	Aluminum salts, soluble Ceiling 5ppm

3. HAZARDS IDENTIFICATION

Emergency Overview

CORROSIVE to eyes and skin. May cause blindness and permanent scarring to the skin. May cause lung Injury—effects may be delayed. Will not burn. Can decompose at high temperatures forming corrosive hydrogen chloride gas. Possible reproductive hazard—may cause fetotoxic and embryotoxic effects, based on animal information.

Potential Health effects

Inhalation Causes respiratory irritation and if heated the hydrochloric acid released may cause potentially life-threatening accumulation of fluid in the lungs (pulmonary edema). Symptoms of pulmonary edema may be delayed for up to 24 hours after exposure.

Skin Contact: Severe irritation to skin and may cause burns. Prolonged or repeated exposure to dilute solutions may cause irritation, redness, pain and drying and cracking of the skin.

Eye Contact: Can cause severe burns and corneal damage, which may result in permanent blindness.

Ingestion: Causes burns of the mouth, throat, and esophagus and stomach.

Chronic Effects: No chronic effects expected.

Existing Medical Conditions Possible Aggravated By Exposure: Skin irritation may be aggravated in individuals with existing skin lesions. Breathing of vapors or mists may aggravate acute or chronic asthma and chronic pulmonary disease such as emphysema and bronchitis.

Carcinogenicity: Aluminum chloride is not classified as carcinogenic by ACGIH (American Conference of Government Industrial Hygienists) or IARC (International Agency for Research on Cancer), not regulated as a carcinogen by OSHA (Occupational Safety and Health Administration), and not listed as a carcinogen by NTP (National Toxicology Program).

4. **FIRST AID MEASURES**

General: If you feel unwell seek medical advice (show the label where possible).

Ingestion:

DO NOT INDUCE VOMITING. If swallowed, call a physician immediately. If victim is alert and not convulsing, rinse mouth and give as much water as possible to dilute material. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. IMMEDIATELY transport victim to an emergency facility.

Skin Contact:

Immediately flush skin with running water for at least 15-20 minutes. Under running water remove contaminated clothing, jewelry and shoes. For burns, obtain medical attention. Wash immediately with plenty of water. Discard heavily contaminated clothing and shoes in a manner which limits further exposure. Do not reuse contaminated clothing without laundering. Get medical attention if pain of irritation persists after washing or if signs and symptoms of overexposure appear.

Eye Contact:

Rinse immediately with plenty of water for a **minimum of 20** minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY. Do not transport victim until the recommended flushing period is completed unless flushing can be continued during transport.

Inhalation:

Remove to fresh air. . Give artificial respiration ONLY if breathing has stopped. Do not use mouth-to-mouth method if victim ingested or 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 Give Cardiopulmonary Resuscitation (CPR) only if there is no pulse AND no breathing. Obtain medical attention IMMEDIATELY . Symptoms of pulmonary edema can be delayed up to 48 hours after exposure.

NOTE TO PHYSICIAN ANTIDOTE: There is no specific **antidote** for aluminum chloride. Treatment Of overexposure should be directed at the control of symptoms and the clinical condition.

5. **FIRE FIGHTING MEASURES**

Flash point	Not applicable.
Flammable Limits (upper)	Not applicable.
Flammable limits (lower)	Not applicable.
Auto ignition Temperature	Not applicable.
Combustion and Thermal Decomposition Products	Not applicable.
Rate of Burning	Not applicable.
Explosive Power	Not applicable.
Sensitivity to Static Discharge	Not applicable.

Suitable Extinguishing Media:

Use water spray fog or regular foam appropriate for surrounding material. Cool any exposed containers with water.

Protective Equipment:

Firefighters, and others exposed, wear self-contained breathing apparatus. Wear full firefighting protective clothing. See MSDS Section 8 (exposure Controls/Personal Protection)

Fire and Explosion Hazards: During a fire, irritating/toxic hydrogen chloride gas and hydrochloric acid may be generated. Aluminum chloride solutions will not burn or support combustion. Well sealed containers may rupture violently when exposed to fire or excessive heat for sufficient time.

Special information: The decomposition products of aluminum chloride are corrosive. Do not enter without wearing specialized protective equipment suitable for the situation. Firefighters normal protective clothing (bunker gear) will not provide adequate protection. Chemical resistant clothing (e.g. Chemical splash suit) and positive pressure self-contained breathing apparatus (MSHA/NIOSH approved or equivalent) may be necessary. Move exposed containers from fire area if it can be done without risk. Keep containers cool by spraying with water if exposed to fire.

NOTE: Also see Section 10 for Stability and Reactivity.

6. **ACCIDENTAL RELEASE MEASURES**

Spills, Leaks or Release:

- Restrict access to area until completion of clean up. Ensure trained personnel conduct clean up.
- Wear adequate personal protective equipment. **DO NOT TOUCH SPILLED MATERIAL.**
- Stop leak if possible without personal risk.
- Small spills: Absorb spill with sand or non-combustible dry material and collect in appropriate container for disposal. Flush area with water.
- Large spills: Prevent entry into sewers and confined areas. Dike if possible. Keep unnecessary people away, isolate hazard area and deny entry. Absorb spill with sand or non-combustible dry material and collect in appropriate container for disposal. Flush area with water. Consider insitu neutralization and disposal. Ensure adequate decontamination of tools and equipment following clean up. Comply with Federal, Provincial/State and local regulations on reporting releases.

Deactivating Chemicals: Lime, liming agents, sodium carbonate (soda ash), and sodium bicarbonate.

Waste Disposal Methods: Dispose of waste material at an approved waste treatment/disposal facility, in accordance with applicable regulations. Do not dispose of waste with normal garbage or to sewer systems.

Note-Clean-up material may be a RCRA Hazardous Waste on disposal.

7. **HANDLING AND STORAGE**

Handling

Precautionary Measures: Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled. Wear appropriate Personal Protection Equipment. People working with this chemical should be properly trained regarding its hazards and its safe use.

Handling: Observe all warnings and precautions listed for the product. Inspect containers for damage or leaks before handling. Secondary protective containers must be used when workers are carrying this material. Avoid generating mists. Prevent the release of mists into the workplace air. Immediately contact the chemical manufacturer/supplier for handling instructions if drums of this material appear to be swollen. To avoid splashing, carefully dispense into sturdy containers made of compatible materials. Use corrosion-resistant transfer equipment when dispensing. Whenever possible, use self-closing, portable containers for dispensing small amounts of this material. Never transfer liquid by pressurizing original container with air or inert gas. Never add water to a corrosive. Always add corrosives to water. When mixing with water, stir small amounts in slowly. Use cold water to prevent excessive heat generation. Keep containers closed when not in use. Empty containers' may contain hazardous residues. Do not use with incompatible materials such as sodium hydroxide and other bases. See Incompatibilities in Section 10.

Storage Requirements: Store in corrosion-proof area from incompatible substances. Store in tightly closed container, preferably the supplier container. Protect from heat, sunlight and damage. Keep dry. Store away from incompatible materials, such as strong bases. Store in suitable, unbreakable labeled containers (usually the shipping container). Inspect all incoming contaminates to make sure they are properly labeled and not damaged. Keep quantity stored as small as possible.

8. **EXPOSURE CONTROLS/PERSONAL PROTECTION
PREVENTIVE MEASURES**

Recommendations listed in this section indicate the type of equipment, which will provide protection against over-exposure to this product. Conditions of use, adequacy of engineering or other control measures and actual exposures will dictate the need for specific protective devices at your workplace.

Engineering Controls:

Where this material is not used in a closed system, good enclosure and local exhaust ventilation should be provided to control exposure. A ventilation system of local exhaust, or process or personnel enclosure is recommended to reduce employee hazardous exposures. Because of the high potential hazard associated with this substance, stringent control measures such as enclosure or isolation may be necessary. Use a corrosion-resistant ventilation system separate from other exhaust ventilation systems. Exhaust directly to the outside, taking necessary precautions for environmental protection. Supply sufficient replacement air to make up for air removed by exhaust systems. Ensure that eyewash station and safety showers are proximal to the workstation location.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection:

Under conditions of frequent use or heavy exposure, respiratory protection may be needed. The NOISH recommendations for hydrogen chloride may be applicable 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 Supplied Air Respirator (SAR), or full-face piece Self-Contained breathing apparatus (SCBA).

Eye Protection:

Wear eye/face protection such as chemical splash proof goggles or face shield. Eyewash equipment and safety shower should be provided in areas of potential exposure.

Skin Protection:

Avoid skin contact. Wear impermeable gloves and suitable protective clothing.

Additional Advice:

Food, beverages and tobacco products should not be carried, stored or consumed where this material is in use. Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water.

EXPOSURE GUIDELINES

PRODUCT: ACGIH: TLV- 2MG/M³ (as Al) (Aluminum Salts, soluble)

HYDROCHLORIC ACID: ACGIH ceiling Exposure Limit (TLV-C) 5 ppm (7.5 mg/m³)

Recommended Protective Material: Guidelines for hydrochloric acid, less than 30 % .

RECOMMENDED (resistance to breakthrough longer than 8 hours) Butyl rubber, natural rubber, neoprene, nitrile rubber, Viton (TM) Saranex TM Barricade TM CPF 3 TM, Responder TM, 4 H 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.

9. **PHYSICAL AND CHEMICAL PROPERTIES**

Appearance and Odor:	clear amber liquid, pungent odor
Boiling Point:	100 to 100 °C
Melting Point:	N/A
Freezing Point:	-20 to -5°C
Vapor Pressure:	Not available
Specific Gravity:	1.15 – 1.40
Vapor Density:	Not available
% Volatile (By Wt):	56 - 62
pH:	<1
Saturation in Air (% by Vol):	Not applicable
Evaporation Rate:	Not available
Solubility in Water:	100 % soluble
Volatile Organic Content:	Not available

10. **STABILITY AND REACTIVITY**

Hazardous Decomposition Products: Thermal decomposition: hydrogen chloride gas, hydrochloric acid, and aluminum oxides.

Chemical Stability: Stable at normal temperatures and pressure.

Conditions to Avoid: Heat

Incompatibility with other Substances: Bases (alkaline materials) such as sodium hydroxide (caustic), and potassium hydroxide.

Corrosivity to Metals: Corrosive to common metals such as aluminum, stainless and mild steel, copper, brass, cast iron, lead and bronze.

Hazardous Polymerization: Will not occur.

11. **Toxicological Information**

Toxicological Data:

Aluminum chloride: LD50 Rat oral 380 mg/kg; LD50 Guinea pig oral 400 mg/kg

Skin Irritation (mouse): Redness, thickening and scaling were observed following application of up to 25% solutions of aluminum chloride in water for 5 consecutive days. Damage was severe by the 4th day following application of the 25% solution. No harmful effects were observed following application of a 2.5% solution.

Mutagenicity: Most live animal studies have produced negative results. Conflicting results have been obtained in cultured mammalian cells and negative results have been obtained in bacteria.

Reproductive Effects: The available studies have not shown any reproductive effects in rats and mice following oral administration.

Teratogenicity and Fetotoxicity: Fetotoxic and/or embryotoxic effects have been observed in rats and mice, in the absence of maternal toxicity, following oral administration.

Synergistic Materials: None known.

12. Ecological Information

Ecotoxicological Information: Fish Toxicity: LC50 (12-96 hr) goldfish 100 mg/L

Invertebrate And Microbial Toxicity: EC50 (48 hr) Daphnia magna 3.9 mg/L

Persistence and Degradation: No data available

13. Disposal Considerations

Review federal, state, and local government requirements prior to disposal.

Whatever cannot be saved for recovery or recycling, including containers, should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options.

RCRA: Hazardous if pH is less than 2. Test waste material for corrosively, D002, prior to disposal.

14. Transport Information

	Canada (TDG)	U.S. (DOT)
Shipping Name	Aluminum chloride, solution	Aluminum chloride, solution
Hazard Class/Division	8: Corrosive liquid	8
Identification No.	UN2581	UN2581
Packing Group:	III	III

Transportation Emergency Telephone Numbers:

1-800-424-9300 CHEMTREC (USA)

1-613-996-6666 CANUTEC (CANADA) (CALL COLLECT)

IATA/ICAO Class: 8

15. Regulatory Information

USA Classification:

OSHA Classification: Hazardous by definition of Hazard Communication Standard
(29 CFR 1910.1200)

SARA Regulations sections 313 and 40 CFR 374: N

SARA Hazard Categories, SARA SECTIONS 311/312 (40 CFR 370.21):

Acute: Y

Chronic: N

Fire: N

Reactive: N

Sudden Release: N

OSHA Process Safety (29CFR1910.119): N

TSCA Inventory Status: Y

Other Regulations/Legislation which apply to this product:

Right-To-Know Lists: Massachusetts, New Jersey, Pennsylvania, California Proposition 65: N

This product does not contain, nor is it manufactured with, ozone-depleting substances.

16. Other Information

National Fire Protection Association (NFPA) Rating

Hazardous Materials Identification System (HMIS) Rating

	NFPA	HMIS	
Health	3	3	4 = Extreme/Severe
Fire	0	0	3 = High/Serious
Reactivity	1	1	2 = Moderate
			1 = Slight

0 = Minimum

Stability:	Stable
Conditions to avoid:	None known
Polymerization:	Will not occur
Conditions to Avoid:	None known
Incompatible Materials:	No specific incompatibility
Hazardous Decomposition Products:	Oxides of nitrogen oxides of sulfur (includes sulfur di and tri oxides) Carbon dioxide Carbon monoxide Ammonia

This information is for the specific material described only and may not be valid if the material is used in combination with any other materials or in any process. The user is responsible to determine the completeness of the information and suitability for the user's own particular use. The knowledge and belief of WaterSolve, LLC, the information is accurate and reliable as of the date indicated but WaterSolve, LLC makes no express or implied warranty of merchantability for the material or the information. WaterSolve, LLC makes no express or implied warranty of fitness for a purpose for the material or for the information.