World Headquarters
Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

MSDS No: M00383

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Ferric Ion Solution
Catalog Number: 2212242

Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

Emergency Telephone Numbers:
(Medical and Transportation)
(303) 623-5716 24 Hour Service
(515)232-2533 8am - 4pm CST

MSDS Number: M00383
Chemical Name: Not applicable
CAS Number: Not applicable
Additional CAS No. (for hydrated forms): Not applicable
Chemical Formula: Not applicable
Chemical Family: Not applicable
Intended Use: Determination of chloride

2. HAZARDS IDENTIFICATION

GHS Classification:
Hazard categories: Skin Corrosion/Irritation: Skin Corr. 1A Reproductive Toxicity: Lact. Specific Target Organ Toxicity - Repeated Exposure: STOT RE. 1
GHS Label Elements:
DANGER

Hazard statements: Causes severe skin burns and eye damage. May cause harm to breast-fed children. Causes damage to organs through prolonged or repeated exposure.
Precautionary statements: Obtain special instructions before use. Avoid contact during pregnancy/while nursing. Wear eye protection. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. 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 or doctor/physician. IF SWALLOWED: rinse mouth. Do NOT induce vomiting. IF exposed or concerned: Get medical advice/attention. Wash contaminated clothing before reuse.

HMIS:
Health: 3
Flammability: 0
Reactivity: 1
Protective Equipment: X - See protective equipment, Section 8.

NFPA:
Health: 3
Flammability: 0
Reactivity: 1
Symbol: Not applicable

WHMIS Hazard Classification: Class E - Corrosive material
WHMIS Symbols: Corrosive

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Components according to GHS:

Ferric Perchlorate

CAS Number: 13537-24-1
Chemical Formula: $Fe(ClO_4)_3$
GHS Classification: Ox. Sol. 2, H272; Skin Irrit. 2, H315; Eye Irrt. 2, H319; STOT SE 3, H335; Lact. 1, H362; STOT Rep. 1, H372
Percent Range: 5.0 - 15.0
Percent Range Units: weight / weight
PEL: Not established
TLV: Not established

WHMIS Symbols: CorrosiveOxidizing

Perchloric Acid

CAS Number: 7601-90-3
Chemical Formula: $HClO_4 \cdot nH_2O$
GHS Classification: Ox. Liq. 1, H271; Met. Corr. 1, H290; Acute Tox. 4 - Orl, H302; Skin Corr. 1A, H315; Lact. 1, H362; STOT Rep. 1, H372
Percent Range: 5.0 - 15.0
Percent Range Units: weight / weight
PEL: Not established
TLV: Not established

WHMIS Symbols: CorrosiveOxidizing

Hazardous Components according to GHS: No

Demineralized Water

CAS Number: 7732-18-5
Chemical Formula: H_2O
GHS Classification: Not hazardous
Percent Range: 80.0 - 90.0
Percent Range Units: volume / volume
PEL: Not established
TLV: Not established

WHMIS Symbols: Not applicable

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4. FIRST AID MEASURES

General Information: In the event of exposure, show this Material Safety Data Sheet and label (where possible) to a doctor.
Advice to doctor: Treat symptomatically.
Eye Contact: Immediately flush eyes with water for 15 minutes. Call physician.
Skin Contact (First Aid): Wash skin with plenty of water for 15 minutes. Remove contaminated clothing. Call physician immediately.
Inhalation: Remove to fresh air. Give artificial respiration if necessary. Call physician.
Ingestion (First Aid): Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.

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5. FIRE FIGHTING MEASURES

Flammable Properties: Material will not burn. Material is not classified as flammable according to GHS criteria.
Fire Fighting Instruction: As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.
Extinguishing Media: Use media appropriate to surrounding fire conditions
Extinguishing Media NOT To Be Used: Not applicable
Fire / Explosion Hazards: Drying to completion may form explosive products.
Hazardous Combustion Products: None reported

6. ACCIDENTAL RELEASE MEASURES

Spill Response Notice:
Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.
Containment Technique: Absorb spilled liquid with non-reactive sorbent material. Stop spilled material from being released to the environment.
Clean-up Technique: If permitted by regulation, Cover spilled material with an alkali, such as soda ash or sodium bicarbonate. Scoop up slurry into a large beaker. Dilute with a large excess of water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Flush reacted material to the drain with a large excess of water. Otherwise, Dispose of in accordance with local, state and federal regulations or laws. Decontaminate the area of the spill with a soap solution.
Evacuation Procedure: Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.
DOT Emergency Response Guide Number: 154

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes skin clothing Do not breathe mist or vapors. Wash thoroughly after handling. Use with adequate ventilation. Maintain general industrial hygiene practices when using this product. Perchlorate Material - special handling may apply. In California, see www.dtsc.ca.gov/hazardouswaste/perchlorate.
Storage: Store away from: alkalies oxidizable materials combustible materials reducers Do not allow product to dry out. Store between 10° and 25°C. Protect from: light
Flammability Class: Not applicable

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Have an eyewash station nearby. Have a safety shower nearby. Use a fume hood to avoid exposure to dust, mist or vapor. Maintain general industrial hygiene practices when using this product.
Personal Protective Equipment:
Eye Protection: chemical splash goggles
Skin Protection: disposable latex gloves In the EU, the selected gloves must satisfy the specifications of EU Directive 89/686/EEC and standard EN 374 derived from it.
Inhalation Protection: laboratory fume hood
Precautionary Measures: Avoid contact with: eyes skin clothing Do not breathe: mist/vapor Wash thoroughly after handling. Use with adequate ventilation. Protect from: light Keep away from: combustible material organic materials alkalies reducers
TLV: Not established
PEL: Not established
For Occupational Exposure Limits (OEL) for ingredients, see section 3 - Composition/Information on Ingredients.:

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear, light pink liquid
Physical State: Liquid
Molecular Weight: Not applicable
Odor: Odorless
Odor Threshold: Odorless
pH: < 1.0
Metal Corrosivity:
Corrosivity Classification: Classed as corrosive to skin. Not generally classed as corrosive to metals in addition to skin classification.
Steel: Not determined
Aluminum: Not determined
Specific Gravity/ Relative Density (water = 1; air =1): 1.095
Viscosity: Not determined
Solubility:
Water: Soluble

Acid: Soluble
Other: Not determined
Partition Coefficient (n-octanol / water): Not applicable
Coefficient of Water / Oil: Not applicable
Melting Point: Not determined
Decomposition Temperature: Not determined
Boiling Point: ~ 100 °C (~ 212 °F)
Vapor Pressure: Not determined
Vapor Density (air = 1): Not determined
Evaporation Rate (water = 1): ~ 1
Volatile Organic Compounds Content: Not applicable
Flammable Properties: Material will not burn. Material is not classified as flammable according to GHS criteria.
Flash Point: Not applicable
Method: Not applicable
Flammability Limits:
Lower Explosion Limits: Not applicable
Upper Explosion Limits: Not applicable
Autoignition Temperature: Not applicable
Explosive Properties:
Not classified according to GHS criteria.
Oxidizing Properties:
Not classified according to GHS criteria.
Reactivity Properties:
Not classifed as self-reactive, pyrophoric, self-heating or emitting flammable gases in contact with water according to GHS criteria.
Gas under Pressure:
Not classified according to GHS criteria.
Not applicable

10. STABILITY AND REACTIVITY

Chemical Stability: Stable when stored under proper conditions.
Mechanical Impact: When dry, explodes with shock, heat or friction.
Static Discharge: None reported.
Reactivity / Incompatibility: May react violently in contact with: alkalies reducers organic materials combustible materials
Hazardous Decomposition: None reported
Conditions to Avoid: Do not heat to dryness. Exposure to light. Extreme temperatures

11. TOXICOLOGICAL INFORMATION

Toxicokinetics, Metabolism and Distribution:
Perchlorates interfere with uptake of iodine and can cause hypothyroidism. Effect is reversable.
Toxicologically Synergistic Products: None reported
Acute Toxicity: Acute Toxicity Estimate (ATE) - Calculated from Ingredient Toxicity Data Based on classification principles, the classification criteria are not met. Route Data Given Below
ATE Oral Rat LD50 = 14808 mg/kg
Specific Target Organ Toxicity - Single Exposure (STOT-SE): Based on classification principles, the classification criteria are not met.
Specific Target Organ Toxicity - Repeat Exposure (STOT-RE): Target Organs Reproductive system Respiratory Tract Liver Kidneys Circulatory system
Perchlorate competitively inhibits thyroidal iodide uptake and leads to perturbation of iodine economy. Iodine is indispensable element for synthesis of thyroid hormones essential for neurodevelopment in prenatal and neonatal periods.
Skin Corrosion/Irritation: Corrosive to skin.
Eye Damage: Corrosive to eyes.
Sensitization: Based on classification principles, the classification criteria are not met.
CMR Effects/Properties (carcinogenic, mutagenic or toxic to reproduction): Summary of findings reported in the literature follow.
Reported perchlorate induced thyroid hormonal changes in pregnant and lactating female rats, fetuses and nursing pups.
This product does NOT contain any IARC listed chemicals.
This product does NOT contain any NTP listed chemicals.

This product does NOT contain any OSHA listed carcinogens.

Symptoms/Effects:

Ingestion: Causes: burns May cause: abdominal pain nausea vomiting thirst diarrhea circulatory collapse excitation body temperature reduction

Inhalation: Causes: burns May cause: choking coughing chest pain

Skin Absorption: None Reported

Chronic Effects: None reported

Medical Conditions Aggravated: Pre-existing: Eye conditions Skin conditions Respiratory conditions

12. ECOLOGICAL INFORMATION

Product Ecological Information: --

No ecological data available for this product. Based on classification principles, not classified as hazardous to the environment.

Ingredient Ecological Information: Perchloric Acid: Cyprinus carpio LC100 = 180 mg/l

CEPA statement: Ferric Perchlorate, Perchloric Acid, Water: Persistent, not bioaccumulative or inherently toxic to aquatic organisms.

13. DISPOSAL CONSIDERATIONS

EPA Waste ID Number: D002

Special Instructions (Disposal): If permitted by regulation, Work in an approved fume hood. Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system. Otherwise, Dispose of material in an E.P.A. approved hazardous waste facility. Perchlorate Material - special handling may apply. In California, see www.dtsc.ca.gov/hazardouswaste/perchlorate.

Empty Containers: Rinse three times with an appropriate solvent. Collect rinsate and dispose of according to local, state or federal regulations. In the US, rinsate from empty containers is classified as hazardous waste and should be disposed of at an E.P. A. approved facility. Rinsate from empty containers may contain sufficient product to require disposal as hazardous waste. Dispose of empty container as normal trash.

NOTICE (Disposal): These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information. In Europe: Chemical and analysis solutions must be disposed of in compliance with the respective national regulations. Product packaging must be disposed of in compliance with the country-specific regulations or must be passed to a packaging return system. Perchlorate Material - special handling may apply. In California, see www.dtsc.ca.gov/hazardouswaste/perchlorate.

14. TRANSPORT INFORMATION

D.O.T.:

D.O.T. Proper Shipping Name: Perchloric Acid

Hazard Class: 8

Subsidiary Risk: 5.1

ID Number: UN1802

Packing Group: II

T.D.G.:

Proper Shipping Name: Perchloric Acid

Hazard Class: 8

Subsidiary Risk: 5.1

UN Number/PIN: 1802

Packing Group: II

I.C.A.O.:

I.C.A.O. Proper Shipping Name: Perchloric Acid

Hazard Class: 8

Subsidiary Risk: 5.1

ID Number: UN1802

Packing Group: II

I.M.O.:

Proper Shipping Name: Perchloric Acid

Hazard Class: 8

Subsidiary Risk: 5.1

ID Number: UN1802

Packing Group: II
Additional Information: Not applicable

15. REGULATORY INFORMATION

U.S. Federal Regulations:
O.S.H.A.: This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)
E.P.A.:
S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370): Immediate (Acute) Health Hazard
S.A.R.A. Title III Section 313 (40 CFR 372): This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.
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302 (EHS) TPQ (40 CFR 355): Not applicable
304 CERCLA RQ (40 CFR 302.4): Not applicable
304 EHS RQ (40 CFR 355): Not applicable
Clean Water Act (40 CFR 116.4): Not applicable
RCRA: Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.
State Regulations:
California Prop. 65: No Prop. 65 listed chemicals are present in this product.
Identification of Prop. 65 Ingredient(s): None
California Perchlorate Rule CCR Title 22 Chap 33: Yes
Trade Secret Registry: Not applicable
National Inventories:
U.S. Inventory Status: All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).
CAS Number: Not applicable
Canadian Inventory Status: All ingredients of this product are DSL Listed.
EEC Inventory Status: All ingredients used to make this product are listed on EINECS / ELINCS.
Australian Inventory (AICS) Status: Not Listed Annual Report Required.
New Zealand Inventory (NZIoC) Status: All components either listed or exempt.
Korean Inventory (KECI) Status: All components of this product are either listed, listed as the anhydrous compound or exempt.
Japan (ENCS) Inventory Status: All components either listed or exempt.
China (PRC) Inventory (MEP) Status: All components either listed or exempt.

16. OTHER INFORMATION

References: TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. In-house information. Technical Judgment.
Complete Text of H phrases referred to in Section 3: H271 May cause fire or explosion; strong oxidizer. H272 May intensify fire; oxidiser. H290 May be corrosive to metals. H302 Harmful if swallowed. H315 Causes skin irritation. H319 Causes serious eye irritation. H335 May cause respiratory irritation. H362 May cause harm to breast-fed children. H372 Causes damage to organs through prolonged or repeated exposure.
Revision Summary: . Substantial revision to comply with EU Reg 1272/2008, Reg 1907/2006 and UN GHS (ST/SG/AC.10/36/Add.3).
Date of MSDS Preparation:
Day: 10
Month: July
Year: 2014
MSDS Prepared: MSDS prepared by Product Compliance Department extension 3350
CCOHS Evaluation Note: It is offered under exemption from WHMIS labeling as specified in the Controlled Products Regulation (CPR) Section 17. It is offered under the interim policy that was established by Health Canada permitting use of GHS-formatted safety data sheets in Canada prior to revision of CPR to GHS. This product has been classified and labeled in accordance with the requirements of GHS (ST/SG/AC.10/36/Add.3). This SDS has been prepared in accordance with the requirements of GHS (ST/SG/AC.10/36/Add.3).

Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume

NV - Not Available v/v - volume/volume

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.