DUCTILE IRON/COMPACTED GRAPHITE IRON (CGI) CASTINGS

SAFETY DATA SHEET (SDS)

DUCTILE IRON/COMPACTED GRAPHITE IRON (CGI) CASTINGS
SDS SC-000-042 Rev. 12

DATE ISSUED
10/13

SECTION 1—PRODUCT IDENTIFICATION & COMPANY INFORMATION

PRODUCT NAME
DUCTILE IRON and COMPACTED GRAPHITE IRON (CGI) CASTINGS


PRODUCT IDENTIFICATION (Label Identifier)
See Above

MANUFACTURER’S NAME
Specialty Castings LLC
STREET ADDRESS
211 Mill Street

EMERGENCY TELEPHONE NO.
888-812-9543
MAILING ADDRESS
211 Mill Street

TELEPHONE NO.
888-812-9543
CITY, STATE, ZIP CODE, COUNTRY
Springport MI 49284 USA

FAX NO.
517-857-3688
E-MAIL ADDRESS/WEBSITE
info@specialtycastings.com/specialtycastings.com

RECOMMENDED USE OF CHEMICAL AND RESTRICTIONS ON USE
Solid casting; no restrictions

SECTION 2—HAZARD IDENTIFICATION

CLASSIFICATION
Castings are metallic articles that do not present hazards in their original form.

OTHER INFORMATION
1. Grinding castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing crystalline silica.
2. Fumes from hot processes may contain other compounds with different exposure limits. Dust or fumes generated by machining, grinding, welding or thermal cutting of the casting may produce airborne contaminants. Consult Sections 3 & 8 for further information.

SECTION 3—COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CHEMICAL NAME/COMMON NAME/SYNONYM</th>
<th>Wt %</th>
<th>CAS NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon (C)</td>
<td>3.0—4.3</td>
<td>7440-44-0</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>0.02—0.13</td>
<td>7440-47-3</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>0.01—1.5</td>
<td>7440-50-8</td>
</tr>
<tr>
<td>Iron (Fe)</td>
<td>87.7—95.1</td>
<td>7439-89-6</td>
</tr>
<tr>
<td>Magnesium (Mg)</td>
<td>0.0001—0.10</td>
<td>7439-95-4</td>
</tr>
<tr>
<td>Manganese (Mn)</td>
<td>&lt;1.2</td>
<td>7439-96-5</td>
</tr>
<tr>
<td>Molybdenum (Mo)</td>
<td>0.01—0.50</td>
<td>7439-98-7</td>
</tr>
<tr>
<td>Nickel (Ni)</td>
<td>0.1—2</td>
<td>7440-02-0</td>
</tr>
<tr>
<td>Silicon (Si)</td>
<td>1.8—4</td>
<td>7440-21-3</td>
</tr>
<tr>
<td>Tin (Sn)</td>
<td>0.1—0.15</td>
<td>7440-31-5</td>
</tr>
</tbody>
</table>
SECTION 4—FIRST AID MEASURES

**EYE CONTACT:** Not applicable

**SKIN CONTACT:** No special requirements

**INGESTION:** Not applicable

**INHALATION** Not applicable

SECTION 5—FIREFIGHTING MEASURES

**FLAMMABLE PROPERTIES:** Not applicable

**EXTINGUISHING MEDIA:** Not applicable

**PROTECTION OF FIREFIGHTERS:** Not applicable

SECTION 6—ACCIDENTAL RELEASE MEASURES

Not applicable

SECTION 7—HANDLING & STORAGE

**RECOMMENDED STORAGE**
No special requirements

**PROCEDURES FOR HANDLING**
Proper hand and foot protection is recommended.

SECTION 8—EXPOSURE CONTROLS/PERSONAL PROTECTION

**ENGINEERING CONTROLS**
None Required. There are no health hazards from castings in solid form.

<table>
<thead>
<tr>
<th>SUBSTANCE</th>
<th>ACGIH TLV mg/m³</th>
<th>OSHA PEL mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon (C)</td>
<td>N/E</td>
<td>N/E</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>0.5</td>
<td>1</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Iron (Fe)</td>
<td>N/E</td>
<td>N/E</td>
</tr>
<tr>
<td>Magnesium (Mg) oxide</td>
<td>10 (I)</td>
<td>15</td>
</tr>
<tr>
<td>Manganese (Mn)</td>
<td>0.02 (R); 0.1 (I)</td>
<td>5 (C)</td>
</tr>
<tr>
<td>Molybdenum (Mo) insoluble</td>
<td>10 (I); 3 (R)</td>
<td>15</td>
</tr>
<tr>
<td>Nickel (Ni)</td>
<td>1.5 (I)</td>
<td>1</td>
</tr>
<tr>
<td>Silicon (Si)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total dust</td>
<td>N/E</td>
<td>15</td>
</tr>
<tr>
<td>Respirable dust</td>
<td>N/E</td>
<td>5</td>
</tr>
<tr>
<td>Tin (Sn)</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

**SUPPLEMENTAL INFORMATION**
Grinding castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing crystalline silica.

Fumes from hot processes may contain other compounds with different exposure limits than those listed above. Dust or fumes generated by machining, grinding, welding or thermal cutting of the casting may produce airborne contaminants. Exposure limits for the most common contaminants are offered as reference. Please consult a competent person for guidance on exposure assessment and controls.

In particular, Hexavalent Chromium is an OSHA Expanded Health Standard; refer to OSHA 29 CFR 1910.1026- Chromium (VI) for complete requirements.
### SUBSTANCE

<table>
<thead>
<tr>
<th>Substance</th>
<th>ACGIH TLV mg/m³</th>
<th>OSHA PEL mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium Compounds (as Cr)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chromium (II) inorganic compounds</td>
<td>N/E</td>
<td>0.5</td>
</tr>
<tr>
<td>Chromium (III) inorganic compounds</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Chromium (VI) inorganic compounds, certain water insoluble</td>
<td>0.01</td>
<td>0.005</td>
</tr>
<tr>
<td>Chromium (VI) inorganic compounds, water soluble</td>
<td>0.05</td>
<td>0.005</td>
</tr>
<tr>
<td>Chromium (VI) all forms and compounds</td>
<td>N/E</td>
<td>0.005</td>
</tr>
<tr>
<td>Copper Compounds (as Cu)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fume, as Cu</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Dusts and mists, as Cu</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Iron Compounds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron oxide (Fe₂O₃) fume</td>
<td>N/E</td>
<td>10</td>
</tr>
<tr>
<td>Iron oxide (Fe₂O₃)</td>
<td>5 (R)</td>
<td>N/E</td>
</tr>
<tr>
<td>Nickel Compounds (as Ni)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insoluble, inorganic compounds</td>
<td>0.2(I)</td>
<td>1</td>
</tr>
<tr>
<td>Soluble, inorganic compounds</td>
<td>0.1(I)</td>
<td>1</td>
</tr>
<tr>
<td>Nickel oxide</td>
<td>0.2(I)</td>
<td>1</td>
</tr>
<tr>
<td>Tin compounds (as Sn)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tin Oxide &amp; inorganic compounds, except SnH₄</td>
<td>2</td>
<td>N/E</td>
</tr>
<tr>
<td>Inorganic compounds, except oxides, as Sn</td>
<td>N/E</td>
<td>2</td>
</tr>
<tr>
<td>Tin Oxides, as Sn</td>
<td>2.0</td>
<td>N/E</td>
</tr>
</tbody>
</table>

### TERMS
All exposure limits referenced above are 8 hour time weighted averages (TWA) unless otherwise noted.

- N/E = None Established
- C = Ceiling
- I = Inhalable fraction
- R = Respirable fraction
- TLV = Threshold Limit Value/American Conference of Industrial Hygienists (ACGIH)
- PEL = Permissible Exposure Limit / OSHA
- mg/m³ = milligrams per cubic meter

### PERSONAL PROTECTION
Proper hand and foot protection is recommended.

### SECTION 9—PHYSICAL & CHEMICAL PROPERTIES

#### APPEARANCE / PHYSICAL STATE
Solid, silver gray in color

#### ODOR / ODOR THRESHOLD
None

#### VAPOR DENSITY
Not applicable

#### MELTING POINT / FREEZING POINT
Approximately 2350°F (1300°C)

#### SPECIFIC GRAVITY (relative density)
7.85 g/cm³ for iron

#### BOILING POINT
5000°F (2750°C) for iron

#### VAPOR PRESSURE
Not applicable

#### FLASH POINT
Not applicable for solid castings

#### EVAPORATION RATE
Not applicable

#### FLAMMABILITY
Not flammable

#### SOLUBILITY IN WATER
Insoluble

#### UPPER AND LOWER FLAMMABILITY LIMITS
Not applicable for solid castings

#### pH
Not applicable

#### AUTO IGNITION TEMPERATURE
Not applicable

#### VISCOSITY
Not applicable
DECOMPOSITION TEMPERATURE
Not applicable

PARTITION COEFFICIENT
Not applicable

SECTION 10—STABILITY & REACTIVITY

CHEMICAL STABILITY
Stable

CONDITIONS TO AVOID
None

REACTIVITY
Not reactive

INCOMPATIBLE MATERIALS
None

HAZARDOUS DECOMPOSITION PRODUCTS
None

POSSIBILITY OF HAZARDOUS REACTIONS
Not applicable

SECTION 11—TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

EYE CONTACT: None

SKIN: None

INGESTION: None

INHALATION: None

Carcinogen Classification of Ingredients

<table>
<thead>
<tr>
<th>INGREDIENT</th>
<th>OSHA</th>
<th>NTP</th>
<th>IARC</th>
<th>TARGET ORGAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel (metal)</td>
<td>NL</td>
<td>R</td>
<td>2B</td>
<td>Lung, Nose</td>
</tr>
</tbody>
</table>

TERMS

OSHA—Occupational Safety & Health Administration
Y = Listed as a Human Carcinogen

NTP—National Toxicology Program
K = Known to be a Human Carcinogen
R = Reasonably Anticipated to be a Human Carcinogen (RAHC)

IARC—International Agency for Research on Cancer
1 = Carcinogen to Humans
2A = Probably Carcinogenic to Humans
2B = Possibly Carcinogenic to Humans
3 = Unclassifiable as to Carcinogenicity in Humans
4 = Probably not Carcinogenic to Humans

Other
NL = Not Listed

SECTION 12—ECOLOGICAL INFORMATION

ECOTOXICITY
Not applicable

PERSISTENCE AND DEGRADABILITY
Not applicable

BIOACCUMULATION POTENTIAL
Not applicable

MOBILITY IN SOIL
Not applicable

OTHER ADVERSE EFFECTS
Not applicable

SECTION 13—DISPOSAL CONSIDERATIONS

Recover or recycle if possible. Dispose of according to federal, state and local regulations. Dust collected from machining, welding, etc. may be classified as a hazardous waste. Consult federal, state and local regulations.

SECTION 14—TRANSPORT INFORMATION

US DEPARTMENT OF TRANSPORTATION (DOT)-HMR (Hazardous Materials Registration)
Not Regulated

CANADIAN TRANSPORTATION OF DANGEROUS GOODS (TDG)
Not regulated

UN SHIPPING NAME
Not regulated

UN NUMBER
Not regulated
<table>
<thead>
<tr>
<th>TRANSPORT HAZARD CLASS</th>
<th>PACKING GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not regulated</td>
<td>Not regulated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ENVIRONMENTAL HAZARDS</th>
<th>LABEL(S) REQUIRED?</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TRANSPORT IN BULK</th>
<th>SPECIAL SHIPPING INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

**SECTION 15—REGULATORY INFORMATION**

**US-OSHA (Hazard Communication Standard)**
Reference 29 CFR 1910.1200 and 1910.1000. A finished casting is an article as defined in the OSHA Hazard Communication Standard 29CFR 1910.1200 (c). Dust or fumes generated by cleaning, machining, grinding, or welding of the casting may produce airborne contaminants, such as chromium, copper, iron, magnesium, manganese, nickel, tin, silicon and silica. For hexavalent chromium references see 29 CFR 1910.1026.

**US-EPA (Toxic Substances Control Act—TSCA)**
All components of these products are on the TSCA inventory list or are excluded from listing.

**US-EPA (SARA Title III)**
Releases to the environment of Chromium, Copper, Manganese and Nickel, may be subject to reporting under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

**CANADA-WHMIS (Workplace Hazardous Materials Information System)**
This SDS has been prepared according to the hazard criteria of the Controlled Product Regulations (CPR) and the SDS contains the information required by the CPR.

**CANADA DSL (Domestic Substances List) Inventory Status**
All components of these products are on the DSL Inventory.

**CEPA (Canadian Environmental Protection Act)**
Chromium and Nickel are on the CEPA Priorities Substances Lists

**EINECS No. (European Inventory of Existing Commercial Chemical Substances)**
All components of these products are on the EINECS list.

**RoHS (Restriction of Certain Hazardous Substances) Compliance**
Castings comply with RoHS

**CALIFORNIA PROPOSITION 65 Compliance**
WARNING: This product contains or produces chemicals known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code 25248.5 et seq.)

**US STATE REGULATORY INFORMATION**
Some of the components listed in Section 3 may be covered under specific state regulations.

**SECTION 16 — OTHER INFORMATION**

**SDS SHEET PREPARED BY**
American Foundry Society, Inc.  
Occupational Safety & Health Committee (10-Q)

**DATE**
10/13

**NOTE**
This data and label information is offered in good faith as typical values and not as a product specification. No warranty either expressed or implied is hereby made. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable. However, each user should review the recommendations in specific context of the intended use and determine if they are appropriate.
Addendum: Label Information

<table>
<thead>
<tr>
<th>PRODUCT IDENTIFIER</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC-000-042 Rev. 12</td>
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</table>

**DUCTILE IRON/COMPACTED GRAPHITE IRON (CGI) CASTINGS**

<table>
<thead>
<tr>
<th>SUPPLIER IDENTIFICATION</th>
<th>HAZARD PICTOGRAMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company Name</td>
<td>Specialty Castings LLC</td>
</tr>
<tr>
<td>Street Address</td>
<td>211 Mill Street</td>
</tr>
<tr>
<td>Mailing Address</td>
<td>211 Mill Street</td>
</tr>
<tr>
<td>City</td>
<td>Springport</td>
</tr>
<tr>
<td>State</td>
<td>MI</td>
</tr>
<tr>
<td>Zip/Postal Code</td>
<td>49284</td>
</tr>
<tr>
<td>Country</td>
<td>USA</td>
</tr>
<tr>
<td>Emergency Phone Number</td>
<td>888-812-9543</td>
</tr>
<tr>
<td>Other Info</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HAZARD PICTOGRAMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>None*</td>
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</table>

<table>
<thead>
<tr>
<th>SIGNAL WORD</th>
</tr>
</thead>
<tbody>
<tr>
<td>None*</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>PRECAUTIONARY STATEMENTS</th>
<th>HAZARD STATEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>None*</td>
<td>None*</td>
</tr>
</tbody>
</table>

*Castings do not present hazards in their original form.

**OTHER INFORMATION**

1. Grinding castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing crystalline silica.

2. Fumes from hot processes may contain other compounds with different exposure limits. Dust or fumes generated by machining, grinding, welding or thermal cutting of the casting may produce airborne contaminants. Consult Sections 3 & 8 of the SDS for further information.