1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name: Ferox PRB zero valent iron powder
Brand: Hepure
CAS-No.: 7439-89-6

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

Identified uses: Environmental remediation, water treatment, various

1.3 Details of the supplier of the safety data sheet

Company: Hepure Technologies, Inc.
63 Main Street, Suite 203B
Flemington, NJ 08822
Telephone: 877-727-4776

1.4 Emergency telephone number

Emergency Phone #: Chemtrec 800-424-9300 CCN234339

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Not classified as hazardous

2.2 GHS Label elements, including precautionary statements

Signal Word: not applicable
Hazard Statements: not applicable
Precautionary Statements: not applicable

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS – none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Formula: Fe
Molecular Weight: 55.85 g/mol
CAS-No.: 7439-89-6
EC-No.: 231-096-4

Carbon: 2 to 2.5%
Sulfur: 0.1%
Silicon: 1 to 1.5%
Phosphorus: 0.1%
Iron: Balance
4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
No data available

4.3 Indication of any immediate medical attention and special treatment needed
No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use Class D or other metal extinguishing agent.

5.2 Special hazards arising from the substance or mixture
These materials, as coarse particles, are non-flammable and do not react with water or other materials used for extinguishing fire. Fine metal dust may pose a risk of fire or explosion if accumulated, mixed and confined with an ignition source. When handling fine particles generated from this material, avoid creating dust clouds and ignition sources. May release iron oxide fume if involved in a fire.

5.3 Advice for firefighters
Wear self-contained breathing apparatus for fire fighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal. Contain spillage, pick up with an electrically protected vacuum cleaner or by wet-brushing and transfer to a container for disposal according to local regulations (see section 13).
7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition - No smoking. Take measures to prevent the buildup of electrostatic charge.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place. Store under inert gas. Moisture sensitive. Keep in a dry place.

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
Components with workplace control parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls
Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection
Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Impermeable gloves, protective work clothing as necessary.

Respiratory Protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
a) Appearance Form: powder
b) Odor no data available
c) Odor Threshold no data available
d) pH no data available
e) Melting point/freezing point Melting point/range: 1,535 °C (2,795 °F) - lit.
f) Initial boiling point and boiling range 2,750 °C (4,982 °F) - lit.
g) Flash point no data available
### h) Evaporation rate
- no data available

### i) Flammability (solid, gas)
- not flammable as a course particle; fine metal dust may pose a risk of fire or explosion if accumulated, mixed and confined with an ignition source

### j) Upper/lower flammability or explosive limits
- no data available

### k) Vapor pressure
- no data available

### l) Vapor density
- no data available

### m) Relative density
- 7.86 g/cm³ at 25 °C (77 °F)

### n) Water solubility
- insoluble

### o) Partition coefficient: n-octanol/water
- no data

### p) Auto-ignition temperature
- available no

### q) Decomposition temperature
- data available

### r) Viscosity
- no data available

### s) Explosive properties
- no data available

### t) Oxidizing properties
- no data available

## 9.2 Other safety information

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Bulk density</td>
<td>2.92 gm/cm³</td>
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</table>

### 10. STABILITY AND REACTIVITY

#### 10.1 Reactivity
- No data available

#### 10.2 Chemical stability
- Stable under recommended storage conditions.

#### 10.3 Possibility of hazardous reactions
- No data available

#### 10.4 Conditions to avoid
- Heat, flames and sparks. Extremes of temperature and direct sunlight.

#### 10.5 Incompatible materials
- Acids, Oxygen, Strong oxidizing agents, Halogens, Phosphorus

#### 10.6 Hazardous decomposition products
- Other decomposition products - no data available
  - In the event of fire: see section 5

### 11. TOXICOLOGICAL INFORMATION

#### 11.1 Information on toxicological effects

**Acute toxicity**
- LD₅₀ Oral - rat - 30,000 mg/kg
- Remarks: Nutritional and Gross Metabolic: Weight loss or decreased weight
gain. Inhalation: no data available
Dermal: no data available
No data available

**Skin corrosion/irritation**
No data available

**Serious eye damage/eye irritation**
No data available

**Respiratory or skin sensitization**
No data available

**Germ cell mutagenicity**
No data available

**Carcinogenicity**

**IARC:** No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**ACGIH:** No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**NTP:** No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**OSHA:** No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity**
No data available

**Specific target organ toxicity - single exposure**
No data available

**Specific target organ toxicity - repeated exposure**
No data available

**Aspiration hazard**
No data available

**Additional Information**
RTECS: NO4565500

Overdose of iron compounds may have a corrosive effect on the gastrointestinal mucosa and be followed by necrosis, perforation, and stricture formation. Several hours may elapse before symptoms that can include epigastric pain, diarrhea, vomiting, nausea, and hematemesis occur. After apparent recovery a person may experience metabolic acidosis, convulsions, and coma hours or days later. Further complications may develop leading to acute liver necrosis that can result in death due to hepatic coma. Long term inhalation exposure to iron (oxide fume or dust) can cause siderosis. Siderosis is considered to be a benign pneumoconiosis and does not normally cause significant physiologic impairment. Siderosis can be observed on x-rays with the lungs having a mottled appearance.

12. ECOLOGICAL INFORMATION

**Non-hazardous**
13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Product: Dispose of in accordance with Federal, State and Local regulations.
Packaging: Dispose of in accordance with Federal, State and Local regulations.

14. TRANSPORT INFORMATION

<table>
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<th>Shipping Regulations:</th>
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<tr>
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<tr>
<td>Marine Pollutant:</td>
<td>No</td>
</tr>
</tbody>
</table>

15. REGULATORY INFORMATION

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components
Iron, Powder

New Jersey Right To Know Components
Iron, Powder

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further information
Copyright 2016 Hepure Technologies, Inc. License granted to make unlimited paper copies for internal use only. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Hepure Technologies, Inc. and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product.

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