

Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 10/26/2015

Reviewed on 10/26/2015

* 1 Identification

· **Product Identifier**

· **Trade name: Steel Foundry Products**

· **Relevant identified uses of the substance or mixture and uses advised against:**

Steel products or castings in their solid state are commonly classified as "articles" and do not constitute a hazardous chemical (in their solid form). However, operations such as burning, welding, brazing, sawing, cutting, grinding and machining can produce hazardous airborne metallic contaminants (as particulates or fumes). The major route of exposure is through inhalation of these particles or fumes.

· **Product Description** No further relevant information available.

· **Details of the Supplier of the Safety Data Sheet:**

· **Manufacturer/Supplier:**

ESCO CORPORATION
2141 N.W. 25th Avenue
Portland, OR 97210-2578
Telephone: (503) 228-2141

· **Emergency telephone number:** (503) 494-8616

2 Hazard(s) Identification

· **Classification of the substance or mixture:**



GHS08 Health hazard

Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Carc. 2 H351 Suspected of causing cancer.

STOT RE 1 H372 Causes damage to organs through prolonged or repeated exposure.



GHS07

Skin Irrit. 2 H315 Causes skin irritation.

Skin Sens. 1 H317 May cause an allergic skin reaction.

STOT SE 3 H335 May cause respiratory irritation.

Eye Irrit. 2B H320 Causes eye irritation.

· **Label elements:**

· **GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms:**



GHS07



GHS08

· **Signal word:** Danger

· **Hazard-determining components of labeling:**

Iron
Nickel
Cobalt

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- **Hazard statements:**

Causes skin and eye irritation.
 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
 May cause an allergic skin reaction.
 Suspected of causing cancer.
 May cause respiratory irritation.
 Causes damage to organs through prolonged or repeated exposure.

- **Precautionary statements:**

Do not breathe dust/fume/gas/mist/vapors/spray.
 In case of inadequate ventilation wear respiratory protection.
 Avoid breathing dust/fume/gas/mist/vapors/spray.
 Use only outdoors or in a well-ventilated area.
 Wear protective gloves.
 Wash thoroughly after handling.
 Do not eat, drink or smoke when using this product.
 Contaminated work clothing must not be allowed out of the workplace.
 Do not handle until all safety precautions have been read and understood.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 Specific treatment (see supplementary first aid instructions on this Safety Data Sheet).

IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 Call a POISON CENTER/doctor if you feel unwell.
 Wash contaminated clothing before reuse.
 If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.
 If exposed or concerned: Get medical advice/attention.
 If skin irritation occurs: Get medical advice/attention.
 If skin irritation or rash occurs: Get medical advice/attention.
 If eye irritation persists: Get medical advice/attention.
 Get medical advice/attention if you feel unwell.
 IF ON SKIN: Wash with plenty of water.
 Take off contaminated clothing and wash it before reuse.

Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Unknown acute toxicity:**

5.5 % of the mixture consists of component(s) of unknown toxicity.

- **Classification system:**

- **NFPA ratings (scale 0 - 4)**



- **HMS-ratings (scale 0 - 4)**

HEALTH	*2	Health = *2
FIRE	0	Fire = 0
REACTIVITY	0	Reactivity = 0

- **Hazard(s) not otherwise classified (HNOC):** None known

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Trade name: Steel Foundry Products*** 3 Composition/Information on Ingredients**

CAS: 7439-89-6 RTECS: NO 4565500	Iron ⚠ Flam. Sol. 2, H228; ⚠ Skin Irrit. 2, H315; STOT SE 3, H335; Eye Irrit. 2B, H320; Combustible Dust	70-99.1%
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- **Chemical characterization: Mixtures**
- **Description:** Mixture: consisting of the following components.

· Dangerous Components:

CAS: 7440-47-3 RTECS: GB 4200000	Chromium ⚠ Acute Tox. 4, H302; Acute Tox. 4, H312; Skin Irrit. 2, H315; Eye Irrit. 2B, H320	0-35%
CAS: 7440-02-0	Nickel ⚠ Carc. 2, H351; STOT RE 1, H372; ⚠ Skin Sens. 1, H317	0-30%
CAS: 7439-96-5 RTECS: OO 9275000	Manganese ⚠ Pyr. Sol. 1, H250; Water-react. 1, H260	0-30%
CAS: 7439-98-7 RTECS: QA 4680000	Molybdenum	0-15%
CAS: 7440-21-3	Silicon ⚠ Flam. Sol. 2, H228; ⚠ Acute Tox. 4, H302; Eye Irrit. 2B, H320	0.1-3%
CAS: 7429-90-5 RTECS: BD 0330000	Aluminium ⚠ Flam. Sol. 2, H228	0-3%
CAS: 7440-48-4 RTECS: GF 8750000	Cobalt ⚠ Resp. Sens. 1, H334; Carc. 2, H351; ⚠ Skin Sens. 1, H317; Aquatic Chronic 4, H413; Combustible Dust	0-4%
CAS: 7440-44-0 RTECS: FF 5250100	Carbon	0-3.5%

*** 4 First-Aid Measures**

- **Description of first aid measures:**
- **General information:**
Symptoms of poisoning may occur after exposure to dust, fumes or particulates; seek medical attention if feeling unwell.
- **After inhalation:**
If having difficulty breathing, move to fresh air and keep at rest in comfortable position for breathing. Obtain medical attention if breathing difficulty persists.
In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:**
Immediately wash with water and soap and rinse thoroughly.
If skin irritation occurs, consult a doctor.
- **After eye contact:**
Rinse opened eye for at least 15 minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing:** If swallowed and symptoms occur, consult a doctor.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed:** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed:**
No further relevant information available.

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* 5 Fire-Fighting Measures

- **Extinguishing media:**
- **Suitable extinguishing agents:**
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards arising from the substance or mixture:**
Fire Hazard: A noncombustible material, not considered flammable.
Explosion Hazard: Not explosive under normal conditions.
Reactivity Hazard: Hazardous reactions will not occur under normal conditions.
- **Advice for firefighters:**
- **Protective equipment:**
As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent) and full protective gear to prevent contact with skin and eyes.

* 6 Accidental Release Measures

- **Personal precautions, protective equipment and emergency procedures:** Not required.
- **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**
Contain and collect as any solid.
Dispose contaminated material as waste according to section 13.
Ensure adequate ventilation.
Dispose of the collected material according to regulations.
- **Reference to other sections:**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

* 7 Handling and Storage

- **Handling**
- **Precautions for safe handling:**
Ensure good ventilation/exhaustion at the workplace when burning, welding, brazing, sawing, cutting, grinding, and machining material.
Prevent formation of dust.
- **Information about protection against explosions and fires:** No special measures required.
- **Conditions for safe storage, including any incompatibilities:**
- **Storage**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** No further relevant information available..
- **Specific end use(s):** No further relevant information available.

* 8 Exposure Controls/Personal Protection

- **Additional information about design of technical systems:** No further data; see section 7.

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Trade name: Steel Foundry Products· **Control parameters:**· **Components with occupational exposure limits:**

7440-47-3 Chromium	
PEL	Long-term value: 1* 0.5** mg/m ³ *metal;**inorganic compds., as Cr
REL	Long-term value: 0.5* mg/m ³ *metal+inorg.compds.as Cr;See Pocket Guide App. C
TLV	Long-term value: 0.5 mg/m ³
7440-02-0 Nickel	
PEL	Long-term value: 1 mg/m ³
REL	Long-term value: 0.015 mg/m ³ as Ni; See Pocket Guide App. A
TLV	Long-term value: 1.5* mg/m ³ elemental, *inhalable fraction
7439-96-5 Manganese	
PEL	Ceiling limit value: 5 mg/m ³ as Mn
REL	Short-term value: 3 mg/m ³ Long-term value: 1 mg/m ³ fume, as Mn
TLV	Long-term value: 0.02* 0.1* mg/m ³ as Mn; *respirable **inhalable fraction
7439-98-7 Molybdenum	
PEL	Long-term value: 15* mg/m ³ *Total dust
TLV	Long-term value: 10* 3** mg/m ³ as Mo; *inhalable fraction ** respirable fraction
7440-21-3 Silicon	
PEL	Long-term value: 15* 5** mg/m ³ *total dust **respirable fraction
REL	Long-term value: 10* 5** mg/m ³ *total dust **respirable fraction
TLV	TLV withdrawn
7429-90-5 Aluminium	
PEL	Long-term value: 15*; 15** mg/m ³ *Total dust; ** Respirable fraction
REL	Long-term value: 10* 5** mg/m ³ as Al*Total dust**Respirable/pyro powd./welding f.
TLV	Long-term value: 1* mg/m ³ as Al; *as respirable fraction
7440-48-4 Cobalt	
PEL	Long-term value: 0.1* mg/m ³ as Co; *for metal dust and fume

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Trade name: Steel Foundry Products

REL	Long-term value: 0.05 mg/m ³ as Co; metal dust & fume
TLV	Long-term value: 0.02 mg/m ³ BEI
7440-44-0 Carbon	
PEL	Short-term value: 10 A mg/m ³ Long-term value: 5 A mg/m ³
· Ingredients with biological limit values:	
7440-48-4 Cobalt	
BEI	15 µg/L urine end of shift at end of workweek Cobalt (background)
	1 µg/L blood end of shift at end of workweek Cobalt (background, semi-quantitative)

· **Additional information:** The lists that were valid during the creation of this SDS were used as basis.

· **Exposure controls:**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing and wash before reuse.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

· **Breathing equipment:** Not required under normal use and handling.

· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Select glove material based on penetration times, rates of diffusion and degradation.

· **Material of gloves:**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application.

· **Eye protection:**



Tightly sealed goggles

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Trade name: Steel Foundry Products**9 Physical and Chemical Properties****· Information on basic physical and chemical properties****· General Information****· Appearance:**

Form:	Solid
Color:	Grey metal
Odor:	Odorless
Odor threshold:	Not determined.

· pH-value: Not applicable.

· Change in condition

Melting point/Melting range:	Not determined.
Boiling point/Boiling range:	3000 °C (5432 °F)

· Flash point: None

· Flammability (solid, gaseous): Not determined.

· Ignition temperature: Not determined

· Decomposition temperature: Not determined.

· Auto igniting: Product is not self-igniting.

· Danger of explosion: Product does not present an explosion hazard.

· Explosion limits:

Lower:	Not determined.
Upper:	Not determined.

· Vapor pressure: Not applicable.

· Density @ 20 °C (68 °F): 7.55 g/cm³ (63.005 lbs/gal)

· Relative density: Not determined.

· Vapor density: Not applicable.

· Evaporation rate: Not applicable.

· Solubility in / Miscibility with:

Water: Insoluble.

· Partition coefficient (n-octanol/water): Not determined.

· Viscosity:

Dynamic:	Not applicable.
Kinematic:	Not applicable.

· Solvent content:

Organic solvents: 0.0 %

Solids content: 100.0 %

· Other information: No further relevant information available.

10 Stability and Reactivity

· Reactivity: No further relevant information available.

· Chemical stability: Stable under normal conditions.

· Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.

· Possibility of hazardous reactions:

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- **Conditions to avoid:** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological Information

- **Information on toxicological effects:**
- **Acute toxicity:**

- **LD/LC50 values that are relevant for classification:**

7439-89-6 Iron		
Oral	LD50	7500 mg/kg (rat)
7439-96-5 Manganese		
Oral	LD50	9000 mg/kg (rat)
7439-98-7 Molybdenum		
Oral	LD50	>5000 mg/kg (rat)
Dermal	LD50	>2000 mg/kg (rat)
Inhalative	LC50/4 h	800 mg/l (Trout)
		>5.84 mg/l (rat)
7440-21-3 Silicon		
Oral	LD50	3160 mg/kg (rat)
7429-90-5 Aluminium		
Oral	LD50	>2000 mg/kg (rat)
Inhalative	LC50/4 h	888 mg/l (rat)
7440-48-4 Cobalt		
Oral	LD50	6170 mg/kg (rat)

- **Primary irritant effect:**
- **On the skin:**
Irritant to skin and mucous membranes.
May cause an allergic skin reaction.
- **On the eye:** Irritating effect.
- **Sensitization:**
Sensitization possible through inhalation.
Sensitization possible through skin contact.
- **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Harmful
Irritant

- **Carcinogenic categories:**

IARC (International Agency for Research on Cancer):		
7440-47-3	Chromium	3
7440-02-0	Nickel	1
7440-48-4	Cobalt	2B
NTP (National Toxicology Program):		
7440-02-0	Nickel	R

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Trade name: Steel Foundry Products**· OSHA-Ca (Occupational Safety & Health Administration):**

None of the ingredients are listed.

12 Ecological Information**· Toxicity:****· Aquatic toxicity:****7440-47-3 Chromium**

EC50 0.07 mg/l (Water flea)

7440-02-0 Nickel

EC50 1.0 mg/l (Water flea)

7439-96-5 Manganese

EC50 40 mg/l (Water flea)

· Persistence and degradability: No further relevant information available.**· Behavior in environmental systems:****· Bioaccumulative potential:** No further relevant information available.**· Mobility in soil:** No further relevant information available.**· Additional ecological information:****· General notes:**

Do not allow undiluted product or product that has not been neutralized to reach ground water, water course or sewage system.

· Results of PBT and vPvB assessment:**· PBT:** Not applicable.**· vPvB:** Not applicable.**· Other adverse effects:** No further relevant information available.*** 13 Disposal Considerations****· Waste treatment methods:****· Recommendation:**

Recycle or dispose of waste material in accordance with local, regional, national, and international regulations.

· Uncleaned packagings:**· Recommendation:** Disposal must be made according to official regulations.**14 Transport Information****· UN-Number:****· DOT, ADR, ADN, IMDG, IATA**

Non-Regulated Material

· UN proper shipping name:**· DOT, ADR, ADN, IMDG, IATA**

Non-Regulated Material

· Transport hazard class(es):**· DOT, ADR, ADN, IMDG, IATA****· Class:**

Non-Regulated Material

· Packing group:**· DOT, ADR, IMDG, IATA**

Non-Regulated Material

· Environmental hazards:

Not applicable.

· Special precautions for user:

Not applicable.

· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:

Not applicable.

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Trade name: Steel Foundry Products· **UN "Model Regulation":** Non-Regulated Material**15 Regulatory Information**

- **Safety, health and environmental regulations/legislation specific for the substance or mixture:**
- **SARA (Superfund Amendments and Reauthorization):**

· **Section 355 (extremely hazardous substances):**

None of the ingredients are listed.

· **Section 313 (Specific toxic chemical listings):**

7440-47-3 Chromium

7440-02-0 Nickel

7439-96-5 Manganese

7429-90-5 Aluminium

7440-48-4 Cobalt

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

· **California Proposition 65:**· **Chemicals known to cause cancer:**

7440-02-0 Nickel

7440-48-4 Cobalt

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.

· **Carcinogenic categories:**· **EPA (Environmental Protection Agency):**

7440-47-3 Chromium

D

7439-96-5 Manganese

D

· **TLV (Threshold Limit Value established by ACGIH):**

7440-47-3 Chromium

A4

7440-02-0 Nickel

A5

7439-98-7 Molybdenum

A3

7429-90-5 Aluminium

A4

7440-48-4 Cobalt

A3

· **NIOSH-Ca (National Institute for Occupational Safety and Health):**

7440-02-0 Nickel

· **GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

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Trade name: Steel Foundry Products**· Hazard pictograms:**

GHS07 GHS08

· Signal word: Danger**· Hazard-determining components of labeling:**

Iron
Nickel
Cobalt

· Hazard statements:

Causes skin and eye irritation.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
Suspected of causing cancer.
May cause respiratory irritation.
Causes damage to organs through prolonged or repeated exposure.

· Precautionary statements:

Do not breathe dust/fume/gas/mist/vapors/spray.
In case of inadequate ventilation wear respiratory protection.
Avoid breathing dust/fume/gas/mist/vapors/spray.
Use only outdoors or in a well-ventilated area.
Wear protective gloves.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing must not be allowed out of the workplace.
Do not handle until all safety precautions have been read and understood.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Specific treatment (see supplementary first aid instructions on this Safety Data Sheet).

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Call a POISON CENTER/doctor if you feel unwell.

Wash contaminated clothing before reuse.

If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.

If exposed or concerned: Get medical advice/attention.

If skin irritation occurs: Get medical advice/attention.

If skin irritation or rash occurs: Get medical advice/attention.

If eye irritation persists: Get medical advice/attention.

Get medical advice/attention if you feel unwell.

IF ON SKIN: Wash with plenty of water.

Take off contaminated clothing and wash it before reuse.

Dispose of contents/container in accordance with local/regional/national/international regulations.

· National regulations:

The product is subject to be classified according with the latest version of the regulations on hazardous substances.

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Trade name: Steel Foundry Products

· State Right to Know:		
CAS: 7439-89-6 RTECS: NO 4565500	Iron ⚠ Flam. Sol. 2, H228; ⚠ Skin Irrit. 2, H315; STOT SE 3, H335; Eye Irrit. 2B, H320; Combustible Dust	70-99.1%
CAS: 7440-47-3 RTECS: GB 4200000	Chromium ⚠ Acute Tox. 4, H302; Acute Tox. 4, H312; Skin Irrit. 2, H315; Eye Irrit. 2B, H320	0-35%
CAS: 7440-02-0	Nickel ⚠ Carc. 2, H351; STOT RE 1, H372; ⚠ Skin Sens. 1, H317	0-30%
CAS: 7439-96-5 RTECS: OO 9275000	Manganese ⚠ Pyr. Sol. 1, H250; Water-react. 1, H260	0-30%
CAS: 7439-98-7 RTECS: QA 4680000	Molybdenum	0-15%
CAS: 7440-21-3	Silicon ⚠ Flam. Sol. 2, H228; ⚠ Acute Tox. 4, H302; Eye Irrit. 2B, H320	0.1-3%
All ingredients are listed.		

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other Information

The information and recommendations in this safety data sheet are, to the best of our knowledge, accurate as of the date of issue. Nothing herein shall be deemed to create warranty, expressed or implied, and shall not establish a legally valid contractual relationship. It is the responsibility of the user to determine applicability of this information and the suitability of the material or product for any particular purpose.

· **Date of preparation / last revision:** 10/26/2015 / -

· **Abbreviations and acronyms:**

ADR: The European Agreement concerning the International Carriage of Dangerous Goods by Road
 ADN: The European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
 IMDG: International Maritime Code for Dangerous Goods
 DOT: US Department of Transportation
 IATA: International Air Transport Association
 ACGIH: American Conference of Governmental Industrial Hygienists
 EINECS: European Inventory of Existing Commercial Chemical Substances
 ELINCS: European List of Notified Chemical Substances
 CAS: Chemical Abstracts Service (division of the American Chemical Society)
 NFPA: National Fire Protection Association (USA)
 HMIS: Hazardous Materials Identification System (USA)
 LC50: Lethal concentration, 50 percent
 LD50: Lethal dose, 50 percent
 PBT: Persistent, Bioaccumulative and Toxic
 vPvB: very Persistent and very Bioaccumulative
 Flam. Sol. 2: Flammable solids, Hazard Category 2
 Pyr. Sol. 1: Pyrophoric Solids, Hazard Category 1
 Water-react. 1: Substances and Mixtures which, in contact with water, emit flammable gases, Hazard Category 1

Acute Tox. 4: Acute toxicity, Hazard Category 4
 Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
 Eye Irrit. 2B: Serious eye damage/eye irritation, Hazard Category 2B
 Resp. Sens. 1: Sensitisation - Respirat., Hazard Category 1
 Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
 Carc. 2: Carcinogenicity, Hazard Category 2
 STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
 STOT RE 1: Specific target organ toxicity - Repeated exposure, Hazard Category 1
 Aquatic Chronic 4: Hazardous to the aquatic environment - Chronic Hazard, Category 4

· *** Data compared to the previous version altered.**

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