SAFETY DATA SHEET (SDS)
GRAY IRON CASTINGS
SDS SC-000-041 Rev. 13
DATE ISSUED
October 2017

SECTION 1: PRODUCT IDENTIFICATION

PRODUCT IDENTIFIER
Gray Iron Castings

COMMON NAME AND OTHER DESIGNATIONS

ASTM (American Society for Testing & Materials) Specification No’s./ACI (Alloy Casting Institute) Alloy Designations:

Manufacturer
Charlotte Pipe and Foundry Co.
Mailing Address
P.O. Box 35430
Contact Person/ Telephone No.
David Waggoner / 704-348-5408

Street Address
1335 S. Clarkson St.
Charlotte, NC 28208 USA
City, State, Zip, Country
Charlotte, NC 28235 USA
e-mail Address / Website
dwaggoner@charlottepipe.com
www.charlottepipe.com

RECOMMENDED USE OF CHEMICAL AND RESTRICTIONS ON USE

Solid casting. No restrictions on use.

SECTION 2: HAZARD IDENTIFICATION

Hazard Classification
This product is an article as sold. Dust or fumes released during machining, grinding, drilling, melting, casting, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the product may produce airborne contaminants that are hazardous. The following classification information is for the hazardous substances that could be released or generated from such processes.

Label Elements

Signal Word
DANGER

Classification

Skin Sensitizer, Category 1 (nickel, hexavalent chromium)
Carcinogen, Category 1 (Inhalation; target organ-respiratory tract) (hexavalent chromium, nickel oxide, respirable crystalline silica)
Specific Target Organ Toxicity Repeated Exposure, Category 1 (Inhalation, target organ-respiratory tract) (hexavalent chromium, nickel, respirable crystalline silica)
Specific Target Organ Toxicity Repeated Exposure, Category 2 (nervous system) (manganese)
**Pictograms**

![Pictogram](image)

Dust and/or fumes released during processing may contain hexavalent chromium, manganese, nickel and respirable crystalline silica

### Hazard Phrases

- **H317**: May cause an allergic skin reaction
- **H350**: May cause cancer by inhalation
- **H372**: Causes damage to respiratory system through prolonged or repeated exposure
- **H373**: May cause damage to brain & nervous system through prolonged or repeated exposure

### Precautionary Phrases

- **P260**: Do not breathe dust & fumes
- **P201**: Obtain special instructions before use.
- **P202**: Do not handle until all safety precautions have been read and understood.
- **P264**: Wash hands thoroughly after handling.
- **P270**: Do not eat, drink or smoke when using this product.
- **P280**: Wear protective gloves, protective clothing, eye protection and face protection.
- **P302**: If on skin: Wash with plenty of water
- **P314**: Get medical advice/attention if you feel unwell
- **P333**: If skin irritation or rash occurs: Get medical advice/attention.
- **P363**: Wash contaminated clothing before reuse
- **P501**: Dispose of contents in accordance with local and national regulations

### SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

All values are expressed as weight percent and are approximate. The percent composition reflects the range that is possible in this group of products.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS #</th>
<th>Wt. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon (C)</td>
<td>7440-44-0</td>
<td>2.5‒4.0</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>7440-47-3</td>
<td>0.01‒1.5</td>
</tr>
<tr>
<td>Chromium, hexavalent*</td>
<td>1333-82-0</td>
<td>*</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>7440-50-8</td>
<td>0.01‒1.00</td>
</tr>
<tr>
<td>Iron (Fe)</td>
<td>7439-89-6</td>
<td>86.3‒96.2</td>
</tr>
<tr>
<td>Manganese (Mn)</td>
<td>7439-96-5</td>
<td>0.2–1.1</td>
</tr>
<tr>
<td>Nickel (Ni)**</td>
<td>7440-02-0</td>
<td>0.01–1.5</td>
</tr>
<tr>
<td>Silicon (Si)</td>
<td>7440-21-3</td>
<td>1.0–3.5</td>
</tr>
<tr>
<td>Silica, crystalline (SiO₂)***</td>
<td>14808-60-7</td>
<td>***</td>
</tr>
<tr>
<td>Tin (Sn)</td>
<td>7440-31-5</td>
<td>0.1–0.15</td>
</tr>
</tbody>
</table>

### NOTES

* When chromium is heated to high temperatures, which may occur during welding and thermal cutting of this product, it may oxidize to form hexavalent chromium. In the product as sold, chromium is in the elemental form.
** When nickel is heated to high temperatures, which may occur during welding and thermal cutting of this product, it may form nickel oxides. In the product as sold, nickel is in the elemental form.

*** Castings that have not been cleaned may contain embedded sand which may release respirable crystalline silica dust during processing.

**SECTION 4: FIRST AID MEASURES**

No first aid is likely to be needed when castings are handled as sold. The following first aid measures may be needed if dust and/or fumes are released when processes such as machining, grinding, drilling, melting, casting, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting are performed on the product.

**EYE CONTACT:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

**SKIN CONTACT:** Wash thoroughly after handling. Wash with plenty of water. If irritation or rash occurs, get medical advice/attention. Remove contaminated clothing and wash before reuse.

**INHALATION:** Remove person to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. If exposed, concerned or feeling unwell get medical advice/attention.

**INGESTION:** NEVER give anything by mouth to an unconscious person. DO NOT INDUCE VOMITING. Give large quantities of water. If vomiting occurs keep airways clear and give more water. Seek medical attention immediately.

**Most Important Symptoms & Effects, Both Acute and Delayed**

No adverse effects are expected from handling castings as sold. Inhalation of fumes or dust from processes such as machining, grinding, drilling, melting, casting, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting may cause irritation of the nose, throat or eyes. Nickel, hexavalent chromium compounds and respirable crystalline silica are listed in the National Toxicology Program (NTP) Annual Report on Carcinogens and the International Agency for Research on Cancer (IARC) Monographs as potential carcinogens (see Section 11). Hexavalent chromium and respirable crystalline silica are considered carcinogens by the Occupational Safety & Health Administration (OSHA). Prolonged overexposure to welding or thermal cutting fumes on materials containing iron may cause siderosis (iron deposits in lungs). Nickel and hexavalent chromium may cause skin sensitization. Manganese may cause damage to brain and nervous system through prolonged or repeated exposure. Respirable crystalline silica may cause adverse lung effects (silicosis), immune system effects and kidney effects.

**Indication of Immediate Medical Attention and Special Treatment Needs**

None known

**SECTION 5: FIREFIGHTING MEASURES**

**Suitable Extinguishing Media**

Use suitable extinguishing methods for surrounding fire.

**Special Hazards Arising from the Substance**

Not applicable for the casting as sold. Welding arcs and sparks can ignite combustibles and flammables.

**Combustion Products**

Welding and thermal cutting may generate oxides of the metals listed in Section 3.

**Special Protective Actions for Firefighters**

Not applicable

**SECTION 6: ACCIDENTAL RELEASE MEASURES**

**Personal Precautions, Protective Equipment and Emergency Procedures**

No special precautions necessary for the product as sold.

**Environmental Precautions**

Gray Iron Castings
SDS-GIC (1017)
Avoid releasing dust generated or collected from processing castings into the environment. Report such spills as required by local and national regulations.

### Methods and Material for Containment and Clean-up
Not applicable

### SECTION 7: HANDLING & STORAGE

**Precautions for Safe Handling**

No special requirements for the product as sold. The following precautions may be needed if processes such as machining, grinding, drilling, melting, casting, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting are performed and produce dust and/or fumes: Avoid breathing fumes or dust. Use good housekeeping practices. Use adequate ventilation to control exposure to dusts and fumes below their applicable occupational exposure limits. Employee exposures should be assessed to determine what specific corrective actions may be needed when performing tasks that release dust or fumes. Take appropriate precautions to prevent fires and explosion when hot work is performed. Do not eat, smoke or drink when performing the tasks listed above.

**Conditions for Safe Storage, Including any Incompatibilities**

No special storage requirements.

### SECTION 8: EXPOSURE CONTROLS & PERSONAL PROTECTION

**Occupational Exposure Limits**

This product is an article as sold. Dust or fumes generated from machining, grinding, drilling, melting, casting, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the product may produce contaminants with the following Occupational Exposure Limits (OELs):

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS #</th>
<th>FEDERAL OSHA PEL* (mg/m³)</th>
<th>ACGIH TLV® (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon</td>
<td>7440-44-0</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Chromium Metal Hexavalent, insoluble**</td>
<td>7440-47-3</td>
<td>1 (TWA)</td>
<td>0.005 (TWA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.005 (TWA)</td>
<td>0.01 (TWA)</td>
</tr>
<tr>
<td>Copper Dust Fume</td>
<td>7440-50-8</td>
<td>1 (TWA)</td>
<td>0.1 (TWA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.1 (TWA)</td>
<td>1 (TWA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.2 (TWA)</td>
<td></td>
</tr>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td>10 (TWA)</td>
<td>5 (TWA)(R)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(as iron oxide fume)</td>
<td>(as iron oxide dust or fume)</td>
</tr>
<tr>
<td>Manganese</td>
<td>7439-96-5</td>
<td>5 (C)</td>
<td>0.02 (TWA)(R)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.1 (TWA)(I)</td>
</tr>
<tr>
<td>Nickel Elemental Insoluble Oxide***</td>
<td>7440-02-0</td>
<td>1 (TWA)</td>
<td>1.5 (TWA)(I)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 (TWA)</td>
<td>0.2 (TWA) (I)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 (TWA)</td>
<td>0.2 (TWA) (I)</td>
</tr>
<tr>
<td>Silicon</td>
<td>7440-03-1</td>
<td>15 (TWA)</td>
<td>NE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 (TWA) (R)</td>
<td></td>
</tr>
<tr>
<td>Silica, respirable crystalline</td>
<td>14808-60-7</td>
<td>0.05 (TWA)****(R)</td>
<td>0.025 (TWA) (R)</td>
</tr>
</tbody>
</table>
### NOTES

* The following State OSHA Plans have adopted lower Permissible Exposure Limits (PELs) for some of the constituents in this product:

  - **California:** Chromium- 0.5 mg/m³ (TWA); Manganese- 0.2 mg/m³ (TWA); Nickel, metal -0.5 mg/m³ (TWA)
  - **Minnesota:** Manganese fume- 1 mg/m³ (TWA); Total Welding Fumes- 5 mg/m³ (TWA).
  - **Michigan:** Chromium- 0.5 mg/m³ (TWA); manganese fume- 1 mg/m³ (TWA); Total Welding Fumes- 5 mg/m³ (TWA).
  - **Oregon:** Chromium- 0.5 mg/m³ (TWA)

** When chromium is heated to high temperatures, which may occur during welding and thermal cutting of this product, it may oxidize to form hexavalent chromium. In the product as sold, chromium is in the elemental form.

*** When nickel is heated to high temperatures, which may occur during welding and thermal cutting of this product, it may form nickel oxides. In the product as sold, nickel is in the elemental form.

**** This OSHA PEL takes effect in June, 2018. Until then, or if the OSHA Respirable Crystalline Silica Standard (1910.1053) is stayed or otherwise not enforced, the PEL-TWA in Federal OSHA jurisdictions and in some state jurisdictions is calculated using the following formula: \( PEL \ (mg/m^3) = 10/\% \text{ quartz} + 2 \) and applies with when the quartz content of the air sample exceeds 1%.

### Exposure Limit Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH TLV</td>
<td>American Conference of Governmental Industrial Hygienists Threshold Limit Value® (2017)</td>
</tr>
<tr>
<td>C</td>
<td>Ceiling Limit</td>
</tr>
<tr>
<td>I</td>
<td>Inhalable fraction of particulate</td>
</tr>
<tr>
<td>mg/m³</td>
<td>Milligram of substance per cubic meter of air</td>
</tr>
<tr>
<td>NE</td>
<td>None Established</td>
</tr>
<tr>
<td>OSHA PEL</td>
<td>Occupational Health and Safety Administration Permissible Exposure Limit</td>
</tr>
<tr>
<td>R</td>
<td>Respirable fraction of particulate</td>
</tr>
<tr>
<td>STEL</td>
<td>Short Term Exposure Limit</td>
</tr>
<tr>
<td>TWA</td>
<td>Time Weighted Average</td>
</tr>
</tbody>
</table>

### Appropriate Engineering Controls

As sold no special control measures are necessary. If dust and/or fumes are released when processes such as machining, grinding, drilling, melting, casting, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting are performed, adequate ventilation should be used to control exposures to dusts and fumes below their applicable occupational exposure limits. Industrial hygiene sampling should be used to determine what specific corrective actions may be needed. Take appropriate precautions to prevent fires and explosion when hot work is performed. Do not eat, smoke or drink when performing the tasks listed above.

### Personal Protective Equipment (PPE)

**Eye Protection**

Wear safety glasses with side-shields if there is a risk of particles getting in eyes. Welding and thermal cutting of this product can generate ultraviolet and infrared radiation. Select appropriate welding shades to prevent eye injury.

**Skin Protection**

Gray Iron Castings
SDS-GIC (1017)
No chemical protective clothing is required. During use of this product, other hazards such as ultraviolet radiation, infrared radiation, hot metal and sparks may be generated. Use appropriate protective clothing and gloves for the application.

Respiratory Protection
As sold, no respiratory protection is expected to be necessary. If dust and/or fumes are released when processes such as machining, grinding, drilling, melting, casting, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting are performed, respiratory protection may be necessary if the concentrations of the hazardous substances listed in the above Table exceed the applicable occupational exposure limits. In these cases, a National Institute of Occupational Safety & Health (NIOSH) approved respirator should be selected based on the form and concentration of the contaminant in air.

SECTION 9: PHYSICAL & CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Solid, gray colored material</td>
</tr>
<tr>
<td>Odor</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>Not applicable</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting Point</td>
<td>~2350°F (1300°C)</td>
</tr>
<tr>
<td>Boiling point</td>
<td>5000°F (2750°C) for iron</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Upper/Lower Flammability or Explosive Limits</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative Density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>Insoluble</td>
</tr>
<tr>
<td>Partition Coefficient</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Auto-Ignition Temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

SECTION 10: STABILITY & REACTIVITY

Reactivity
Inert, not reactive

Chemical Stability
Stable

Possibility of Hazardous Reactions
None known with the product as sold.

Conditions to avoid
None known

Incompatible Materials
None known

Hazardous Decomposition Products
Welding and thermal cutting on casting may generate oxides of the metals listed in Section 3.

SECTION 11: TOXICOLOGICAL INFORMATION

This product is an article as sold. Dust or fumes generated from machining, grinding, drilling, melting, casting, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the product may produce airborne contaminants that are hazardous. Information about these components is supplied.
Acute Toxicity
The constituents do not meet the criteria to be classified in this category.

<table>
<thead>
<tr>
<th>Component</th>
<th>Rat (oral) LD50</th>
<th>Rat (Inhalation) LC50 (4 hr)</th>
<th>Rat (inhalation) LC50 (6 hr)</th>
<th>Rat (dermal) LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon</td>
<td>2000 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chromium</td>
<td>&gt;5000 mg/kg</td>
<td>5.41 mg/L air</td>
<td></td>
<td>2000 mg/kg</td>
</tr>
<tr>
<td>Copper</td>
<td>300–2,500 mg/kg</td>
<td>5.11 mg/L air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hexavalent Chromium</td>
<td>52 mg/kg</td>
<td>99–262 mg/m³, Rabbit (dermal) LD50 = 57 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron</td>
<td>98.6–1060 g/kg</td>
<td>250 mg/m³ air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manganese</td>
<td>&gt; 2000 mg/kg</td>
<td>&gt; 5.14 mg/L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nickel</td>
<td>&gt;9000 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silicon</td>
<td>3160 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LD50 = Lethal Dose of the substance at which 50% of the exposed test population is killed within a given period of time.
LC50 = Lethal Concentration of the substance at which 50% of the exposed test population is killed within a given period of time.

Skin Corrosion/Irritation
The constituents do not meet the criteria to be classified in this category.

Serious Eye Damage or Irritation
Dusts and fumes may cause eye irritation but the constituents do not meet the criteria to be classified in this category.

Respiratory or Skin Sensitization
Nickel and Hexavalent Chromium
May cause allergic skin sensitization.

Germ Cell Mutagenicity
Nickel
Chromosomal aberrations and in vitro and in vivo testing has shown that nickel is genotoxic (ATSDR); data is insufficient for classification.

Carcinogenicity
Carbon
Not listed by IARC, NTP or OSHA
Chromium
Metallic chromium is not listed by IARC, NTP or OSHA. When chromium is heated to high temperatures such as those that occur in welding arcs or during thermal cutting processes, it can oxidize to form hexavalent chromium. In the product as sold, chromium is in the elemental form. Hexavalent chromium is listed by IARC (possibly carcinogenic to humans—Group 2BA) and NTP (known human carcinogen).
Copper
Not listed by IARC, NTP or OSHA
Iron
Not listed by IARC, NTP or OSHA
Manganese
Not listed by IARC, NTP or OSHA
Nickel
Listed by IARC (possibly carcinogenic to humans—Group 2BA) and NTP (known human carcinogen). The increased risk of lung and sinus cancer varies with the form of nickel. There is no evidence that metallic nickel is associated with nasal or lung cancer (ATSDR, ECHA).
Silicon
Not listed by IARC, NTP or OSHA
Silica, Respirable Crystalline
Listed as a carcinogen by IARC 1 (Carcinogenic to Humans), NTP (Known to be a human carcinogen) and OSHA. Respirable crystalline silica has been associated with an increased risk of lung cancer.
Tin
Not listed by IARC, NTP or OSHA
Abbreviations

ASTDR      US Agency for Toxic Substances & Disease Registry (US Dept. Health & Human Services)
ECHA        European Chemicals Agency
IARC         International Agency for Research on Cancer
NTP          National Toxicology Program (U.S. National Institute of Environmental Health Sciences)
OSHA       U.S. Occupational Safety and Health Administration

Reproductive Toxicity

Nickel
Some studies indicate there may be effects on fertility but the data do not meet the criteria to be classified in this category.

Specific Target Organ Toxicity—Single Exposure (SE)

Copper
There are reports of copper fume causing “metal fume fever” resulting in symptoms of with a burning sensation, throat irritation, coughing, shortness of breath, nausea, aches and fever. These studies lack adequate exposure data and clear evidence that copper fumes caused metal fume fever. The data is inadequate for classification.

Specific Target Organ Toxicity—Repeated Exposure

Hexavalent Chromium
Chrome ulcers, nasal septum holes, inflammation of the nasal mucosa and throat, chronic bronchitis, kidney and liver effects have been reported in chrome workers. The effects result in a Specific Target Organ Toxicity—Repeat or Prolonged Exposure (STOT-RE) Category 1 classification.

Iron
Prolonged exposure may lead result in iron deposits in the lung, a condition known as siderosis but this effect but does not meet the criteria to be classified in this category.

Manganese
Inflammatory changes in the lung were found in monkeys exposed to manganese dioxide via inhalation for 10 months. At high exposure levels (greater than 5 mg/m³), manganism (chronic manganese poisoning) has been reported in workers. Symptoms of manganism include sleepiness, weakness in the legs, a mask-like facial appearance, emotional disturbances and a spastic gait. High levels of pneumonia have also been reported in workers inhaling large amounts of manganese dust and fume. In some studies, manganese has been associated with longer reaction times, hand steadiness and eye-hand coordination. Effects appear to be more pronounced with exposures to respirable sized particles. These effects result in a STOT-RE Category 2 classification.

Nickel (elemental and nickel oxide)
Animal studies have shown lung changes and inflammation following inhalation exposure. Effects vary with the form of nickel used in the studies, animal species and route of administration. There have been case reports of occupational asthma, pulmonary fibrosis and pulmonary edema in workers, however, exposure data is lacking. The animal studies result in a STOT-RE Category 1 classification.

Silica, Respirable Crystalline
Prolonged and repeated exposure to respirable crystalline silica may cause silicosis. Respirable crystalline silica may also cause immune system effects and kidney effects.

Aspiration Hazard

Based on the physical form, the product is not expected to be an aspiration hazard.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity
Ecotoxicity is expected to be minimal since the product as sold is a solid with low water solubility. Dust generated and/or collected from further processing of the casting may be toxic to the environment.

Persistence and Degradation
Not applicable

Bioaccumulation
Not applicable
Mobility in Soil
Not applicable

Environmental Fate
Not applicable

SECTION 13: DISPOSAL INFORMATION

Recover or recycle castings or dispose of according to federal, state and local regulations. Dust collected from product processing operations may be classified as a hazardous waste. Dispose of such dust in accordance with federal, state and local regulations.

SECTION 14: TRANSPORTATION INFORMATION

U.S. Department of Transportation (DOT)
Product is not regulated

International Maritime Dangerous Goods (IMDG)
Product is not regulated

Transport in bulk according to Annex II of MARPOL 73/78 (Marine Pollution) and the International Bulk Chemical (IBC) Code
Product is not regulated

International Civil Aviation Org. (ICAO) / International Air Transport Assoc. (IATA)
Product is not regulated

SECTION 15: REGULATORY INFORMATION

This product is an article as sold. If this product is further processed, the regulatory status of the components listed in the composition section of this sheet may be altered. The following regulatory information may not be complete and should not be relied upon as the sole source of information regarding regulatory responsibilities.

Occupational Health and Safety Administration
This product is an article as sold. Dust or fumes generated by further processing of the product may produce airborne contaminants that are regulated by OSHA. These are listed in Section 8.

TSCA Chemical Inventories
This product is an article as defined by Toxic Substances Control Act (TSCA) regulations, and is exempt from TSCA Inventory listing requirements

Other Regulatory Information

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS #</th>
<th>CERCLA RQ (lbs)</th>
<th>Section 313</th>
<th>NPRI Threshold Category</th>
<th>California Prop 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium</td>
<td>7440-47-3</td>
<td>5,000</td>
<td>313</td>
<td>1A</td>
<td>Carcinogen (hexavalent form only)</td>
</tr>
<tr>
<td>Copper</td>
<td>7440-50-8</td>
<td>5,000</td>
<td>313</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manganese</td>
<td>7439-96-5</td>
<td>313</td>
<td></td>
<td>1A</td>
<td></td>
</tr>
<tr>
<td>Nickel</td>
<td>7440-02-0</td>
<td>100</td>
<td>313</td>
<td>1A</td>
<td>Carcinogen</td>
</tr>
</tbody>
</table>

Notes
CAS = Chemical Abstract Service Registry Number, a 7-digit identifier.
CERCLA RQ = Comprehensive Environmental Response, Compensation & Liability Act of 1980, Reportable Quantity. If a value is listed then releases of particles, ≤ 100 µm in size, to the environment may require reporting under CERCLA Sections 102–103 (40 CFR Part 302).

EINECS = European Inventory of Existing Commercial Chemical Substances, a 7-digit identifier.

NPRI = National Pollutant Release Inventory Threshold Category, if 1A or 1B is listed, may be subject to reporting under the Canadian Environmental Protection Act, 1999.

Prop 65 = Proposition 65, if listed in the table above: WARNING: This product contains chemicals known to the State of California to cause cancer.

Section 313 = if ‘313’ is listed, may be subject to the reporting requirements found under Emergency Planning and Community Right-to-Know Act (EPCRA) Section 313 (40 CFR Part 372).

These products are not believed to contain any substances that meet the notification requirements found under EPCRA Sections 302 or 304 (40 CFR Part 355) nor subject to the accidental release prevention requirements under CAA 112(r) (40 CFR Part 68).

SECTION 16: OTHER INFORMATION

DATE PREPARED: October 2017

PREPARER: American Foundry Society, Inc. Occupational Safety & Health Committee (10-Q)

This SDS is intended to be used as a guide to the appropriate handling, storage, and use of this product by an adequately trained person. The American Foundry Society, Inc. is not responsible for the misuse, mishandling or improper storage of this material by the user.

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