



**Nickel:** Allergic skin reactions. Possible cancer of the nose or lungs.

**SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**

**Ingredients in Casting**

Substance	CAS #	Weight %	OSHA PEL mg/m <sup>3</sup>	ACGIH TLV® Mg/m <sup>3</sup>	Carcinogen Designation
Iron	7439-89-6	70 – 99.1	10	5 (R)	IARC 3
Chromium, metal*	7440-47-3	0 - 35.0	1	0.5	IARC 3; ACGIH A4
Nickel*	7440-02-0	0 - 15.0	1	1.5 (I)	IARC 2B; NTP R; ACGIH A5
Manganese*	7439-96-5	0.1 – 25.0	5 (C)	0.2	Not listed
Molybdenum*	7439-98-7	0.1 – 2.0	NE	10 (I) 3 (R)	Not listed
Silicon	7440-21-3	0.1 – 3.0	15 5 (R)	NE	Not listed
Aluminum*	7429-90-5	0.00 – 3.0	15 5 (R)	10	Not listed
Cobalt*	7440-48-4	0.0 – 1.0	0.1	0.02	IARC 2B; ACGIH A3
Carbon	7440-44-0	0.0 – 2.0	NE	NE	Not listed

\* Chromium, nickel, manganese, molybdenum, aluminum (as fume or dust) and cobalt are "toxic chemicals" subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986. The name, CAS # and weight % of these chemicals must be included in all MSDSs that are copied and distributed for ESCO Corporation Steel Foundry Products.

Alloy concentrations may vary somewhat between batches or lots. Various grades of steel will contain different combinations of these alloying elements. De minimis quantities of individual trace or residual elements may also be present in the steel. No permissible exposure limits (PEL) or threshold limit values (TLV) exist for solid steel. Values shown are applicable to component elements.

**Additional Substances that may be Created During Welding, Thermal Cutting or Grinding of Castings**

Substance	CAS #	OSHA PEL Mg/m <sup>3</sup>	ACGIH TLV® mg/m <sup>3</sup>	Carcinogen Designation
Iron oxide	1309-37-1	10	5 (R)	IARC 3, ACGIH A4
Chromium, trivalent	16065-83-1	0.5	0.5	IARC 3, ACGIH A4
Chromium, hexavalent (insoluble forms)	18540-29-9	0.005	0.01	OSHA, NTP K, IARC 1, ACGIH A1
Nickel oxide	1313-99-1	1	0.2 (I)	Not listed

**Exposure Limit Abbreviations**

NE= None Established

ACGIH TLV= American Conference of Governmental Industrial Hygienists Threshold Limit Value®, 2007 Edition

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**OSHA PEL**= Occupational Health and Safety Administration Permissible Exposure Limit

**mg/m<sup>3</sup>**= milligrams per cubic meter

**C**= Exposure limit is expressed as a ceiling limit

**R**= Respirable fraction of dust; exposure limit applies only to this fraction of dust

**I**= Inhalable fraction of dust; exposure limit applies only to this fraction of dust

### **Carcinogen Designations**

**IARC**= International Agency for Research on Cancer. 1= Carcinogenic 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

**NTP**= National Toxicology Program. K= Known to be a Human Carcinogen; R= Reasonably Anticipated to Be a Human Carcinogen

**ACGIH**= American Conference of Governmental Industrial Hygienists. A1= Confirmed Human Carcinogen; A2= Suspected Human Carcinogen; A3= Confirmed Animal Carcinogen with Unknown Relevance to Humans; A4= Not Classifiable as a Human Carcinogen; A5= Not Suspected as a Human Carcinogen

**OSHA PEL**= Occupational Health and Safety Administration has classified the substance as a carcinogen

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### **SECTION 4: FIRST AID MEASURES**

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- Skin Contact** Remove particles by washing thoroughly with soap and water. Seek medical attention if condition persists.
- Inhalation** Remove to fresh air. If condition continues, consult a physician.
- Eye Contact** Flush thoroughly with running water to remove particle. Seek medical attention.
- Ingestion** Not normally applicable but if significant amounts of metal are ingested, consult a physician.

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### **SECTION 5: FIRE FIGHTING MEASURES**

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#### **Extinguishing Media**

Steel castings in their usual physical forms do not present fire or explosion hazards under normal conditions. Use fire fighting methods and materials that are appropriate for surrounding area.

Molten metal may explode on contact with water. For these fires, use dry powder or sand.

#### **Conditions to Avoid**

None

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### **SECTION 6: ACCIDENTAL RELEASE MEASURES**

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Not applicable to solid castings.

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### **SECTION 7: HANDLING AND STORAGE**

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No special storage necessary for solid castings.

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**SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION**

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<b><u>Respiratory Protection</u></b>	None necessary for handling solid castings. If welding, grinding or thermal cutting on castings, provide sufficient ventilation to maintain concentrations of hazardous substances below their applicable exposure limits (see Section 3).
<b><u>Hands, Arms, and Body</u></b>	Protective gloves should be worn as required for welding, burning, or handling operations.
<b><u>Eyes and Face</u></b>	Safety glasses and/or faceshield should be worn when grinding on castings. Additional eye and face protection may be needed if welding or thermal cutting on castings.

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**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

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<b>Physical State:</b>	Solid	<b>Flammability:</b>	Not applicable
<b>Appearance and Odor:</b>	Grey metal; odorless	<b>Flash Point:</b>	Not applicable
<b>Boiling Point:</b>	5000 °F for iron	<b>Auto-Ignition Temperature:</b>	Not applicable
<b>Melting Point:</b>	Approx. 2800°F	<b>Flammable Limits in Air:</b>	Not applicable
<b>Evaporation Rate:</b>	Not applicable	<b>pH:</b>	Not applicable
<b>Vapor Pressure:</b>	Not applicable	<b>Decomposition Temperature:</b>	Not applicable
<b>Vapor Density:</b>	Not applicable		
<b>Specific Gravity:</b>	7.6-7.9		
<b>Solubility in Water:</b>	Not applicable		
<b>% Volatile by Volume:</b>	Not applicable		
<b>Partition Coefficient:</b>	Not applicable		

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**SECTION 10: STABILITY AND REACTIVITY**

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<b><u>Stability</u></b>	Stable under normal conditions of use, storage, and transportation.
<b><u>Conditions to Avoid</u></b>	None
<b><u>Incompatibility (Materials To Avoid)</u></b>	May react with strong acids to form hydrogen gas.
<b><u>Conditions of Reactivity</u></b>	None
<b><u>Hazardous Decomposition Products</u></b>	None
<b><u>Impact or Shock Sensitivity</u></b>	Not applicable
<b><u>Hazardous Polymerization</u></b>	Not applicable

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**SECTION 11: TOXICOLOGICAL INFORMATION**

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No toxicology information is available for the solid castings.

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**SECTION 12: ECOLOGICAL INFORMATION**

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No ecological information is available for the solid castings.

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**SECTION 13: DISPOSAL INFORMATION**

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Recover or recycle the castings if possible. Dispose using methods which are in accordance with local, state, and federal regulations.

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**SECTION 14: TRANSPORTATION INFORMATION**

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<u>US Dept. of Transportation</u>	Not regulated
<u>Canadian Transport Dangerous Goods (TDG)</u>	Not regulated
<u>Shipping Name</u>	Not regulated
<u>Hazard Class</u>	Not regulated
<u>UN/NA#</u>	Not regulated
<u>Shipping Labels Required</u>	No
<u>Packing Group</u>	Not regulated
<u>International Transportation Regulations</u>	Not applicable

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**SECTION 15: REGULATORY INFORMATION**

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<u>Occupational Health and Safety Administration</u>	Castings are considered to be article under the Hazard Communication Standard (1910.1200).
<u>EPA Toxic Substances Control Act (TSCA)</u>	All components of these products are on the TSCA inventory list or are excluded from listing
<u>EPA SARA Title III</u>	Castings are considered to be articles as manufactured by ESCO Corporation. Further processing (including, without limitation operations such as burning, welding, brazing, sawing, cutting, grinding and machining), manufacturing or otherwise use of the castings by the end user could subject the end user to the reporting requirements specified in Sections 311, 312 and 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (Title III of the Superfund Amendments and Reauthorization Act of 1986) and 40 CFR Parts 370 and 372.
<u>Canada-WHMIS (Workplace Hazardous Materials Information System)</u>	This MSDS contains the information required by the WHMIS regulation
<u>Canadian DSL Inventory Status</u>	All components are listed on the DSL Inventory
<u>Canadian Environmental Protection act (CEPA)</u>	The components of these products are not on the CEPA Priorities Substances Lists
<u>European Inventory of Commercial Hazardous Substances (EINECS)</u>	All components are on the EINECS list

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

**California Proposition 65 Compliance**      Warning: This product contains or may produce chemicals known to the State of California to cause cancer and birth defects (or other reproductive harm)

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**SECTION 16: OTHER INFORMATION**

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PREPARER:



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Environmental Affairs

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