

# MATERIAL SAFETY DATA SHEET

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** FerroVer<sup>®</sup> Iron Reagent  
**Catalog Number:** 2105769

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:** M00135  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** May cause allergic reaction. May cause irritation.  
**Date of MSDS Preparation:**  
**Day:** 15  
**Month:** October  
**Year:** 2009

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Sodium Thiosulfate

**CAS No.:** 10102-17-7  
**TSCA CAS Number:** 7772-98-7  
**Percent Range:** 45.0 - 55.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 > 8 gm/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation.

### 1,10-Phenanthroline-p-toluenesulfonic Acid Salt

**CAS No.:** 92798-16-8  
**TSCA CAS Number:** 92798-16-8  
**Percent Range:** 1.0 - 5.0  
**Percent Range Units:** weight / weight  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation. Toxic properties unknown.

### Sodium Hydrosulfite

**CAS No.:** 7775-14-6  
**TSCA CAS Number:** 7775-14-6  
**Percent Range:** 15.0 - 25.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 > 500 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Allergen Causes moderate eye irritation. Flammable solid.

**Sodium Citrate**

**CAS No.:** 68-04-2  
**TSCA CAS Number:** 68-04-2  
**Percent Range:** 1.0 - 10.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 >8 g/Kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation.

**Sodium Metabisulfite**

**CAS No.:** 7681-57-4  
**TSCA CAS Number:** 7681-57-4  
**Percent Range:** 20.0 - 30.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD<sub>50</sub> = 1131 mg/kg  
**LC50:** None reported  
**TLV:** 5 mg/m<sup>3</sup> (ACGIH - TWA)  
**PEL:** Not established  
**Hazard:** May cause irritation. May cause allergic reaction.

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### 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** White to light yellow crystals

**Odor:** Sulfur-like

MAY CAUSE EYE AND RESPIRATORY TRACT IRRITATION

MAY CAUSE ALLERGIC RESPIRATORY REACTION IF SWALLOWED OR INHALED

**HMIS:**

**Health:** 2

**Flammability:** 0

**Reactivity:** 1

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 2

**Flammability:** 0

**Reactivity:** 1

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** May cause irritation

**Skin Contact:** No effects are anticipated

**Skin Absorption:** None reported

**Target Organs:** None reported

**Ingestion:** May cause: allergic respiratory reaction gastrointestinal irritation circulatory disturbances central nervous system depression Very large doses may cause: abdominal pain diarrhea vomiting depression

**Target Organs:** None reported

**Inhalation:** May cause: respiratory tract irritation allergic respiratory reaction difficult breathing coughing rapid pulse and respirations chest pain blood pressure changes sweating flushing hives

**Target Organs:** None reported

**Medical Conditions Aggravated:** Sulfites are strong sensitizers. Inhalation and ingestion may cause allergic respiratory reactions in asthmatics. Persons with respiratory conditions should take special care when working with products that contain sulfites.

**Chronic Effects:** Chronic overexposure may cause allergic respiratory reactions

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

An ingredient of this mixture is: IARC Group 3: Non-classifiable  
Metabisulfites  
This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental mutagen.  
**Toxicologically Synergistic Products:** None reported

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#### 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.  
**Skin Contact (First Aid):** Wash skin with soap and plenty of water.  
**Ingestion (First Aid):** Give 1-2 glasses of water. Do not induce vomiting. Call physician immediately.  
**Inhalation:** Give artificial respiration if necessary. Remove to fresh air. Call physician.

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#### 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Can burn in fire, releasing toxic vapors.  
**Flash Point:** Not applicable  
**Method:** Not applicable  
**Flammability Limits:**  
**Lower Explosion Limits:** Not applicable  
**Upper Explosion Limits:** Not applicable  
**Autoignition Temperature:** Not determined  
**Hazardous Combustion Products:** Toxic fumes of: sulfur oxides, sodium monoxide, carbon monoxide, carbon dioxide.  
**Fire / Explosion Hazards:** May react violently with: organic materials, aluminum / aluminum compounds, strong oxidizers, combustible materials, strong acids, water  
**Static Discharge:** None reported.  
**Mechanical Impact:** None reported  
**Extinguishing Media:** Carbon dioxide, Alcohol foam, Dry chemical.  
**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

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#### 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:** Stop spilled material from being released to the environment. Cover spilled solid material with sand or other inert material.  
**Clean-up Technique:** Sweep up material. 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. 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.  
**Special Instructions (for accidental release):** Not applicable  
**304 EHS RQ (40 CFR 355):** Not applicable  
**D.O.T. Emergency Response Guide Number:** Not applicable

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#### 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes, skin, clothing. Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.  
**Storage:** Store between 10° and 25°C. Protect from: heat, moisture, light. Keep away from: acids / acid fumes, combustible materials, organic material, oxidizers  
**Flammability Class:** Not applicable

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## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Use general ventilation to minimize exposure to mist, vapor or dust. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** adequate ventilation and / or dust / mist mask

**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: dust Wash thoroughly after handling. Use with adequate ventilation. Protect from: heat Keep away from: acids/acid fumes organic materials combustible material oxidizers water

**TLV:** Not established

**PEL:** Not established

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## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** White to light yellow crystals

**Physical State:** Solid

**Molecular Weight:** Not applicable

**Odor:** Sulfur-like

**pH:** 5% solution = 5.29

**Vapor Pressure:** Not applicable

**Vapor Density (air = 1):** Not applicable

**Boiling Point:** Not applicable

**Melting Point:** decomposes at 192° C

**Specific Gravity (water = 1):** 2.27

**Evaporation Rate (water = 1):** Not applicable

**Volatile Organic Compounds Content:** Not determined

**Partition Coefficient (n-octanol / water):** Not determined

**Solubility:**

**Water:** Soluble

**Acid:** Soluble

**Other:** Not determined

**Metal Corrosivity:**

**Steel:** 0.106 in/yr

**Aluminum:** 0.003 in/yr

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## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Exposure to light. Excess moisture Extreme temperatures

**Reactivity / Incompatibility:** Incompatible with: combustible materials organic materials oxidizers aluminum acids sodium nitrite sodium chlorite

**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: sulfur oxides carbon monoxide carbon dioxide

**Hazardous Polymerization:** Will not occur.

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## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** None reported

**LC50:** None reported

**Dermal Toxicity Data:** None reported

**Skin and Eye Irritation Data:** Erythema at 3 minutes, 1 hour, 4 hours, 24 hours, 48 hours, 72 hours = 0. Edema at 3 minutes, 1 hour, 4 hours, 24 hours, 48 hours, 72 hours = 0.

**Mutation Data:** Sodium Metabisulfite: cytogenetic analysis hamster ovary 180 µg/l; sister chromatid exchange on hamster ovary @ 200 µg/l.

**Reproductive Effects Data:** Sodium Metabisulfite: oral rat TDLo = 20 g/kg - effects on newborn - stillbirth; oral rat TDLo = 40 g/kg - effects on newborn - weaning or lactation index.  
**Ingredient Toxicological Data:** Sodium Hydrosulfite Oral rat LD50 > 500 mg/kg; Sodium Thiosulfate Oral rat LD50 > 8 g/kg; Sodium Citrate Oral rat LD50 > 8 g/kg

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## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** Sodium Metabisulfite: 120 ppm / 24, 48 & 96 hours / mosquito fish / TLM / fresh water (converting bisulfite figure to metabisulfite); Sodium Thiosulfate: Aquatic toxicity: 24,000 mg / l / 96 hours / mosquito-fish / TLM / turbid water at 22 ° - 24° C.

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## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** Not applicable

**Special Instructions (Disposal):** 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.

**Empty Containers:** Rinse three times with an appropriate solvent. 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.

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## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

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**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

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**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

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**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

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## 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 Delayed (Chronic) 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 no RCRA regulated substances.

**C.P.S.C.:** Not applicable

**State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** Not applicable

**California Perchlorate Rule CCR Title 22 Chap 33:**

**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).

**TSCA CAS Number:** Not applicable

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## 16. OTHER INFORMATION

**Intended Use:** Iron determination

**References:** CCINFO MSDS/FTSS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. NIOSH Registry of Toxic Effects of Chemical Substances, 1985-86. Cincinnati: U.S. Department of Health and Human Services, April, 1987. Outside Testing. Vendor Information. Gosselin, R. E. et al. Clinical Toxicology of Commercial Products, 5th Ed. Baltimore: The Williams and Wilkins Co., 1984. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. Technical Judgment. In-house information. 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.

**Revision Summary:** Updates in Section(s) 14,

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**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.**

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