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)

Grey Iron Casting

MANUFACTURER'S NAME Aurora Metals L.L.C.	**STREET ADDRESS** 1995 Greenfield Ave
EMERGENCY TELEPHONE NO. 630-844-6839	**MAILING ADDRESS** 1995 Greenfield Ave
TELEPHONE NO. 630-844-4900	**CITY, STATE, ZIP CODE, COUNTRY** Montgomery, IL 60538 - USA
FAX NO. 630-844-6839	**E-MAIL ADDRESS/WEBSITE** Aurorametals.com - sales@aurorametals.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_2O_3) fume	N/E	10
Iron oxide (Fe_2O_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/m^3 = 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/cm^3 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	PARTITION COEFFICIENT
Not applicable	Not applicable

SECTION 10—STABILITY & REACTIVITY

CHEMICAL STABILITY
Stable

CONDITIONS TO AVOID
None

REACTIVITY	INCOMPATIBLE MATERIALS
Not reactive	None
HAZARDOUS DECOMPOSITION PRODUCTS	**POSSIBILITY OF HAZARDOUS REACTIONS**
None	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	PERSISTENCE AND DEGRADABILITY
Not applicable	Not applicable
BIOACCUMULATION POTENTIAL	**MOBILITY IN SOIL**
Not applicable	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)	CANADIAN TRANSPORTATION OF DANGEROUS GOODS (TDG)
Not Regulated	Not regulated
UN SHIPPING NAME	**UN NUMBER**
Not regulated	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, 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 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 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	DATE
American Foundry Society, Inc. Occupational Safety & Health Committee (10-Q)	**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

PRODUCT IDENTIFIER

SC-000-041 Rev. 12

GRAY IRON CASTINGS

SUPPLIER IDENTIFICATION

Company Name Aurora Metals L.L.C.

Street Address 1995 Greenfield Ave

Mailing Address: 1995 Greenfield Ave

City Montgomery State IL

Zip/Postal Code 60538 Country USA

Emergency Phone Number 630-844-4907

Other Info

HAZARD PICTOGRAMS

None*

SIGNAL WORD

None*

PRECAUTIONARY STATEMENTS

None*

HAZARD STATEMENTS

None*

*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**.**