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

OTHER DESIGNATIONS:

PRODUCT IDENTIFICATION (Label Identifier)
DUCTILE IRON PIPE

MANUFACTURER’S NAME
McWane Ductile, Division of McWane, INC.

STREET ADDRESS
2266 South Sixth Street

EMERGENCY TELEPHONE NO.
877-217-6372

MAILING ADDRESS
2266 South Sixth Street

TELEPHONE NO.          CITY, STATE, ZIP CODE, COUNTRY
E-MAIL ADDRESS/WEBSITE
Cincinnati, Ohio 43812-6001, USA

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</th>
<th>OSHA PEL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mg/m³</td>
<td>mg/m³</td>
</tr>
<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>15</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.
<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

VAPOUR 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
TRANSPORT HAZARD CLASS  |  PACKING GROUP
Not regulated               |  Not regulated

ENVIRONMENTAL HAZARDS     |  LABEL(S) REQUIRED?
None                        |  No

TRANSPORT IN BULK         |  SPECIAL SHIPPING INFORMATION
Not applicable             |  Not applicable

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 72.

CANADA-WHIMIS (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
Castsings 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.
**PRODUCT IDENTIFIER**

SC-000-042 Rev. 12

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

<table>
<thead>
<tr>
<th><strong>SUPPLIER IDENTIFICATION</strong></th>
<th><strong>HAZARD PICTOGRAMS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Company Name: McWane Ductile</td>
<td>None*</td>
</tr>
<tr>
<td>Street Address: 2266 South Sixth Street</td>
<td></td>
</tr>
<tr>
<td>Mailing Address: 2266 South Sixth Street</td>
<td></td>
</tr>
<tr>
<td>City: Coshocton</td>
<td>State: OH</td>
</tr>
<tr>
<td>Zip/Postal Code: 438126001</td>
<td>Country: USA</td>
</tr>
<tr>
<td>Emergency Phone Number: 877-217-6372</td>
<td></td>
</tr>
<tr>
<td>Other Info: Coatings will have their own SDSs</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>PRECAUTIONARY STATEMENTS</strong></th>
<th><strong>HAZARD STATEMENTS</strong></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**

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