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Meets the Requirements of OSHA Standard 29 CFR 1910.1200 Hazard Communication and EPA Supplier Notification Requirements under Section 313 of the Emergency Planning and Community Right-to-Know Act.

SAFETY DATA SHEET (SDS)

GRAY IRON CASTINGS

SDS SC-000-041 Rev. 12

DATE ISSUED

10/13

SECTION 1—PRODUCT IDENTIFICATION & COMPANY INFORMATION

PRODUCT NAME

GRAY IRON CASTINGS

OTHER DESIGNATIONS: ASTM (American Society for Testing & Materials) Specification No's., (ACI (Alloy Casting Institute) Alloy Designations—Grades)

ASTM: A48, A74, A126, A159, A278, A319, A667, A748, A823, A942

PRODUCT IDENTIFICATION (Label Identifier)

Gray Iron

MANUFACTURER'S NAME

Badger Iron Works Inc.

STREET ADDRESS

2103 Stokke Parkway

EMERGENCY TELEPHONE NO.

715-235-4223

MAILING ADDRESS

2103 Stokke Parkway

TELEPHONE NO.

715-235-4223

CITY, STATE, ZIP CODE, COUNTRY

Menomonie, WI 54751 U.S.A

FAX NO.

715-235-1398

E-MAIL ADDRESS/WEBSITE

WWW.BadgerIronWorks.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

CHEMICAL NAME/COMMON NAME/SYNONYM	Wt %	CAS NUMBER
Carbon (C)	2.5–4.0	7440-44-0
Chromium (Cr)	0.01–1.5	7440-47-3
Copper (Cu)	0.01–1.00	7440-50-8
Iron (Fe)	86.3–96.2	7439-89-6
Manganese (Mn)	0.2–1.1	7439-96-5
Nickel (Ni)	0.01–1.5	7440-02-0
Silicon (Si)	1.0–3.5	7440-21-3
Tin (Sn)	0.1–0.15	7440-31-5

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.

SUBSTANCE	ACGIH TLV mg/m ³	OSHA PEL mg/m ³
Carbon (C)	N/E	N/E
Chromium (Cr)	0.5	1
Copper (Cu)	1	1
Iron (Fe)	N/E	N/E
Manganese (Mn)	0.02 (R); 0.1 (I)	5 (C)
Nickel (Ni)	1.5 (I)	1
Silicon (Si)		
Total dust	N/E	15
Respirable dust	N/E	5
Tin (Sn)	2	2

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	ACGIH TLV mg/m ³	OSHA PEL mg/m ³
Chromium Compounds (as Cr)		
Chromium (II) inorganic compounds	N/E	0.5
Chromium (III) inorganic compounds	0.5	0.5
Chromium (VI) inorganic compounds, certain water insoluble	0.01	0.005
Chromium (VI) inorganic compounds, water soluble	0.05	0.005
Chromium (VI) all forms and compounds	N/E	0.005
Copper Compounds (as Cu)		
Fume, as Cu	0.2	0.1
Dusts and mists, as Cu	1	1
Iron Compounds		
Iron oxide (Fe ₂ O ₃) fume	N/E	10
Iron oxide (Fe ₂ O ₃)	5 (R)	N/E
Nickel Compounds (as Ni)		
Insoluble, inorganic compounds	0.2(I)	1
Soluble, inorganic compounds	0.1(I)	1
Nickel oxide	0.2(I)	1
Tin compounds (as Sn)		
Tin Oxide & inorganic compounds, except SnH ₄	2	N/E
Inorganic compounds, except oxides, as Sn	N/E	2
Tin Oxides, as Sn	2	N/E

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	VAPOR DENSITY
None	Not applicable
MELTING POINT/FREEZING POINT	SPECIFIC GRAVITY (relative density)
Approximately 2350°F (1300°C)	7.85 g/cm ³ for iron
BOILING POINT	VAPOR PRESSURE
5000°F (2750°C) for iron	Not applicable
FLASH POINT	EVAPORATION RATE
Not applicable for solid castings	Not applicable
FLAMMABILITY	SOLUBILITY IN WATER
Not flammable	Insoluble
UPPER AND LOWER FLAMMABILITY LIMITS	pH
Not applicable for solid castings	Not applicable
AUTO IGNITION TEMPERATURE	VISCOSITY
Not applicable	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				
INGREDIENT	OSHA	NTP	IARC	TARGET ORGAN
Nickel (metal)	NL	K	2B	Lung, Nose
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 Not regulated	PACKING GROUP Not regulated
ENVIRONMENTAL HAZARDS None	LABEL(S) REQUIRED? No
TRANSPORT IN BULK Not applicable	SPECIAL SHIPPING INFORMATION 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, manganese, nickel, silicon, tin 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-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 Substance 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.	