

### 1. Identification :

Product identifier	Carbon or Alloy, Ground Engaging Tools
Other means of identification	Forged and Cast Products, HL-MSDS-001.
Synonyms	Steel
Recommended use	Earth Excavation.
Recommended restrictions	None known.
Document & Issue date	HL-MSDS-001, May 15, 2017
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### 2. Hazard(s) identification :

Physical hazards	Not classified.
Health hazards	Not classified.
OSHA defined hazards	Not classified.
Hazard symbol	None
Signal word	None
Hazard statement	None
Precautionary statement	
Prevention	Avoid creating dust.
Response	Wash skin with soap and water.
Storage	Store away from incompatible materials.
Disposal	Dispose of waste and residues in accordance with local authority requirements.
Hazard(s) not classified (HNOC)	None
Supplemental information	Manufactured and shipping state; this product is considered non-hazardous. Processing may generate hazardous fumes and dusts. Welding, cutting and metalizing can generate ozone. Ozone can cause irritation of eyes, nose and respiratory tract.

### 3. Composition/information on ingredients :

Chemical name	CAS number	Percent (%)
Carbon	7440-44-0	0.01-1.10
Chromium	7440-47-3	0.01-13.00
Copper	7440-50-8	0.04-0.7
Manganese	7439-96-5	0.25-2.0
Molybdenum	7439-98-7	0.01-1.10
Nickel	7440-02-0	0.01-3.80
Phosphorous	7723-14-0	.035 Max
Silicon	7440-21-3	0.15-2.20
Sulfur	7704-34-9	0.001-0.15
Tungsten	7440-33-7	0.00-0.18
Vanadium	7440-62-2	0.01-.50

The product is an alloy. Other alloys and trace elements may be present, depending on the product, in quantities generally less than 0.5%. These elements may include Boron, Calcium, Niobium, Nitrogen, Titanium, Aluminum, Tin, Zinc, Bismuth, Beryllium, Selenium.

#### 4. First-aid measures :

Inhalation	In case of inhalation of fumes from welding product: Move into fresh air and keep at rest. Get medical attention if symptoms persist. If breathing is difficult, give oxygen. If breathing stops, provide artificial respiration.
Skin contact	Wash skin with soap and water. In case of burns with hot metal, rinse with plenty of cold water. If burns are severe, consult a physician. If skin irritation or an allergic skin reaction develops, get medical attention.
Eye contact	Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. Get medical attention promptly if symptoms persist or occur after washing.
Ingestion	Solid steel: Not applicable. Dust: Get medical attention if any discomfort continues.
Most important Symptoms/effects, acute and delayed	Exposed individuals may experience tearing, redness, and discomfort. High concentrations of freshly formed fumes/dusts of metal oxides can produce symptoms of metal fume fever. Typical symptoms last 12 to 48 hours and are characterized by metallic taste in the mouth, dryness, and irritation of the throat, followed by weakness, muscle pain, fever, and chills.

#### 5. Fire-fighting measures :

Suitable extinguishing media	None known
Unsuitable extinguishing media	None known
Specific hazards from the chemical	At temperatures above the melting point, may liberate fumes of nickel, and zinc oxide.
Special protective equipment	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire-fighting equipment/instructions	Use standard firefighting procedures and consider the hazards of other involved materials.

#### 6. Accidental release measures :

Personal precautions, protective equipment and emergency procedures	Cold solid metal: No special precautions are necessary beyond normal good hygiene practices.  Section 8 of the SDS for additional personal protection advice when handling this product hot. Heated metal: Avoid contact with hot material. Wear protective clothing as described in Section 8 of this safety data sheet.
Methods and materials for containment and cleaning up	In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.
Collect for recycling. Environmental precautions	No specific precautions.

## 7. Handling and storage :

Precautions for safe handling	Avoid contact with sharp edges and hot surfaces. Use appropriate gloves and tools to ensure safe handling. Use work methods which minimize dust/fume production. Do not breathe fumes and dusts. Follow the recommendations in ANSI Z49.1, Safety in welding and cutting (ANSI=American National Standard Institute).
Conditions for safe storage, including any incompatibilities	Store in a dry place. Store away from: Acids.

## 8. Exposure controls/personal protection :

Occupational exposure limits US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)		
Chemical name	CAS number	OSHA/ACGIH
Iron	7439-89-6	
Chromium	7440-47-3	1.0/0.5
Manganese	7439-96-5	5.0/0.1
Nickel	7440-02-0	1.0/1.5
Silicon	7440-21-3	5.0/10.0
Copper	7440-50-8	1.0/1.0
Carbon black	1333-86-4	3.5/3.0
Antimony	7440-36-0	0.5/0.5
Arsenic	7440-38-2	0.01/0.01
Cobalt	7440-48-4	0.01/0.02
Lead	7439-92-1	0.05/0.05
Appropriate engineering controls	Adequate ventilation should be provided so that exposure limits are not exceeded. Use local exhaust when welding, burning, sawing, brazing, grinding or machining to prevent excessive dust or fume exposure.	
Individual protection measures		
Eye/face protection	Risk of contact: Wear approved safety goggles. Use of safety glasses or goggles is required for welding, burning, sawing, brazing, grinding or machining operations.	
Hand protection	Wear protective gloves. Risk of contact: Wear suitable protective clothing.	
Respiratory protection	Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.	
Thermal hazards	When material is heated, wear gloves to protect against thermal burns. Thermally protective apron and long sleeves are recommended when volume of hot material is significant.	
General hygiene	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Observe any medical surveillance requirements.	

## 9. Physical and chemical properties :

Appearance	Massive, solid metal.
Physical state	Solid.
Form	Solid.
Color	Metallic gray.
Odor	None.
Odor threshold	Not applicable.
pH	Not applicable.

Melting point	2750 °F (1510 °C)
Initial boiling point and boiling range	Not applicable.
Flash point	Not applicable.
Evaporation rate	Not applicable.
Flammability (solid, gas)	Not applicable.
Flammability limit - lower (%)	Not applicable.
Flammability limit - upper (%)	Not applicable.
Explosive limit - lower (%)	Not applicable.
Explosive limit - upper (%)	Not applicable.
Vapor pressure	Not applicable.
Vapor density	Not applicable.
Relative density	Not applicable.
Solubility(ies)	Insoluble
Partition coefficient (n-octanol/water)	Not applicable.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not applicable.
Viscosity	Not applicable.
Other information	Not applicable.
Solubility (other)	Not applicable.

## 10. Stability and reactivity :

Reactivity	Stable at normal conditions.
Chemical stability	This product is stable under expected conditions of use.
Possibility of hazardous reactions	Will not occur.
Conditions to avoid	Contact with incompatible materials. Contact with acids will release flammable hydrogen gas.
Incompatible materials	Strong acids. Oxidizing agents.
Hazardous decomposition	At temperatures above the melting point, may liberate fumes containing oxides of Iron and alloying elements.

## 11. Toxicological information :

*Information on likely routes of exposure*

Ingestion	Solid steel: Not relevant, due to the form of the product. However, ingestion of dusts generated during working operations may cause nausea and vomiting.
Inhalation	No inhalation hazard under normal conditions. Welding, burning, sawing, brazing, grinding or machining operations may generate fumes and dusts of metal oxides.
Skin contact	Under normal conditions of intended use, this material does not pose a risk to health. Dust may irritate skin. Contact with hot material can cause thermal burns which may result in permanent damage.
Eye contact	Under normal conditions of intended use, this material does not pose a risk to health. Contact with hot material can cause thermal burns which may result in permanent damage. Grinding and sanding this product may generate dust. Dust may irritate the eyes.
Symptoms related to the physical, chemical & toxicological characteristics	Exposed individuals may experience eye tearing, redness, and discomfort. High concentrations of freshly formed fumes/dusts of metal oxides can produce symptoms of metal fume fever. Typical symptoms last 12 to 48 hours and are characterized by metallic taste in the mouth, dryness, and irritation of the throat, followed by weakness, muscle pain, fever, and chills.

Acute toxicity Components	Processing may generate hazardous fumes and dusts. Welding, cutting and metalizing can generate ozone. Ozone can cause irritation of eyes, nose and respiratory tract.
Skin corrosion/irritation	Dust may irritate skin.
Serious eye damage/eye irritation	Dust may irritate the eyes.
Respiratory sensitization	Not relevant, due to the form of the product. Contains nickel: May cause allergy or asthma symptoms or breathing difficulties if inhaled. This ingredient is bound within the product and release is not expected under normal condition.
Skin sensitization	Contains nickel: May cause an allergic skin reaction.
Germ cell mutagenicity	Not relevant, due to the form of the product.
Carcinogenicity	Not relevant, due to the form of the product. Inhalation of carbon black dust may cause cancer, however due to the physical form of the product inhalation of dust is not relevant. Nickel and Nickel Compounds, Lead and Lead Compound, and certain Chromium Compounds (e.g., hexavalent chromium) are considered known or possible carcinogens. This ingredient is bound within the product and release is not expected under normal condition.
<i>IARC Monographs. Overall Evaluation of Carcinogenicity</i>	
Arsenic (CAS 7440-38-2)	1 Carcinogenic to humans.
Carbon black (CAS 1333-86-4)	2B Possibly carcinogenic to humans.
Chromium (CAS 7440-47-3) 3	Not classifiable as to carcinogenicity to humans.
Cobalt (CAS 7440-48-4)	2B Possibly carcinogenic to humans.
Lead (CAS 7439-92-1)	2B Possibly carcinogenic to humans.
Nickel (CAS 7440-02-0)	2B Possibly carcinogenic to humans.
<i>US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)</i>	
Arsenic (CAS 7440-38-2)	Cancer
Reproductive toxicity	Not relevant, due to the form of the product.
Specific target organ toxicity – single exposure	No data available.
Specific target organ toxicity – repeated exposure	Not relevant, due to the form of the product. Contains Manganese: Causes damage to organs (lung) through prolonged or repeated exposure by inhalation. This ingredient is bound within the product and release is not expected under normal condition.
Aspiration hazard	Due to the physical form of the product it is not an aspiration hazard.
Chronic effects	Chronic inhalation of high concentrations of iron oxide fumes or dust may lead to benign pneumoconiosis. Repeated overexposure to lead, arsenic, and nickel can increase the risk of developing cancer. Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases. Exposure to manganese fume/dust can affect the central nervous system (apathy, drowsiness, weakness and other chronic symptoms such as postural tremors). The ingredients of the alloy are bound within the product and release is not expected under normal conditions.

## 12. Ecological information :

Eco toxicity	The environmental hazard of the product is considered to be limited.
Persistence and degradability	No data available.
Bio accumulative potential	No data available on bioaccumulation.
Mobility in soil	Not relevant, due to the form of the product.
Other adverse effects	None known.

## 13. Disposal considerations :

Disposal instructions	Dispose waste and residues in accordance with applicable federal, state, and local regulations.
Hazardous waste code	Not regulated.
Waste from residues of product	Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal. Recover and recycle, if practical.
Contaminated packaging	Emptied containers may retain product residue, follow label warnings.

## 14. Transport information :

DOT	Not regulated as a hazardous material by DOT.
IATA	Not regulated as a dangerous good.
IMDG	Not regulated as a dangerous good.

## 15. Regulatory information :

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)  
Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA) Hazard categories

Immediate Hazard – No      Delayed Hazard – Yes      Reactivity Hazard - No

Pressure Hazard – No      Fire Hazard - No

SARA 302 Extremely hazardous substance – NO

SARA 311/312 Hazardous chemical - Only if fume or dust emitted or released from a manufactured solid that is being modified

SARA 313 (TRI reporting)      YES - for toxic components

Toxic Substances Control Act (TSCA) Inventory      YES - for toxic components

## 16. Other information :

NFPA Rating and Symbol:

