

Solve 4K

Safety Data Sheet

Date Issued: 02/11/2015

Date Revised: 02/11/2015

I. PRODUCT IDENTIFICATION

Product Name: **Solve 4K**

Use of the substance/mixture: water treatment chemical

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

For product information call 616 575-8693 or visit 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)

II. HAZARDS IDENTIFICATION

Classification of the substance or mixture

Corrosive to metals: Category 1 May be corrosive to metals

Acute toxicity (oral): Category 4 Harmful if swallowed

Serious eye damage: Category 1 Causes serious eye damage

GHS-Labeling



Hazard pictograms: Signal word:

DANGER

Hazard statements: H290 May be corrosive to metals.

H 302 Harmful if swallowed.

H318 Causes serious eye damage.

Precautionary statements:

Prevention: P234 Keep only in original container.
P261 Avoid breathing dust/fumes/gas/mist/vapors/spray.
P264 Wash face, hands and any exposed skin thoroughly after handlings.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye and face protection.

Response:

P390 Absorb spillage to prevent material damage.
P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P330 Rinse mouth.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 If eye irritation persists: Get medical advice/attention.

Storage: P406 Store in corrosive resistant container with a resistant inner liner.

P405 Store locked up.

Disposal: P501 Dispose of contents/container as special waste in compliance with Local and national regulations.

Other hazards which do not result in classification

Potential environmental effects: May lower the pH of water and thus be harmful to aquatic organisms.

Advice: Causes eye and skin irritation.

Inhalation: May cause respiratory tract irritation.

Skin: Causes severe skin irritation.

Eyes: Causes severe eye irritation.

III. COMPOSITION/INFORMATION ON INGREDIENTS

Substances/Mixture

Chemical nature Aqueous solution

Further information

For the full text of the H-statements mentioned in this Section, see Section 16.

For the full text of the R-phrases mentioned in this Section, see Section 16.

IV. FIRST AID MEASURES

Description of first aid measures

General: Show this safety data sheet to the doctor in attendance.

Eye Contact: Important! Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If possible use lukewarm water. Consult physician.

Skin Contact: Take off contaminated clothing and shoes immediately. Rinse with plenty of water. Obtain medical attention. Wash clothing before reuse.

Inhalation: Rinse mouth and nose with water. Move to fresh air. Call a physician if symptoms occur.

Ingestion: Do NOT induce vomiting. Rinse mouth with water. Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Consult a physician.

Most important symptoms and effects, both acute and delayed.

V. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Not combustible.

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

Unsuitable extinguishing media

No special requirements.

Special hazards arising from the substance or mixture

Heating above the decomposition temperature can cause formation of hydrogen chloride.

Special protective actions for fire-fighters

Exposure to decomposition products may be a hazard to health. In the event of fire, wear self-contained breathing apparatus.

Use NIOSH/MSHA approved respiratory protection.

VI. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Personal precautions, protective equipment and emergency procedures:

Restrict access to area until completion of clean-up. Ensure clean-up is conducted by trained personnel only. Where exposure level is not known, wear NIOSH approved, positive pressure, self-contained respirator. Where exposure level is known, wear NIOSH approved respirator suitable for level of exposure. In addition to the protective clothing/equipment in Section 8, wear a two piece PVC suit with hood or PVC overalls with hood, wear impervious boots. Keep all other personnel upwind and away from the spill/release. For personal protection see Section 8.

Environmental Precautions:

Prevent product from entering the environment.

Restrict the spread of the spillage by using inert absorbent material (sand, gravel). Cover the drains. Must be disposed of in accordance with local and national regulations.

Methods and materials for containment and cleaning up:

Clean-up methods-small spillage

Dilute residues with water and then neutralize with lime or limestone powder to a solid consistency. Shovel or sweep up. Must be disposed of in accordance with local and national regulations.

Clean-up methods-large spillage

Remove spill using a vacuum truck. Dilute residues with water and then neutralize with lime or limestone powder to a solid consistency. Shovel or sweep up remaining material. Must be disposed of in accordance with local and national regulations.

Additional advice

Inform the rescue service in case of entry into waterways, soil or drains.

VII. HANDLING AND STORAGE

Precautions for safe handling

Danger for slipping. For personal protection see Section 8. The work place and work methods shall be organized in such a way that direct contact with the product is prevented or minimized. Handle and open container with care.

Conditions for safe storage, including any incompatibilities

Avoid high temperatures. Avoid freezing.

Materials to avoid: Metals, bases

VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value	Form of exposure	Control parameters	Update	Basis
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IV. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state/color/ Odor:	light green/brown liquid; slight acidic odor
Melting point/range:	Crystallization point/range -10° C
Boiling Point:	100-105 °C;
Flash point:	Not applicable, inorganic compound
Explosive properties	
Upper explosion limit:	No data available
Density:	1.20-1.35 g/cm ³
Water Solubility:	(20°C) completely soluble
Partition coefficient (n-octanol/water):	Not applicable, inorganic compound
Volatile organic content (VOC):	Not applicable

X. STABILITY AND REACTIVITY

Reactivity

Chemical stability

Possibility of hazardous reactions

Hazardous reactions: Bases cause exothermic reactions

Conditions to avoid: Avoid freezing. Avoid storage at high temperatures.

Incompatible materials:

Materials to Avoid: Metals, bases
Hazardous decomposition products: Heating above the decomposition temperature can cause formation of hydrogen chloride.

XI. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute oral toxicity

Iron dichloride: LD50 Rat: 220 mg/kg
Remarks: Calculated as Fe/OECD Test Guideline 423
Hydrochloric acid: LD50 rabbit: 900 mg/kg

Acute inhalation toxicity:

Iron dichloride: LC50 Remarks: No data available, not applicable
Hydrochloric acid: LC50 rat: 3124 ppm 1hr.
Hydrochloric acid: LCLo human: 1300 ppm 30min.
Hydrochloric acid: LCLo human: 3000 ppm 5min.

Acute dermal toxicity

Iron dichloride: LD50 Rat: >2000 mg/kg
Remarks: OECD Test Guideline 402
Read-across (Analogy), CAS-No. 7758-94-3
Iron dichloride: LD50 Rat:>881 mg/kg
Remarks: OECD Test Guideline 402
Calculated as Fe
Iron dichloride: LD50 Rabbit: >5,010 mg/kg
Conclusion: 31,5 % solution

Skin corrosion/irritation

Iron dichloride: Rabbit
Result: Mild skin irritation/OECD Test Guideline 404
Hydrochloric acid: rabbit:
Result: Corrosive/4h/0,5 ml, conc. 170g/l

Serious eye damage/eye irritation:

Iron dichloride: Rabbit
Result: Corrosive/OECD Test Guideline 405
Hydrochloric acid: rabbit:
Result: Risk of serious damage to eyes/OECD Test Guideline 405/0,1 ml, conc. 10%/yes

Respiratory or skin sensitization

Skin sensitization:

Iron dichloride: Conclusion: According to experience sensitization is not expected.
Hydrochloric acid: Remarks: patch test on human volunteers did not demonstrate sensitization properties.

Germ cell mutagenicity

Genotoxicity in vitro:

Hydrochloric acid: Ames test/Salmonella typhimurium (bacterium)/ with and without
Result: Negative
Hydrochloric acid: Cytogenetic assay/Mouse/with and without Result: negative

Carcinogenicity

Iron dichloride: Not believed to be a carcinogen.

Reproductive toxicity

XI. ECOLOGICAL INFORMATION

ECOTOXICITY EFFECTS

Aquatic toxicity

Remarks: this material is not classified as dangerous for the environment. The compound is considered to have no long term effects in aquatic systems due to the rapid formation of insoluble hydroxides.

Iron dichloride:

LC50/96h Japanese rice fish (*Oryzias latipes*) OECD Test Guideline 203: 47 mg/l

NOEC/90d Coho salmon (*Oncorhynchus*): >1 mg/l

EC50/48h/water flea (*Daphnia magna*)/OECD Test Guideline 202: 19 mg/l

NOEC/21d/water flea (*Daphnia magna*): >1mg/l

IC50/72h/green algae (*Pseudokirchneriella subcapitata*)OECD Test Guideline 201: 6.9 mg/l

Hydrochloric acid:

LC50/96 h/BLUEGILL SUNFISH (*Lepomis macrochirus*/semi-static test: 20.5 mg/l

LC50/96h/Mosquito fish (*Gambusia affinis*): 282 mg/l

LC50/48h/Golden orfe (*Leuciscus idus*): 862 mg/l

EC50/48h/ Waterflea ((*Daphnia magna*)/static test/OECD Test Guideline 202: 0.45 mg/l

EC50/Fresh water algae (*Chlorella vulgaris*)/static test/OECD Test Guideline 201: 0.73mg/l

Toxicity to other organisms

Hydrochloric acid: LOEC/flora: 6 mg/l

Persistence and degradability:

Biological degradability

Iron dichloride: The methods for determining the biological degradability are not applicable to inorganic substances.

Hydrochloric acid: The methods for determining the biological degradability are not applicable to inorganic substances.

Bioaccumulative potential

Partition coefficient: n-octanol/water: Not applicable, inorganic compound

Iron dichloride: The product is not expected to bioaccumulate.

Partition coefficient: n-octanol/water: Not applicable, inorganic compound.

Hydrochloric acid: The product is not expected to bioaccumulate.

Partition coefficient: n-octanol/water: Not applicable, inorganic compound.

Mobility in soil

Water solubility: completely soluble (20°C)

Hydrochloric acid:

Vapor pressure: >1,013 hPa (25°C)

Water solubility: ca. 500 g/l (25°C)

Other adverse effects

May lower the pH of water and thus be harmful to aquatic organisms.

13. DISPOSAL CONSIDERATIONS

Product: Classified as hazardous waste. Must be disposed of in accordance with local, state and national regulations.

Contaminated packaging: Classified as hazardous waste. Must be disposed of in accordance with local and national regulations.

14. TRANSPORT INFORMATION

UN number 1760

Land transport

USDOT

Proper Shipping Name: UN1760, Corrosive liquid, n.o.s. (Ferrous chloride)

Hazard Class: 8

Packing Group: III

UN/ID Number: UN1760

DOT-Labels: 8

Reportable quantity: Ferrous chloride

Sea transport

IMDG:

Proper Shipping Name: UN1760, Corrosive liquid, n.o.s. (Ferrous chloride)

Hazard Class: 8

Packing Group: III

UN/ID Number: UN1760

IMDG-Labels: 8

Environmentally Hazardous: Not a Marine Pollutant

Air transport

ICAO/IATA

Proper Shipping Name: Ferric Chloride Solution

Hazard Class: 8

Packing Group: III

UN/ID Number: UN2582

ICAO-Labels: 8

Special precautions for user

15.

REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Title III Section 311 Categories

Immediate (Acute) Health Effects: Yes

Delayed (Chronic) Health Effects: No

Sudden Release of pressure hazard: No

Fire hazard: No

Reactivity hazard: No

SARA 313- Specific Toxic Chemical Listings

Hydrochloric acid(7647-01-0)

OSHA a. United States Occupational Safety and Health Administration substances, 29 CFR 1910.1000 Sub Part Z.

Iron dichloride (7758-94-3)

CERCLA hazardous substances. 40 CFR part 302. May be subject to emergency release notification under SARA Title III.

CERCLA Hazardous substance (Reportable Quantities)

Iron dichloride (7758-94-3) 100 lb.

Hydrochloric acid (7647-01-0) 5,000 lb.

WHMIS Classification E Corrosive Material

Canadian Ingredient Disclosure List

Ingredient Disclosure List (WHMIS)

Iron dichloride (7758-94-3)

California Proposition 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm. None present ()

Notification status:

USA: All components of this product are included on the TSCA Chemical Inventory or are not required to be listed on the TSCA Chemical I inventory.

Canada: All components of this product are included on the Domestic Substances List (DSL) or are not required to be listed on the DSL

European Union (EU): All components of this product are included on the European Inventory of Existing Chemical Substances (EINECS) or are not required to be listed on EINECS.

Australia: All components of this product are included in the Australian Inventory of Chemical Substances(AICA) or are not required to be listed on AICS.

China: All components of this product are included on the Chinese inventory or are not required to be listed on the Chinese Inventory.

Japan: All components of this product are included on the Japanese (ENCS) inventory or are not required to be listed on the Japanese Inventory.

Korea: All components of this product are included on the Korean (ECL) inventory or are not required to be listed on the Korean inventory

New Zealand: This product's New Zealand Inventory of Chemical Substances (NZIoC) status has NOT been determined.

Philippines: All components of this product are included on the Philippine (PICCS) inventory or are not required to be listed on the Philippine inventory.

Taiwan: This product's Taiwan Toxic Chemical Substances Control Act Inventory status has NOT been determined.

DATE ISSUED: 02/11/2015

DATE REVISED: 02/11/2015

Revision number: 0

16. OTHER INFORMATION

	HEALTH	FLAMMABILITY	REACTIVITY
NFPA	3	0	0
HMS	3	0	0

OTHER INFORMATION

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.

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
STEL: Short-term exposure limit
SDS: Safety Data Sheet
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
(WAF): *water-accommodated fraction*