1. Identification

Product identifier 1522 - 1566 Steel
Other means of identification
SDS number WS003
Recommended use Not available.
Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer/Supplier The Worthington Steel Company
Address
200 Old Wilson Bridge Road
Columbus, OH 43085
United States

Email: steel@worthingtonindustries.com
Telephone Number: 800-944-3733
CHEMTREC - 24 HOURS: Within US: 800-424-9300 International: +1 703-741-5970 (collect calls accepted)

2. Hazard(s) identification

Physical hazards Not classified.
Health hazards Not classified.
OSHA defined hazards Not classified.

Label elements

Hazard symbol None.
Signal word None.
Hazard statement None.

Precautionary statement

Prevention Observe good industrial hygiene practices.
Response Wash thoroughly after handling.
Storage Store away from incompatible materials.
Disposal Dispose of waste and residues in accordance with local authority requirements.

Hazard(s) not otherwise classified (HNOC) Molten material will produce thermal burns.

3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td>96-98</td>
<td></td>
</tr>
<tr>
<td>Manganese</td>
<td>7439-96-5</td>
<td>0-1.7</td>
<td></td>
</tr>
<tr>
<td>Carbon</td>
<td>7440-44-0</td>
<td>0-1.1</td>
<td></td>
</tr>
<tr>
<td>Chromium</td>
<td>7440-47-3</td>
<td>0-0.5</td>
<td></td>
</tr>
<tr>
<td>Silicon</td>
<td>7440-21-3</td>
<td>0-0.4</td>
<td></td>
</tr>
<tr>
<td>Nickel</td>
<td>7440-02-0</td>
<td>0-0.15</td>
<td></td>
</tr>
<tr>
<td>Aluminium</td>
<td>7429-90-5</td>
<td>0-0.1</td>
<td></td>
</tr>
</tbody>
</table>
### 1. Substance Information

**Molybdenum**
- CAS Number: 7439-98-7
- Concentration: 0-0.1%

**Titanium**
- CAS Number: 7440-32-6
- Concentration: 0-0.1%

**Sulfur**
- CAS Number: 7704-34-9
- Concentration: 0-0.05%

**Phosphorus**
- CAS Number: 7723-14-0
- Concentration: 0-0.04%

**Boron**
- CAS Number: 7440-42-8
- Concentration: 0-0.02%

**Vanadium**
- CAS Number: 7440-62-2
- Concentration: 0-0.02%

**Lead**
- CAS Number: 7439-92-1
- Concentration: 0-0.01%

### Composition comments
All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

### 4. First-aid measures

**Inhalation**
- Contact with dust or fume: Immediately remove from further exposure. Get immediate medical assistance. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. Give supplemental oxygen, if available. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

**Skin contact**
- Wash with soap and water. Get medical attention if irritation develops and persists. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Seek medical attention for severe cuts or abrasions.

**Eye contact**
- Rinse immediately with plenty of water for at least 15 minutes. Remove any contact lenses. Get medical attention if irritation develops or persists.

**Ingestion**
- Contact with dust: Immediately rinse mouth and drink a cupful of water. Never give anything by mouth to a victim who is unconscious or is having convulsions. Only induce vomiting at the instruction of medical personnel. Get medical attention immediately.

**Most important symptoms/effects, acute and delayed**
- Dust and fumes may irritate eyes, skin and upper respiratory tract. Contact with molten material may cause thermal burns.

**Indication of immediate medical attention and special treatment needed**
- Treat symptomatically. Exposure may aggravate pre-existing respiratory disorders. Symptoms may be delayed.

**General information**
- Show this safety data sheet to the doctor in attendance.

### 5. Fire-fighting measures

**Suitable extinguishing media**
- Extinguish with foam, carbon dioxide or dry powder.

**Unsuitable extinguishing media**
- Do not use water or halogenated extinguishing media.

**Specific hazards arising from the chemical**
- Fire or high temperatures create: Metal oxides.

**Special protective equipment and precautions for firefighters**
- Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

**Fire fighting equipment/instructions**
- Move containers from fire area if you can do it without risk.

**General fire hazards**
- Solid metal is not flammable; however, finely divided metallic dust or powder may form an explosive mixture with air.

### 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures**
- Keep unnecessary personnel away. Avoid inhalation of dust from the spilled material. Wear protective clothing as described in Section 8 of this SDS. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

**Methods and materials for containment and cleaning up**
- Pick up mechanically. For a dry material spill, use a HEPA (high efficiency particle air) vacuum to collect material and place in a sealable container for disposal. Avoid dust formation. Recover and recycle, if practical. Keep out of water supplies and sewers.

**Environmental precautions**
- Prevent further leakage or spillage if safe to do so. Do not contaminate water. If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).
7. Handling and storage

**Precautions for safe handling**

Wear appropriate personal protective equipment (See Section 8). Keep formation of airborne dusts to a minimum. Provide appropriate exhaust ventilation at places where dust is formed. Avoid inhalation of dust and fumes. Avoid contact with skin and eyes. Avoid contact with sharp edges and hot surfaces. Do not get this material on clothing. Do not eat, drink or smoke when using the product. Wash thoroughly after handling. Follow the recommendations in ANSI Z49.1, Safety in welding and cutting (ANSI=American National Standard Institute). Steel products are massive and care must be taken to prevent them from falling, rolling or tipping on objects in their path.

**Conditions for safe storage, including any incompatibilities**

Store away from incompatible materials.

---

8. Exposure controls/personal protection

**Occupational exposure limits**


<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead (CAS 7439-92-1)</td>
<td>TWA</td>
<td>0.05 mg/m³</td>
</tr>
</tbody>
</table>

**US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium (CAS 7429-90-5)</td>
<td>PEL</td>
<td>5 mg/m³</td>
<td>Respirable dust.</td>
</tr>
<tr>
<td>Chromium (CAS 7440-47-3)</td>
<td>PEL</td>
<td>1 mg/m³</td>
<td>Total dust.</td>
</tr>
<tr>
<td>Manganese (CAS 7439-96-5)</td>
<td>Ceiling</td>
<td>5 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>Molybdenum (CAS 7439-98-7)</td>
<td>PEL</td>
<td>15 mg/m³</td>
<td>Total dust.</td>
</tr>
<tr>
<td>Nickel (CAS 7440-02-0)</td>
<td>PEL</td>
<td>1 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Phosphorus (CAS 7723-14-0)</td>
<td>PEL</td>
<td>0.1 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Silicon (CAS 7440-21-3)</td>
<td>PEL</td>
<td>5 mg/m³</td>
<td>Respirable fraction.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 mg/m³</td>
<td>Total dust.</td>
</tr>
</tbody>
</table>

**US. OSHA Table Z-3 (29 CFR 1910.1000)**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon (CAS 7440-44-0)</td>
<td>TWA</td>
<td>5 mg/m³</td>
<td>Respirable fraction.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 mg/m³</td>
<td>Total dust.</td>
</tr>
</tbody>
</table>

**US. ACGIH Threshold Limit Values**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium (CAS 7429-90-5)</td>
<td>TWA</td>
<td>1 mg/m³</td>
<td>Respirable fraction.</td>
</tr>
<tr>
<td>Carbon (CAS 7440-44-0)</td>
<td>TWA</td>
<td>2 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Chromium (CAS 7440-47-3)</td>
<td>TWA</td>
<td>0.5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Lead (CAS 7439-92-1)</td>
<td>TWA</td>
<td>0.05 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Nickel (CAS 7440-02-0)</td>
<td>TWA</td>
<td>1.5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Phosphorus (CAS 7723-14-0)</td>
<td>TWA</td>
<td>0.1 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

**US. NIOSH: Pocket Guide to Chemical Hazards**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium (CAS 7429-90-5)</td>
<td>TWA</td>
<td>5 mg/m³</td>
<td>Respirable.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 mg/m³</td>
<td>Welding fume or pyrophoric powder.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 mg/m³</td>
<td>Total</td>
</tr>
<tr>
<td>Carbon (CAS 7440-44-0)</td>
<td>TWA</td>
<td>2.5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Chromium (CAS 7440-47-3)</td>
<td>TWA</td>
<td>0.5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Lead (CAS 7439-92-1)</td>
<td>TWA</td>
<td>0.05 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Manganese (CAS 7439-96-5)</td>
<td>STEL</td>
<td>3 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>Nickel (CAS 7440-02-0)</td>
<td>TWA</td>
<td>1 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.015 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>
US. NIOSH: Pocket Guide to Chemical Hazards

### Components

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus (CAS 7723-14-0)</td>
<td>TWA</td>
<td>0.1 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Silicon (CAS 7440-21-3)</td>
<td>TWA</td>
<td>5 mg/m³</td>
<td>Respirable.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 mg/m³</td>
<td>Total</td>
</tr>
<tr>
<td>Vanadium (CAS 7440-62-2)</td>
<td>STEL</td>
<td>3 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

**Biological limit values**

**ACGIH Biological Exposure Indices**

<table>
<thead>
<tr>
<th>Components</th>
<th>Value</th>
<th>Determinant</th>
<th>Specimen</th>
<th>Sampling Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead (CAS 7439-92-1)</td>
<td>300 µg/l</td>
<td>Lead</td>
<td>Blood</td>
<td>*</td>
</tr>
</tbody>
</table>

* - For sampling details, please see the source document.

### Exposure guidelines

**Appropriate engineering controls**

Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of dust. Keep melting/soldering temperatures as low as possible to minimize the generation of fume. Shower, hand and eye washing facilities near the workplace are recommended.

### Individual protection measures, such as personal protective equipment

**Eye/face protection**

Wear safety glasses with side shields (or goggles). Wear a face shield when working with molten material.

**Skin protection**

- **Hand protection**
  Wear protective gloves (i.e. latex, nitrile, neoprene).

- **Other**
  Chemical resistant clothing is recommended.

**Respiratory protection**

Use a respirator when local exhaust or ventilation is not adequate to keep exposures below the OEL. In a confined space a supplied respirator may be required. Selection and use of respiratory protective equipment should be in accordance with OSHA General Industry Standard 29 CFR 1910.134; or in Canada with CSA Standard Z94.4. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.

**Thermal hazards**

Heat resistant/insulated gloves and clothing are recommended when working with molten material.

**General hygiene considerations**

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

### 9. Physical and chemical properties

**Appearance**

- **Physical state**
  Solid.

- **Form**
  Solid.

- **Color**
  Gray.

- **Odor**
  Odorless.

- **Odor threshold**
  Not available.

- **pH**
  Not applicable.

- **Melting point/freezing point**
  2400 - 2800 °F (1315.56 - 1537.78 °C)

- **Initial boiling point and boiling range**
  Not applicable.

- **Flash point**
  Not applicable.

- **Evaporation rate**
  Not available.

- **Flammability (solid, gas)**
  Not available.

- **Upper/lower flammability or explosive limits**
  - Flammability limit - lower (%)
    Not applicable.
  - Flammability limit - upper (%)
    Not applicable.
  - Explosive limit - lower (%)
    Not available.
  - Explosive limit - upper (%)
    Not available.
Vapor pressure  Not applicable.
Vapor density  Not applicable.
Relative density  7.5 - 8.5
Solubility (water)  Not soluble in water.
Partition coefficient (n-octanol/water)  Not available.
Auto-ignition temperature  Not applicable.
Decomposition temperature  Not available.
Viscosity  Not available.
Percent volatile  0

10. Stability and reactivity
Reactivity  The product is non-reactive under normal conditions of use, storage and transport.
Chemical stability  Material is stable under normal conditions.
Possibility of hazardous reactions  Hazardous polymerization does not occur.
Conditions to avoid  Contact with incompatible materials. Avoid molten metal contact with water.
Hazardous decomposition products  Toxic metal oxides are emitted when heated above the melting point.

11. Toxicological information
Information on likely routes of exposure

Inhalation  Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the mucous membranes and respiratory tract. Lung damage and possible pulmonary edema can result from dust exposure. Inhalation of fumes may cause a flu-like illness called metal fume fever.
Skin contact  Dust may irritate skin. Contact with molten material may cause thermal burns.
Eye contact  Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye.
Ingestion  Ingestion of dusts generated during working operations may cause nausea and vomiting.

Symptoms related to the physical, chemical and toxicological characteristics  Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye, mucous membranes and respiratory tract. Contact with molten material may cause thermal burns.

Information on toxicological effects
Acute toxicity  When heated, the vapors/fumes given off may cause respiratory tract irritation. High concentrations of freshly formed fumes/dusts of metal oxides can produce symptoms of metal fume fever.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium (CAS 7429-90-5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>&gt; 0.888 mg/l, 4 Hours</td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>9 g/kg</td>
</tr>
<tr>
<td>Boron (CAS 7440-42-8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>650 mg/kg</td>
</tr>
<tr>
<td>Components</td>
<td>Species</td>
<td>Test Results</td>
</tr>
<tr>
<td>-------------</td>
<td>---------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Carbon (CAS 7440-44-0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>&gt; 2000 mg/m3, 4 hours</td>
</tr>
<tr>
<td>Iron (CAS 7439-89-6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>&gt; 100 mg/m3, 6 hours</td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>&gt; 5 mg/kg</td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>98.6 g/kg</td>
</tr>
<tr>
<td>Manganese (CAS 7439-96-5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50/LC90</td>
<td>Rat</td>
<td>&gt; 1500 mg/kg</td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>9000 mg/kg</td>
</tr>
<tr>
<td>Nickel (CAS 7440-02-0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>&gt; 9000 mg/kg</td>
</tr>
<tr>
<td>Silicon (CAS 7440-21-3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>3150 mg/kg</td>
</tr>
<tr>
<td>Sulfur (CAS 7704-34-9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>&gt; 2000 mg/kg, 24 Hours</td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>&gt; 5.43 g/m3, 4 Hours</td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>&gt; 2200 mg/kg</td>
</tr>
</tbody>
</table>

**Skin corrosion/irritation** Dust may irritate skin.

**Serious eye damage/eye irritation** Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye.

**Respiratory or skin sensitization**

**Respiratory sensitization** No sensitizing effects known.

**Skin sensitization** Prolonged contact with metallic dust or fumes may cause an allergic skin reaction in sensitized individuals.

**Germ cell mutagenicity** No data available.

**Carcinogenicity** Suspected of causing cancer. The International Agency for Research on Cancer (IARC). The National Toxicology Program (NTP) and OSHA do not list steel products as carcinogens. Steel products contain alloying elements and/or residual elements that are suspected or confirmed human carcinogens (e.g. chromium, nickel). IARC identifies welding fumes as a group 2B carcinogen, a mixture that is possibly carcinogenic to humans. Welding fumes are difficult to classify because the composition and quantity are dependent upon the alloy being welded, electrodes used, and process.

**IARC Monographs. Overall Evaluation of Carcinogenicity**

- Chromium (CAS 7440-47-3) 3 Not classifiable as to carcinogenicity to humans.
- Lead (CAS 7439-92-1) 2B Possibly carcinogenic to humans.
- Nickel (CAS 7440-02-0) 2B Possibly carcinogenic to humans.
Reproductive toxicity
Suspected of damaging fertility or the unborn child.

Specific target organ toxicity - single exposure
May cause irritation of respiratory tract.

Specific target organ toxicity - repeated exposure
Causes damage to organs () through prolonged or repeated exposure.

Aspiration hazard
Not relevant, due to the form of the product.

Chronic effects
Prolonged and repeated overexposure to dust can lead to benign pneumoconiosis. Chronic exposure to breathing low levels of manganese dust or fume over a long period of time can result in "manganism," a disease of the central nervous system similar to Parkinson's Disease, gait impairment, muscle spasms and behavioral changes.

Further information
Steel products may be coated with oil based products to prevent rust. Rust preventive oils are generally applied at customer request and usually contains severely hydrotreated light and heavy naphthenic oils. Prolonged contact with rust preventive oil may cause dermatitis.

12. Ecological information

Ecotoxicity
Alloys in massive forms present a limited hazard for the environment.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus (CAS 7723-14-0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Water flea (Daphnia magna)</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Bluegill (Lepomis macrochirus)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Persistence and degradability
The product is not biodegradable.

Bioaccumulative potential
No data available.

Mobility in soil
Alloys in massive forms are not mobile in the environment.

Other adverse effects
None expected.

13. Disposal considerations

Disposal instructions
Dispose in accordance with all applicable regulations.

Local disposal regulations
Dispose of in accordance with local regulations.

Hazardous waste code
Not regulated.

Waste from residues / unused products
Dispose of in accordance with local regulations. Scrapped material should be sent for refining to recover precious metal content. Solid metal and alloys in the form of particles may be reactive. Its hazardous characteristics, including fire and explosion, should be determined prior to disposal.

Contaminated packaging
Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT
Not regulated as dangerous goods.

IATA
Not regulated as dangerous goods.

IMDG
Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable.
15. Regulatory information

US federal regulations

This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

- Lead (CAS 7439-92-1)
  - Reproductive toxicity
  - Central nervous system
  - Kidney
  - Blood
  - Acute toxicity

CERCLA Hazardous Substance List (40 CFR 302.4)

- Chromium (CAS 7440-47-3) LISTED
- Lead (CAS 7439-92-1) LISTED
- Manganese (CAS 7439-96-5) LISTED
- Nickel (CAS 7440-02-0) LISTED
- Phosphorus (CAS 7723-14-0) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

- Immediate Hazard - Yes
- Delayed Hazard - Yes
- Fire Hazard - No
- Pressure Hazard - No
- Reactivity Hazard - No

SARA 302 Extremely hazardous substance

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>Reportable quantity (pounds)</th>
<th>Threshold planning quantity (pounds)</th>
<th>Threshold planning quantity, lower value (pounds)</th>
<th>Threshold planning quantity, upper value (pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus</td>
<td>7723-14-0</td>
<td>1</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SARA 311/312 Hazardous chemical

- Yes

SARA 313 (TRI reporting)

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>% by wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manganese</td>
<td>7439-96-5</td>
<td>0-1.7</td>
</tr>
<tr>
<td>Nickel</td>
<td>7440-02-0</td>
<td>0-0.15</td>
</tr>
<tr>
<td>Lead</td>
<td>7439-92-1</td>
<td>0-0.01</td>
</tr>
</tbody>
</table>

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

- Chromium (CAS 7440-47-3)
- Lead (CAS 7439-92-1)
- Manganese (CAS 7439-96-5)
- Nickel (CAS 7440-02-0)
- Phosphorus (CAS 7723-14-0)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)

- Not regulated.

US state regulations

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

US. Massachusetts RTK - Substance List

- Aluminium (CAS 7429-90-5)
- Chromium (CAS 7440-47-3)
- Lead (CAS 7439-92-1)
- Manganese (CAS 7439-96-5)
- Molybdenum (CAS 7439-98-7)
- Nickel (CAS 7440-02-0)
- Phosphorus (CAS 7723-14-0)
- Silicon (CAS 7440-21-3)
Sulfur (CAS 7704-34-9)
Vanadium (CAS 7440-62-2)

**US. New Jersey Worker and Community Right-to-Know Act**
Aluminium (CAS 7429-90-5)
Boron (CAS 7440-42-8)
Carbon (CAS 7440-44-0)
Chromium (CAS 7440-47-3)
Lead (CAS 7439-92-1)
Manganese (CAS 7439-96-5)
Molybdenum (CAS 7439-98-7)
Nickel (CAS 7440-02-0)
Phosphorus (CAS 7723-14-0)
Silicon (CAS 7440-21-3)
Sulfur (CAS 7704-34-9)
Titanium (CAS 7440-32-6)
Vanadium (CAS 7440-62-2)

**US. Pennsylvania Worker and Community Right-to-Know Law**
Aluminium (CAS 7429-90-5)
Chromium (CAS 7440-47-3)
Lead (CAS 7439-92-1)
Manganese (CAS 7439-96-5)
Molybdenum (CAS 7439-98-7)
Nickel (CAS 7440-02-0)
Phosphorus (CAS 7723-14-0)
Silicon (CAS 7440-21-3)
Sulfur (CAS 7704-34-9)

**US. Rhode Island RTK**
Aluminium (CAS 7429-90-5)
Chromium (CAS 7440-47-3)
Lead (CAS 7439-92-1)
Manganese (CAS 7439-96-5)
Nickel (CAS 7440-02-0)
Phosphorus (CAS 7723-14-0)
Vanadium (CAS 7440-62-2)

**US. California Proposition 65**
Lead (CAS 7439-92-1)
Nickel (CAS 7440-02-0)

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>No</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*"A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).*

**16. Other information, including date of preparation or last revision**

**Issue date**
01-June-2015
Revision date: -  
Version #: 01  
Further information: HMIS® is a registered trade and service mark of the NPCA. 

HMIS® ratings: 
- Health: 1* 
- Flammability: 0 
- Physical hazard: 0 

NFPA ratings: 

References: 
- ACGIH  
- EPA: AQUIRE database  
- NLM: Hazardous Substances Data Base  
- US. IARC Monographs on Occupational Exposures to Chemical Agents  
- HSDB® - Hazardous Substances Data Bank  
- IARC Monographs. Overall Evaluation of Carcinogenicity  
- National Toxicology Program (NTP) Report on Carcinogens  
- ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices  

Disclaimer: 
All information in this Material Safety Data Sheet is believed to be accurate and reliable. However, no guarantee or warranty of any kind is made with regard to the accuracy of information or the suitability of the recommendations contained herein. It is the user’s responsibility to assess the safety and toxicity of this product under their own conditions of use and to comply with all applicable laws and regulations.