



Solve 4A

Safety Data Sheet

Date Issued: 03/25/2015

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I. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: **SOLVE 4A**

COMPANY: WaterSolve, LLC, 5031 68TH Street, Caledonia, Michigan 49316 USA

For Product information call 616-575-8693 www.gowatersolve.com

For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident

Call CHEMTREC Day or Night

Within USA and Canada: 1-800-424-9300

Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

Recommended use: Water treatment chemical.

Recommended restrictions: None known.

II. HAZARDS IDENTIFICATION

Physical hazards: Corrosive to metals

Category 1

Health Hazards: Acute toxicity, oral

Category 4

Skin corrosion/irritation

Category 1B

Serious eye damage/eye irritation

Category 1

Specific Target Organ Toxicity,

Repeated exposure

Category 2 (liver)

OSHA defined hazards Not classified.



Label elements

Signal Word: DANGER

Hazard statement: May be corrosive to metals. Harmful if swallowed. Causes severe skin burns and eye damage. May cause damage to organs (Liver) through prolonged or repeated exposure.

Precaution statement

Prevention: Keep only in original container. Do not breathe mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear Protective gloves/protective clothing/eye protection/face protection.

Response:

If swallowed: Rinse mouth. DO NOT induce vomiting.

If on skin or hair: Take off immediately all contaminated clothing. Rinse skin with water/shower.

If inhaled: Remove person to fresh air and keep comfortable for breathing.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Wash contaminated clothing before reuse. Absorb spillage to prevent material damage.

Storage: Store locked up. Store in corrosive resistant container with a resistant inner liner.

Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC): None known.

III. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

CHEMICAL NAME	CAS NUMBER`	%
Ferrous chloride	7758-94-3	18- 36
Hydrochloric acid	7647-01-0	<6

Composition comments: All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

IV. FIRST AID MEASURES

Eye Contact: Do not rub. Immediately flush eyes gently for 15 minutes with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

Skin Contact: Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.

Inhalation: Remove person from exposure area to fresh air. If breathing is difficult, give oxygen. Apply artificial respiration if patient is not breathing. Call a physician if symptoms develop or persist.

Ingestion: Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Never give anything by mouth to unconscious individual.

Most important symptoms/effects, acute and delayed: Abdominal pain. Burning pain and severe corrosive skin damage. Diarrhea, nausea, vomiting, Jaundice. Causes serious eye damage. Symptoms may include stinging, tearing redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Prolonged exposure may cause chronic effects.

Indication of immediate medical attention and special treatment needed: Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information: Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

V. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media: Water fog, foam, dry chemical powder, carbon dioxide

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

Specific hazards arising from the chemical: Hydrogen chloride gas. Iron oxides.

Special protective equipment and precautions for firefighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions: Move containers from fire area if you can do so without risk.

Specific methods: Use standard firefighting procedures and consider the hazards of other involved materials.

VI. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see Section 8 or the SDS.

Methods and materials for containment and cleaning up: This product is miscible in water.

Large spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb spillage to prevent material damage. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water.

Small spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental Precautions:

Use appropriate containment to avoid environmental contamination. Prevent water contaminated with this product from entering drains, sewers, or streams, water courses or onto the ground.

VII. HANDLING AND STORAGE

Precautions for safe handling: Do not breathe mist or vapor. Do not get in eyes, on skin or on clothing. Do not taste or swallow. When using, do not eat, drink or smoke. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Use personal protection as recommended in Section 8 of the SDS. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities: Store locked up. Store away from incompatible materials (see Section 10 of the SDS).

VIII. EXPOSURE CONTROL/PERSONAL PROTECTION

Components/CAS#	TYPE	VALUE	ACGIH	NIOSH
Hydrochloric acid 7647-01-0	Ceiling	7mg/m ³ 5ppm		
Ferrous chloride 7758-94-3	TWA	1 mg/m ³	X	
Hydrochloric acid 7647-01-0	Ceiling	2ppm	X	
Ferrous chloride 7758-94-3	TWA	1 mg/m ³		X
Hydrochloric acid 7647-01-0	Ceiling	7 mg/m ³ 5ppm		X

Biological limit values: No biological exposure limits noted for the ingredient(s).

Appropriate Engineering Controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protective measures, such as Personal Protection Equipment:

Eye Protection: Wear safety glasses with side shields (or goggles) and a face shield. If there is any probability of contact with liquid or mist, wear chemical splash goggles and face shield. Eye wash station should be readily available. Do not wear contact lenses.

Skin Protection: Wear appropriate chemical resistant gloves. Polyethylene gloves are recommended. Wear appropriate personal protective clothing to prevent skin contact. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. If prolonged or repeated contact is anticipated, all clothing should be impervious to liquid. Impervious gloves, clothing and rubber boots are recommended.

Other: Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory Protection: In case of insufficient ventilation, wear suitable respiratory equipment.

Thermal hazards: Wear appropriate thermal protective clothing, when necessary.

Additional Recommendations and General hygiene considerations: Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Before eating, drinking or smoking, wash face and hands thoroughly with soap and water. Food, beverages, and tobacco products should not be carried, stored, or consumed where this material is in use.

IX. **PHYSICAL AND CHEMICAL PROPERTIES**

Appearance:

Physical state:	liquid
Form:	liquid
Color:	greenish yellow
Odor:	Slight odor of hydrochloric acid
Odor threshold:	Not available
Boiling point:	220°F (104.44 °C)230
Melting/freezing point:	Not available
Vapor pressure:	Not available
Vapor Density:	Not applicable
pH:	<2
Flash point:	Not available
Evaporation Rate:	Not applicable
Upper/lower flammability Or explosive limits:	Not available
Relative density:	1.2 ± 0.03
Solubility in water:	Completely soluble in water.
Autoignition temp:	Not available
Decomposition temp:	Not available
Partition coefficient (n-octanol/water)	Not available

X. **STABILITY AND REACTIVITY DATA**

Reactivity: May be corrosive to metals.
Chemical stability: Material is stable under normal conditions.
Possibility of hazardous reactions: No dangerous reaction known under conditions of normal use.
Conditions to Avoid: Contact with incompatible materials.
Incompatible materials: Metals, strong oxidizing agents, amines.
Haz. Decomposition Products: No hazardous decomposition products are known.

XI. **TOXICOLOGICAL INFORMATION**

Information on likely routes of exposure

Inhalation: May cause damage to organs through prolonged or repeated exposure by inhalation.
May cause irritation to the respiratory system.
Skin contact: Causes severe skin burns.
Eye contact: Causes serious eye damage.
Ingestion: Causes digestive tract burns. Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics:

Abdominal pain. Burning pain and severe skin damage. Diarrhea. Nausea, vomiting, jaundice. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Information on toxicological effects:

Acute toxicity: Harmful if swallowed.

Components

Ferrous chloride (CAS 7758-94-3)

Acute Dermal: LD50 Rat: >2000 mg/kg, 14 days Rat: >2000 mg/kg 24 hours

Acute inhalation: LC50 Rat: 5 mg/l, 4 hours

Acute oral: LD50 Rat: 450 mg/kg Rat 300 – 2000 mg/kg

Hydrochloric acid (CAS 7647-01-0)

Acute Inhalation: LC50 Rat: 3124 mg/l, 1 hour

Acute oral: LD50 Rabbit: 900 mg/kg

Skin corrosion/irritation: Causes severe skin burns and eye damage.

Serious eye damage/eye irritation: Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization: Not available.

Skin sensitization: This product is not expected to cause skin sensitization.

Germ cell mutagenicity: No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

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

IARC Monographs. Over all Evaluation of Carcinogenicity:

Hydrochloric acid (CAS 7647-01-0) 3 Not classifiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not listed.

Reproductive toxicity: This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity single exposure: Not classified.

Specific target organ toxicity- repeated exposure: May cause damage to organs (Liver) through prolonged or repeated exposure.

Aspiration hazard: Not available.

XII. ECOLOGICAL INFORMATION

Ecotoxicity: Because of the low pH of this product, it would be expected to produce significant Ecotoxicity upon exposure to aquatic organisms and aquatic systems.

Ferrous chloride (CAS 7758-94-3)

Aquatic

LC50/96h/Striped bass (*Morone saxatilis*): 4 mg/l

Hydrochloric acid:

Aquatic

LC50/96 h/Western mosquitofish (*Gambusia affinis*): 282 mg/l

Persistence and degradability: No data is available on the degradability of this product.

Bioaccumulative potential: No data is available.

Mobility in soil: No data is available

Other adverse effects: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

XIII. DISPOSAL CONSIDERATIONS

Disposal instructions: Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with all local/regional/national/international regulations.

Local disposal regulations: Dispose in accordance with all applicable regulations.

Hazardous waste code: D002: Waste Corrosive material [pH <=2 or >=12.5, or corrosive to steel]

The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues/unused products: Dispose of in accordance with local regulations.

Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

XIV. TRANSPORTATION INFORMATION

US DOT

Proper shipping name: Ferrous chloride, solution
Hazard Class: 8
Subsidiary risk: -
Label (s): 8
Packing Group: II
UN/ID Number: UN1760
Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.
Special provisions: B3, IB2, T11, TP2, TP27
Packaging exceptions: 154
Packaging non bulk: 202
Packaging bulk: 242

IATA

Proper shipping name: Corrosive liquid, n.o.s. (Ferrous chloride)
Hazard Class: 8
Packing Group: II
Subsidiary risk: -
Label (s): 8
Environmental hazards: 8L
ERG Code:
Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.

IMDG

Proper shipping name: CORROSIVE LIQUID, N.O.S. (Ferrous chloride)
Hazard Class: 8
Packing Group: II
Subsidiary risk: -
Label (s): 8
Environmental hazards Marine pollutant: No
EmS: F-A, S-b
Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:
This product is a liquid and when transported in bulk is covered under MARPOL 73/78 Annex II.
This product is listed in the IBC Code.
Ship type: 3
Pollutions category: Y

XV. REGULATORY INFORMATION

US Federal regulations: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D): Not regulated.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not listed.
CERCLA Hazardous Substance List (40 CFR 302.4)
Ferrous chloride (CAS 7758-94-3): LISTED
Hydrochloric acid (CAS 7647-01-0): LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories: Immediate Hazard-Yes
Delayed Hazard-Yes
Fire Hazard-No
Pressure Hazard-No
Reactivity Hazard-No

SARA 302 Extremely hazardous substance

Chemical Name	CAS number	Reportable Quantity	Threshold planning quantity	Threshold planning quantity, lower value	Threshold planning quantity, upper value
Hydrochloric acid	7647-01-0	5000	500lbs		

SARA 311/312 Hazardous chemical: Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Hydrochloric acid	7647-01-0	<6

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Hydrochloric acid (CAS 7647-01-0)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Hydrochloric acid (CAS 7647-01-0)

Safe Drinking Water Act : Not regulated (SDWA)

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21CFR 1310.02(b) and 1310.04 (f) (2) and Chemical Code Number

Hydrochloric acid (CAS 7647-01-0) 6545

Drug Enforcement Administration (DEA). List 1&2, Essential Chemicals 21 CFR 1310.12(c)

Hydrochloric acid (CAS 7647-01-0) 20 % WV

DEA Exempt Chemical Mixtures Code Number

Hydrochloric acid (CAS 7647-01-0) 6545

U.S. Massachusetts RTK-Substance List

Ferrous chloride (CAS 7758-94-3)

Hydrochloric acid (CAS 7647-01-0)

U.S. New Jersey Worker and Community Right-to Know Act

Ferrous chloride (CAS 7758-94-3)

Hydrochloric acid (CAS 7647-01-0)

U.S. Pennsylvania Worker and Community Right-to-Know Law

Ferrous chloride (CAS 7758-94-3)

Hydrochloric acid (CAS 7647-01-0)

U.S. Rhode Island RTK

Hydrochloric acid (CAS 7647-01-0)

U.S. California Proposition 65

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

US-California Proposition 65-Carcinogens & Reproductive Toxicity (CRT): Listed substance

Not listed

International Inventories

Country(s) or Region	Inventory name	On inventory yes/no*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country (s).

* A “No” indicates that one or more components of the product are not listed or exempt from listed or exempt from listing on the inventory administered by the governing country(s).

XVI. OTHER INFORMATION

Other information: NFPA: 3-0-0

Full text of H-Statements referred to under Sections 2 and 3.

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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 given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Reasonable care has been taken in the preparation of this information, but the manufacturer makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. 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 the company, the information is accurate and reliable as of the date indicated but the company makes no express or implied warranty of merchantability for the material or the information. The company makes no express or implied warranty of fitness for a purpose for the material or for the information. Users of any chemical should educate themselves on all aspects of its use by independent investigation of current scientific and medical knowledge that the material can be used safely. Both the supplier and manufacturer make no representations and assume no liability for any direct, incidental or consequential damages resulting from its use. Both the supplier and manufacturer make no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The buyer assumes all responsibility for using and handling the product in accordance with applicable federal, state and local regulations.

List of abbreviations and acronyms that could be, but not necessarily are, used in the safety data sheet:

ACGIH: American Conference of Industrial Hygienists
BEI: Biological Exposure Index
CAS Chemical: Abstracts Service (Division of the American Chemical Society)
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act
CMR: Carcinogenic, Mutagenic or Toxic for Reproduction
DOT: Department of Transportation
FG: Food grade
FIFRA: Federal Insecticide, Fungicide, and Rodenticide Act
GHS: Globally Harmonized System of Classification and Labeling of Chemicals
H-statement: Hazard Statement
HMIRC: Hazardous Materials Information Review Commission
HMIS: Hazardous Materials Identification System
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulation by the “International Air Transport Association” (IATA)
ICAO: International Civil Aviation Organization
ICAO-TI (ICAO): Technical Instructions by the “International Civil Aviation Organization”
IMDG: International Maritime Code for Dangerous Goods
ISO: International Organization for Standardization
logPow: octanol-water partition coefficient
LCxx: Lethal Concentration, for xx percent of test population
LDxx: Lethal Dose, for xx percent of test population
ICxx: Inhibitory Concentration for xx of a substance
ECxx: Effective Concentration of xx
N.O.S.: Not otherwise specified
NFPA: National Fire Protection Association
NIOSH: National Institute for Occupational Safety and Health
OECD: Organization for Economic Co-operation and Development
OEL: Occupational Exposure Limit
OSHA: Occupational Safety and Health Administration
P-Statement: Precautionary Statement
PBT: Persistent, Bioaccumulative and Toxic
PMRA: Health Canada Pest Management Regulatory Agency
PPE: Personal Protective Equipment
RTK: Right to Know
SDS: Safety Data Sheet
STEL: Short-term exposure limit
STOT: Specific Target Organ Toxicity
TLV: Threshold Limit Value
TWA: Time-weighted average
VPVB: Very Persistent and Very Bioaccumulative

WEL: Workplace Exposure Level
WHMIS: Workplace Hazardous Materials Information System