

# Solve 3K

## Safety Data Sheet

Date Issued: 11/06/2017

Date Revised: 11/06/2017

### I. PRODUCT IDENTIFICATION

Product Name: **Solve 3K**

Use of the substance/mixture: water treatment chemical

Recommended restrictions on use: There are no uses advised against

Company: **WaterSolve LLC, 5031 68<sup>TH</sup> Street, Caledonia, Michigan 49316 USA**

For product information call 616 575-8693 or visit [www.gowatersolve.com](http://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
Skin irritation:	Category 2	Causes severe skin burns and eye damage
Serious eye damage:	Category 1	Causes serious eye damage

#### GHS-Labeling



#### Hazard pictograms: Signal word:

#### DANGER

Hazard statements:	H290	May be corrosive to metals.
	H302	Harmful if swallowed.
	H315	Causes skin irritation.
	H318	Causes serious eye damage.

#### Precautionary statements:

Prevention:	P234	Keep only in original container.
	P264	Wash face, hands and any exposed skin thoroughly after handlings.
	P270	Do not eat, drink or smoke when using this product.
	P280	Wear protective gloves/protective clothing/eye and face protection.

#### Response:

P301+P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P330	Rinse mouth.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P321	Specific treatment (see supplemental first aid instructions on this label.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P362	Take of contaminated clothing and wash 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.
P310	Immediately call a POISON CENTER or doctor/physician.

**Storage:** P390 Absorb spillage to prevent material damage.  
P406 Store in corrosive resistant container with a resistant inner liner.  
**Disposal:** P501 Dispose of contents/container as special waste in compliance with  
Local and national regulations.

Hazardous components which must be listed on the label:

- 7705-08-0 Iron trichloride
- 7647-01-0 Hydrochloric acid

**Other hazards which do not result in classification**

**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**

**Hazardous components**

Chemical Name	CAS-No.	Concentration (%)
Iron trichloride	7705-08-0	35-45%
Hydrochloric acid	7647-01-0	1-5%

**Further information**

This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

This product contains WHMIS regulated (hazardous) components.

**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 a 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 or milk. 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.

**Further information:** Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**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  
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.  
Material for packaging: Suitable material: plastic (PE,PP,PVC.), polyester with fiberglass reinforcement, rubber-coated steel, titanium.

**Materials to avoid:** Metals, bases

Stainless steel, leather, non-acid proof metals (for example aluminum, copper and iron), reaction with some metals may evolve flammable hydrogen gas.

**VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Components with workplace control parameters**

Components	CAS-No.	Value	Form of exposure	Control parameters	Update	Basis
Hydrochloric acid	7647-01-0	C		2ppm	2007-01-01	ACGIH
		C		5 ppm 7 mg/m <sup>3</sup>	2013-10-08	NIOSH REL
		C		5 ppm 7 mg/m <sup>3</sup>	2006-02-28	OSHA Z-1
		C		5 ppm 7 mg/m <sup>3</sup>	1989-01-19	OSHA PO
Iron trichloride	7705-08-0	TWA		1mg/m <sup>3</sup>	2013-03-01	ACGIH
		TWA		1mg/m <sup>3</sup>	1989-01-19	OSHA PO
		TWA		1mg/m <sup>3</sup>	2013-10-08	NIOSH REL

**Appropriate engineering controls**

Handle in accordance with good industrial hygiene and safety practice.

Eye wash bottle or emergency eye-wash fountain must be found in the work place.

**Individual protective measures, such as personal protective equipment****Respiratory protection**

Respiratory protection is not required under normal handling conditions. If aerosols or mist are formed, eg. when cleaning containers with a high pressure washer, use half mask with filter B2.

**Hand:** Glove material: Rubber or plastic gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves,. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

**Skin and body protective**

Wear protective clothing if necessary. Use rubber boots.

**Eye protection**

Tightly fitting safety goggles. Eye wash bottle with pure water.

**Environmental exposure controls:** No data available

**IV. PHYSICAL AND CHEMICAL PROPERTIES****Information on basic physical and chemical properties**

<b>Physical state/color/ Odor:</b>	liquid/dark brown/ slight acidic odor
<b>pH:</b>	<1
<b>Initial/Range/Boiling Point:</b>	100-105 °C;
<b>Flash point:</b>	Not applicable
<b>Density:</b>	1.41-1.44 g/cm <sup>3</sup>
<b>Water Solubility:</b>	(20°C) completely soluble, at dilution to less than 1% of FeCl <sub>3</sub> , precipitation of iron hydroxide occurs.
<b>Partition coefficient (n-octanol/water):</b>	Not applicable, inorganic compound
<b>Volatile organic content (VOC):</b>	Not applicable
<b>Surface tension:</b>	No data available

**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, stainless steel, leather, non-acid proof metals (for example aluminum, copper and iron)  
Reaction with some metals may evolve flammable hydrogen gas.

**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 trichloride:** LD50 Rat: 220 mg/kg  
Remarks: Calculated as Fe/OECD Test Guideline 423

#### Acute dermal toxicity

**Iron trichloride:** LD50 Rat: >2564 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  
Remarks: Calculated as Fe

#### Skin corrosion/irritation

**Iron trichloride:** Conclusion: Corrosive  
Rabbit  
Result: irritating/OECD Test Guideline 404  
Remarks: Read-across (Analogy), CAS-No. 7758-94-3

#### Serious eye damage/

**Eye irritation:** Conclusion: Corrosive to the eyes.

#### Serious eye damage/

#### Eye irritation

**Iron trichloride:** Rabbit  
Result: Corrosive  
OECD Test Guideline 405  
Remarks: Read-across (Analogy), CAS-No. 7758-94-3

#### Respiratory or skin sensitization

**Skin sensitization:** Conclusion: Not sensitizing.

#### Skin sensitization

**Iron trichloride:** Conclusion: According to experience sensitization is not expected.

#### Carcinogenicity

**Iron trichloride:** Conclusion: Not believed to be a carcinogen.

#### Reproductive toxicity

**Iron trichloride:** Conclusion: Not believed to be toxic for reproduction.

## XI. ECOLOGICAL INFORMATION

### ECOTOXICITY EFFECTS

#### Aquatic toxicity

**Iron trichloride:**  
LD50 Bluegill sunfish (*Lepomis macrochirus*): 96h 59mg/l Remarks: hydrated substance  
NOEC Bluegill sunfish (*Lepomis macrochirus*): 96h >1mg/l Remarks: hydrated substance  
EC50 water flea (*Daphnia magna*): 48h 27mg/l  
NOEC water flea (*Daphnia magna*): 21d >1mg/l  
EC50 algae: 15d rate of growth: 58mg/l

Remarks: Test is not appropriate due to the flocculating characteristics of the products. The compound is considered to have no long term effects in aquatic systems due to the rapid formation of insoluble hydroxides.

#### Toxicity to other organisms

**Iron trichloride:** Remarks: No data available

#### Persistence and degradability:

#### Biological degradability

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

**Biological degradability**

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

**Mobility in soil**

Water solubility: completely soluble (20°C)

Surface tension: No data available

**Iron trichloride:**

**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, state and national regulations.

**14. TRANSPORT INFORMATION**

**UN number 2582**

**Land transport**

USDOT

Description of the goods/

Proper shipping name: UN2582, FERRIC CHLORIDE SOLUTION

Hazard Class: 8

Packing Group: III

UN/ID Number: UN2582

DOT-Labels: 8

Reportable quantity: Ferric chloride

**Sea transport**

IMDG:

Description of the goods/

Proper shipping name: UN2582, FERRIC CHLORIDE SOLUTION

Hazard Class: 8

Packing Group: III

UN/ID Number: UN2582

IMDG-Labels: 8

Environmentally hazardous: Not a Marine Pollutant.

**Air transport**

ICAO/IATA

Description of the goods/

Proper shipping name: UN2582, FERRIC CHLORIDE SOLUTION

Hazard Class: 8

Packing Group: III

ICAO-Labels: 8

Special precautions for user

None known.

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

**CERCLA Hazardous substance (Reportable Quantities)**

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

Diiron tris (sulphate) (10028-22-5) 1,000 lb.

Iron trichloride (7705-08-0) 1,000 lb.

Hydrochloric acid (7647-01-0)

Iron trichloride (7705-08-0)

**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 ()

Other regulations: No restrictions identified other than those already covered in regulations.

**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.

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16. **OTHER INFORMATION**

	HEALTH	FLAMMABILITY	REACTIVITY
NFPA	3	0	1
HMIS	3	0	1

**OTHER 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 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. 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. 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. 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:**

AICS: Australian Inventory of Chemical Substances

ASTM: American Society for the Testing of Materials

ACGIH: American Conference of Industrial Hygienists

bw: Body Weight

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

DIN: Standard of the German Institute for Standardization

DSL: Domestic Substances List (Canada)

ECx: Concentration associated with x% response

EmS: Emergency Schedule

ENCS: Existing and New Chemical Substances

ErCx: Concentration associated with x% growth rate response

ERG: Emergency Response Guide

FG: Food grade

FIFRA: Federal Insecticide, Fungicide, and Rodenticide Act

GHS: Globally Harmonized System of Classification and Labeling of Chemicals

GLP: Good laboratory practice

H-statement: Hazard Statement

HMIRC: Hazardous Materials Information Review Commission

HMIS: Hazardous Materials Identification System

IARC: International Agency for Research on Cancer

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulation by the International Air Transport Association (IATA)

IBC: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk

IC50: Half maximal inhibitory concentration



ICAO: International Civil Aviation Organization  
ICAO-TI (ICAO): Technical Instructions by the International Civil Aviation Organization  
IECSC: Inventory of Existing Chemical Substances in China  
IMDG: International Maritime Code for Dangerous Goods  
IMO: International Maritime Organization  
ISHL: Industrial Safety and Health Law (Japan)  
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  
KECI: Korea Existing Chemicals Inventory  
MARPOL: International Convention for the Prevention of Pollution from Ships  
MSHA: Mine Safety and Health Administration  
n.o.s.: Not otherwise Specified  
NFPA: National Fire Protection Association  
NO(A)EC: No Observable Effect Loading Rate  
NO(A)EL: No Observable (Adverse) Effect Level  
NTP: National Toxicology Program  
NIOSH: National Institute for Occupational Safety and Health  
NOELR: No Observable Effect Loading Rate  
NZIoC: New Zealand Inventory of Chemicals  
OECD: Organization for Economic Co-operation and Development  
OPPTS: Office of Chemical Safety and Pollution Prevention  
OEL: Occupational Exposure Limit  
OSHA: Occupational Safety and Health Administration  
P-Statement: Precautionary Statement  
PBT: Persistent, Bioaccumulative and Toxic  
PICCS: Philippines Inventory of Chemicals and Chemical Substances  
PMRA: Health Canada Pest Management Regulatory Agency  
PPE: Personal Protective Equipment  
Q SAR: (Quantitative) Structure Activity Relationship  
RCRA: Resource Conservation and Recovery Act  
REACH: Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorization and Restriction of Chemicals  
RQ: Reportable Quantity  
RTK: Right to Know  
SADT: Self Accelerating Decomposition Temperature  
SARA: Superfund Amendments and Reauthorization Act  
STEL: Short-term exposure limit  
SDS: Safety Data Sheet  
STOT: Specific Target Organ Toxicity  
TCSI: Taiwan Chemical Substance Inventory  
TSCA: Toxic Substances Control Act (United States)  
TLV: Threshold Limit Value  
TWA: Time-weighted average  
UN: United Nations  
UNRTDG: United Nations Recommendations on the Transport of Dangerous Goods  
vPvB: Very Persistent and Very Bioaccumulative  
WEL: Workplace Exposure Level  
WHMIS: Workplace Hazardous Materials Information System  
(WAF): *water-accommodated fraction*