

## FERROIN INDICATOR SOLUTION

### 1. Chemical Product And Company Identification

Company's Name: REAGENTS, INC.

Company's P. O. Box: 240746

Company's City: CHARLOTTE

Company's State: NC

Company's Country: US

Company's Zip Code: 28224

Company's Info Ph #: 704/554-7474, 800/732-8484

Emergencies, call CHEMTREC: 800-424-9300

Date MSDS Prepared: June 9, 2003

**Synonyms:** Orthophenanthroline monohydrate; 4,5-Diazaphenanthrene monohydrate / Iron (II) sulfate (1:1), heptahydrate / Deionized Water

**Molecular Weight:** Not applicable to mixtures.

**Product Codes:** 6-11090

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent,(w/v)%	Hazardous
1,10-Phenanthroline	66-71-7	1.5	Yes
Ferrous Sulfate, Heptahydrate	7782-63-0	0.7	Yes
Water	7732-18-5	Remainder	No

### 3. Hazards Identification

#### Emergency Overview

**AS PART OF GOOD INDUSTRIAL AND PERSONNAL HYGENINE AND SAFETY PROCEDURE, AVOID ALL UNNECESSARY EXPOSURE TO THIS CHEMICAL SUBSTANCE AND ENSURE ITS PROMPT REMOVAL FROM EYES, SKIN, AND CLOTHING. WASH THOROUGHLY AFTER HANDLING.**

Health Rating: 1 - Slight

Flammability Rating: 0 - None

Reactivity Rating: 0 - None

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Green

#### Potential Health Effects

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**Inhalation:** No adverse effects expected.

**Ingestion:** Extremely large doses may cause poisoning.

**Skin Contact:** No adverse effects expected. Will stain skin.

**Eye Contact:** No adverse effects expected but splashes may cause irritation.

**Chronic Exposure:** No information found.

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#### **4. First Aid Measures**

**Inhalation:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention for any breathing difficulty.

**Ingestion:** Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention for any gastrointestinal irritation.

**Skin Contact:** Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if symptoms occur.

**Eye Contact:** Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention for any irritation.

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#### **5. Fire Fighting Measures**

**Fire:** Not considered to be a fire hazard.

**Explosion:** Not considered to be an explosion hazard.

**Fire Extinguishing Media:** Use any means suitable for extinguishing surrounding fire.

**Special Information:** Use protective clothing and breathing equipment appropriate for the surrounding fire.

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#### **6. Accidental Release Measures**

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw-dust. Do not flush to sewer!

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#### **7. Handling and Storage**

Keep in a tightly closed container. Store in a cool, dry, ventilated area. Protect against physical damage. Separate from acids and alkalis. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product. Protect from freezing.

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#### **8. Exposure Controls/Personal Protection**

***Airborne Exposure Limits:***

*Ferrous Sulfate, Heptahydrate-ACGIH Threshold Limit Value (TLV): 1 mg/m<sup>3</sup> (TWA) soluble iron salt as Fe. 1,10-Phenanthroline: None established.*

***Ventilation System:*** *A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.*

***Personal Respirators (NIOSH Approved):*** *Not expected to require personal respirator usage. If the exposure limit is exceeded, a half-face dust/mist respirator may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-facepiece dust/mist respirator may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.*

***Skin Protection:*** *Wear protective gloves and clean body-covering clothing.*

***Eye Protection:*** *Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.*

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## ***9. Physical and Chemical Properties***

***Appearance:*** *Clear, dark red liquid.*

***Odor:*** *Odorless.*

***Solubility:*** *Miscible in water.*

***Density:*** *1.001(calc.)*

***pH:*** *No information found.*

***% Volatiles by volume @ 21°C (70°F):*** *> 99 (as water)*

***Boiling Point:*** *ca. 100°C (ca. 212°F)*

***Melting Point:*** *ca. 0°C (ca. 32°F)*

***Vapor Density (Air=1):*** *No information found.*

***Vapor Pressure (mm Hg):*** *No information found.*

***Evaporation Rate (BuAc=1):*** *No information found.*

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## ***10. Stability and Reactivity***

***Stability:*** *Stable under ordinary conditions of use and storage.*

***Hazardous Decomposition Products:*** *No hazardous decomposition products.*

***Hazardous Polymerization:*** *Will not occur.*

***Incompatibilities:*** *None found.*

***Conditions to Avoid:*** *Heat.*

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## ***11. Toxicological Information***

**1,10-Phenanthroline**

**Toxicological Data:** Anhydrous: Investigated as a mutagen, reproductive effector. Hydrate: Investigated as a mutagen.

**Reproductive Toxicity:** It was teratogenic in a single study in mice. Its reproductive hazard in humans is unknown.

**Ferrous Sulfate, Heptahydrate:** Oral rat LD<sub>50</sub>: 319 mg/kg. Investigated as a tumorigen and mutagen.

-----\Cancer Lists\-----

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
1,10-Phenanthroline (66-71-7)	No	No	None
Ferrous Sulfate (7782-63-0)	No	No	None

**12. Ecological Information**

**Environmental Fate:** No information found.

**Environmental Toxicity:** No information found.

**13. Disposal Considerations**

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA-hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

**14. Transport Information**

Not regulated.

**15. Regulatory Information**

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
1,10-Phenanthroline (66-71-7)	Yes	Yes	Yes	Yes
Ferrous Sulfate (7782-63-0)	No	No	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient	--Canada--			
	Korea	DSL	NDSL	Phil.

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<i>1,10-Phenanthroline (66-71-7)</i>	<i>Yes</i>	<i>Yes</i>	<i>No</i>	<i>No</i>
<i>Ferrous Sulfate (7782-63-0)</i>	<i>Yes</i>	<i>No</i>	<i>No</i>	<i>Yes</i>

-----\Federal, State & International Regulations - Part 1\-----

<i>Ingredient</i>	-SARA 302-		-----SARA 313-----	
	<i>RQ</i>	<i>TPQ</i>	<i>List</i>	<i>Chemical Catg.</i>
<i>1,10-Phenanthroline (66-71-7)</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>
<i>Ferrous Sulfate (7782-63-0)</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>

-----\Federal, State & International Regulations - Part 2\-----

<i>Ingredient</i>	<i>CERCLA</i>	-RCRA-	-TSCA-
		<i>261.33</i>	<i>8(d)</i>
<i>1,10-Phenanthroline (66-71-7)</i>	<i>No</i>	<i>No</i>	<i>No</i>
<i>Ferrous Sulfate (7782-63-0)</i>	<i>1000</i>	<i>No</i>	<i>No</i>

*Chemical Weapons Convention: No TSCA 12(b): No CDTA: No*  
*SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No Reactivity: No (Pure / Solid)*  
**WHMIS:** *This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.*

## **16. Other Information**

**NFPA Ratings:** *Health: 1 Flammability: 0 Reactivity: 0*

**Label Hazard Warning:**

**AS PART OF GOOD INDUSTRIAL AND PERSONNAL HYGENINE AND SAFETY PROCEDURE, AVOID ALL UNNECESSARY EXPOSURE TO THIS CHEMICAL SUBSTANCE AND ENSURE ITS PROMPT REMOVAL FROM EYES, SKIN, AND CLOTHING. WASH THOROUGHLY AFTER HANDLING.**

**Label Precautions:**

- Avoid breathing mist.*
- Avoid contact with eyes, skin and clothing.*
- Wash thoroughly after handling.*
- Keep container closed.*
- Use with adequate ventilation.*

**Label First Aid:** *If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. In all cases get medical attention immediately.*

**Product Use:** *Laboratory Reagent.*

**Disclaimer:**

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