SAFETY DATA SHEET
METAFIX® I-3, I-6A, I-7A Reagent

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product Identifier

Product Name
METAFIX® I-3, I-6A, I-7A Reagent

Synonyms
Reduced iron: Iron, Ferrum, Carbonyl iron, ferrous iron
Iron sesquioxide: Ferric(III) oxide, anhydrous iron oxide; indian red oxide
Activated carbon: Activated charcoal, Carbon black, Carbon soot, Charcoal, Lampblack
Calcium carbonate: Carbonic acid, calcium salt (1:1); Precipitated chalk.
Iron sulfide: Pyrite, Marcasite, iron disulfide, iron (II) sulfide, ferric disulfide

Pure substance/mixture
Mixture

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use:
Remediation of contaminated soil and groundwater

Restrictions on Use
Not for direct treatment of potable drinking water

1.3. Details of the supplier of the safety data sheet

Manufacturer
PeroxyChem LLC
2005 Market Street
Suite 3200
Philadelphia, PA 19103
Phone: +1 267/ 422-2400 (General Information)
E-Mail: sdsinfo@peroxychem.com

1.4. Emergency telephone numbers

For leak, fire, spill or accident emergencies, call:
+1 703-527-3887 (CHEMTREC)
(303) 595-9048 (Medical - U.S. - Call Collect)
2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

The preparation is not classified in accordance with Directive 1272/2008.

2.2. Label Elements

Not classified as a dangerous substances or preparation according to Regulation (EC) 1272/2008.

2.3. OTHER INFORMATION

General Hazards
CONTAINMENT HAZARD: Any vessel that contains wet product must be vented due to potential pressure build up from gases.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>EC-No</th>
<th>CAS-No</th>
<th>Weight %</th>
<th>Classification according to Regulation (EC) No. 1272/2008 [CLP]</th>
<th>REACH registration number</th>
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<tbody>
<tr>
<td>Reduced Iron</td>
<td>Present</td>
<td>7439-89-6</td>
<td>25 - 35</td>
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<tr>
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<td>&lt; 25</td>
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<td>Iron sulfide</td>
<td>Present</td>
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<td>&lt; 35</td>
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</table>

Occupational exposure limits, if available, are listed in section 8. Synonyms are provided in Section 1.

4. FIRST AID MEASURES

4.1. Description of first-aid measures

**Skin Contact**
Wash off with soap and water. If skin irritation persists, call a physician.

**Eye Contact**
Rinse thoroughly with plenty of water, also under the eyelids. If eye irritation persists, consult a specialist.

**Inhalation**
Remove person to fresh air. If signs/symptoms continue, get medical attention.

**Ingestion**
Rinse mouth with water and afterwards drink plenty of water or milk. Call a poison control center or doctor immediately for treatment advice.

4.2. Most important symptoms and effects, both acute and delayed

**Most important symptoms and effects, both acute and delayed**
May cause skin and eye irritation
May cause respiratory tract irritation

4.3. Indication of immediate medical attention and special treatment needed, if necessary

**Indication of immediate medical attention and special treatment needed, if necessary**
Treat symptomatically.

5. FIRE-FIGHTING MEASURES
5.1. Extinguishing media

Suitable Extinguishing Media
Carbon dioxide (CO₂), Dry chemical, Water spray, Foam

5.2. Special hazards arising from the substance or mixture

Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases
Combustible material. Dry or powdered ingredients are combustible. Dispersal of finely divided dust from products into air may form mixtures that are ignitable or explosive. Minimize airborne dust generation and eliminate sources of ignition.

5.3. Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Avoid contact with eyes. Use personal protective equipment. For personal protection see Section 8.

6.2. Environmental Precautions

Local authorities should be advised if significant spillages cannot be contained.

6.3. Methods and materials for containment and cleaning up

Maintain good housekeeping practices to avoid accumulation of settled dust, especially on overhead surfaces. Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry. Pick up and transfer to properly labeled containers. Take precautionary measures against static discharges. Do not dry sweep dust. Wet dust with water before sweeping or use a vacuum to collect dust. Keep in suitable and closed containers for disposal. The waste may be recovered and recycled.

6.4. Reference to other sections

For personal protection see Section 8. See section 13 for disposal information.

7. HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Minimize dust generation and accumulation. Avoid contact with eyes. Avoid breathing dust. Keep away from open flames, hot surfaces and sources of ignition. Wear personal protective equipment. Refer to Section 8.

7.2. Conditions for safe storage, including any incompatibilities

Storage
Store in a well-ventilated place. Keep cool. Keep away from open flames, hot surfaces and sources of ignition. Any vessel that contains wet product must be vented due to potential pressure build up from gases.

Materials to avoid

7.3. Specific end uses

See subsection 1.2. Relevant identified uses of the substance or mixture and uses advised against

8. EXPOSURE CONTROLS/PERSONAL PROTECTION
## 8.1. Control parameters

### Exposure Limits

Ingredients with workplace control parameters

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<thead>
<tr>
<th>Chemical name</th>
<th>European Union</th>
<th>The United Kingdom</th>
<th>Ireland</th>
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<tr>
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<td></td>
<td>TWA 4 mg/m³</td>
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<td>STEL 30 mg/m³</td>
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<td></td>
<td>TWA 4 mg/m³</td>
<td>STEL 12 mg/m³</td>
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<td>TWA 5 mg/m³</td>
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<td>TWA 10 mg/m³</td>
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<tr>
<td>Activated carbon</td>
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<tr>
<td>1309-37-1</td>
<td>STEL 10 mg/m³</td>
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<tr>
<td>Activated carbon</td>
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<td>TWA 1.0 mg/m³</td>
<td>TWA 6.0 mg/m³</td>
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<th>Croatia</th>
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<td>TWA 6 mg/m³</td>
<td>STEL 10 mg/m³</td>
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<td>1309-37-1</td>
<td>STEL 10 mg/m³</td>
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<td>TWA 4 mg/m³</td>
</tr>
<tr>
<td>Calcite</td>
<td>TWA 10 mg/m³</td>
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<tr>
<td>1317-65-3</td>
<td>TWA 5 mg/m³</td>
<td></td>
<td>TWA 5 mg/m³</td>
</tr>
</tbody>
</table>

### 8.2. Exposure Controls

#### Engineering measures

Provide appropriate exhaust ventilation at places where dust is formed.
METAFIX® I-3, I-6A, I-7A Reagent

Personal protective equipment

**Respiratory Protection**
If handling generates dust levels which causes irritation, or results in personal exposure exceeding the local occupational exposure standards (OES), then suitable approved dust respirator should be used. Personal exposure to dust should ideally be controlled to the lowest level possible below the OES.

**Eye/face Protection**
Whenever airborne dust concentrations are high, appropriate protective eyewear, such as mono-goggles, should be worn to prevent eye contact.

**Skin and Body Protection**
Lightweight protective clothing.

**Hand Protection**
No special precautions required

Hygiene measures
When using, do not eat, drink or smoke. Wear suitable gloves and eye/face protection. Wash hands before breaks and at the end of workday. Wash hands with water as a precaution. Regular cleaning of equipment, work area and clothing is recommended. Avoid breathing vapors, mist or gas.

**Environmental exposure controls**
The product should not be allowed to enter drains, water courses or the soil.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

- **Appearance**: Powder, dark brown to black
- **Color**: dark brown to black
- **Physical State**: Solid
- **Odor**: No information available
- **Odor threshold**: No information available
- **pH**: 6 - 8 (as aqueous solution)
- **Flash point**: No information available
- **Melting Point/Range**: No information available
- **Freezing Point**: No information available
- **Boiling Point/Range**: No information available
- **Autoignition temperature**: No information available
- **Explosive properties**: Low level dust explosion hazard
- **Vapor pressure**: No information available
- **Vapor density**: No information available
- **Relative Density**: No information available
- **Partition coefficient**: No information available
- **Water solubility**: 50 % w/w
- **Viscosity**: No information available
- **Evaporation Rate**: No information available

9.2. OTHER INFORMATION

- **Bulk Density**: No information available

10. STABILITY AND REACTIVITY

10.1. Reactivity
None under normal use conditions

10.2. Chemical Stability
Stable under recommended storage conditions.

10.3. Possibility of Hazardous Reactions
Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.
10.4. Conditions to avoid

Heat, flames and sparks.

10.5. incompatible materials


10.6. Hazardous Decomposition Products

Reacts with acids to release carbon dioxide gas and heat

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity

<table>
<thead>
<tr>
<th>LD50 Dermal</th>
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<tbody>
<tr>
<td>LD50 Oral</td>
<td>Iron: 98.6 g/kg bw (rat)</td>
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<tr>
<td>LC50 Inhalation</td>
<td>No information available</td>
</tr>
</tbody>
</table>

Skin Contact: May cause irritation.

Eye Contact: May cause irritation.

Inhalation: May cause irritation of respiratory tract.

Ingestion: Ingestion may cause gastrointestinal discomfort including nausea, vomiting and diarrhea if large amounts are ingested.

Chronic toxicity

Sensitization: Not expected to be sensitizing based on the components.

Carcinogenicity: The table below indicates whether each agency has listed any ingredient as a carcinogen.

Mutagenicity: This product is not recognized as mutagenic by Research Agencies.

Other Information: Chronic exposure to dust at concentrations exceeding occupational exposure limits may cause pneumoconiosis (lung disease).

12. ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity effects

Ecotoxicity effects of component substances.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Toxicity to algae</th>
<th>Toxicity to fish</th>
<th>Toxicity to Microorganisms</th>
<th>Toxicity to daphnia and other aquatic invertebrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced Iron</td>
<td></td>
<td>96 h LC50: = 13.6 mg/L (Morone saxatilis) static</td>
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<td></td>
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</tbody>
</table>

12.2. Persistence and degradability

Biodegradability does not pertain to inorganic substances.

12.3. Bioaccumulative potential

Bioaccumulation is unlikely.
12.4. Mobility in soil

No information available.

12.5. Results of PBT and vPvB assessment

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

12.6. Other Adverse Effects

None known.

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from residues / unused products  Dispose of in accordance with the European Directives on waste and hazardous waste.

Contaminated Packaging  Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

ADR/RID  NOT REGULATED

IMDG/IMO  NOT REGULATED

ICAO/IATA  NOT REGULATED

15. REGULATORY INFORMATION

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

International Inventories

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>TSCA (United States)</th>
<th>DSL (Canada)</th>
<th>EINECS/ELINCS (Europe)</th>
<th>ENCS (Japan)</th>
<th>China (IECSC)</th>
<th>KECL (Korea)</th>
<th>PICCS (Philippines)</th>
<th>AICS (Australia)</th>
<th>NZIoC (New Zealand)</th>
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15.2. Chemical Safety Report

Not Applicable.

16. OTHER INFORMATION

Full text of H-phrases referred to in sections 2 and 3
Restrictions on Use
This product's foreseen or recommended applications are: Remediation of contaminated soil and groundwater

Disclaimer
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Prepared By:

PeroxyChem
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End of Safety Data Sheet