

SAFETY DATA SHEET

Date Prepared: 12/24/2014

Last Revision: 00/00/0000

Date Printed: 12/29/2014

1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION
MATERIAL IDENTITY:

 Cast Iron Bar Stock
 Product Identification Numbers: 4512, 4512HR, 5008,
 4018, 5506, 6003, 7002, 700, G1, G1A, G2, G2P, G25
 and all subcategory numbers

INFORMATION TELEPHONE:

INFORMATION: (815) 338-7800

EMERGENCY TELEPHONE:

EMERGENCY: (815) 338-7800

COMPANY:

 Dura-Bar
 1800 W. Lake Shore Dr.
 Woodstock, IL 60098

Trade Name: Common Name of Synonyms: Ductile Irons and Gray Irons

Chemical Name: Iron

Form: Continuous Cast Bar

2. HAZARDS IDENTIFICATION

General Hazard Statement: Cast iron products in their natural state do not present inhalation, ingestion or contact hazards. However, dust or fumes from machining, cutting, grinding, welding, brazing, flame cutting and arc gouging will release contaminants into the air, with inhalation as the primary route of entry. Since the castings are primarily iron, the dust and fume generated from the working of these castings will be primarily iron or iron oxide. Flame cutting, arc gouging or welding on these castings may convert a fraction of the chromium to a water insoluble hexavalent (Carcinogenic) form. However, the chromium content of these castings is very low.

EMERGENCY OVERVIEW REPRESENTS HAZARDOUS COMPONENTS THAT CAN BE RELEASED DURING PROCESSING.
OSHA HAZARDOUS

Target Organ

Eye

Skin

Respiratory

Kidney, Respiratory, Skin

Target Organ Effect:

Irritant

Irritant/Sensitizer

Irritant/Sensitizer

Target Organ Effect

GHS LABEL ELEMENTS, INCLUDING PRECAUTIONARY STATEMENTS

Health		Environmental	Physical
Acute Toxicity, Oral	Category 2	Acute Aquatic Toxicity Category 1	Not Classified
Skin Irritant	Category 2	Chronic Aquatic Toxicity Category 1	
Serious Eye Irritant	Category 2B		
Respiratory Sensitization	Category 1		
Carcinogenicity	Category 2		
Reproductive	Category 1B		
Target Organ Toxicity (kidney, respiratory, skin)	Category 1		

Pictogram:



Signal Word

Danger

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Hazard Statements		Precautionary Statements	
H303	Maybe harmful if swallowed	P281	Wear protective gloves/protective clothing/eye protection/face protection
H315	Causes skin irritation	P260	Do not breath dust/fume/gas/mist/vapors/spray
H320	Causes eye irritation	P285	In case of inadequate ventilation wear respiratory protection
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled	P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
H317	May cause an allergic skin reaction	P273	Avoid release to the environment
H341	Suspected of genetic defects		
H351	Suspected of causing cancer		
H370	Causes damage to organs (kidneys, respiratory)		
H401	Toxic to Aquatic Life		

Potential Health Effects of Acute Exposure

Inhalation Inhalation of high concentrations of metal dust or fume for short periods of time can cause irritation to the eyes, nose and throat. Metal fume fever can also occur, with symptoms of metallic taste, dryness of the mouth, throat irritation and chills and fever, which usually lasts for 12 to 48 hours.

Potential Health Effects of Chronic Exposure by Principle Elements

Carbon: Prolonged and repeated over-exposure (Inhalation) may lead to benign pneumoconiosis.

Chromium: In some workers, chromium compounds act as allergens and may cause dermatitis and may also produce pulmonary sensitization. Chromium and chromium compounds have been identified as carcinogenic substances.

Copper: Fumes may cause metal fume fever, with flu-like symptoms and hair and skin discoloration. Keratinization of the hands and feet has been reported. Systemically, dust and fume cause irritation of the upper respiratory tract, metallic taste and nausea.

Iron: Iron oxide dust or fumes may cause benign pneumoconiosis (siderosis). This disease may make x-ray diagnosis of other lung conditions difficult or impossible, but causes little or no disability.

Manganese: Chronic manganese poisoning may result from inhalation of dust and fume. The central nervous system is the chief site of injury. This is not a fatal disease, although it is extremely disabling. Some persons may be hypersusceptible to manganese. Freshly formed manganese fume has caused fever and chills, similar to metal fume fever.

Nickel: The most common ailment arising from contact with nickel or its compounds is an allergenic dermatitis known as "nickel itch", which occurs usually when the skin is moist. Generally, nickel and most salts of nickel do not cause systemic poisoning, but nickel and some nickel compounds have been identified as suspected carcinogens.

Silicon: Accumulation in lungs can cause benign pneumoconiosis, but is not considered to be responsible for pulmonary functional impairment or respiratory symptoms.

Molybdenum: Particulate affects the eyes and respiratory system and may also damage the liver and kidneys.

Tin: Prolonged or repeated skin contact may cause dermatitis. Chronic exposure to tin oxide dusts and fume may result in stannosis (benign pneumoconiosis)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization:

Ingredient(s)	CAS Number	% (by weight)
Base Metal		
Iron (Fe)	7439-89-6	Remainder
Principle Alloying Elements		
Carbon (C)	7440-44-0	2.5-4.3
Chromium (Cr)	7440-47-3	0.01-2.0
Copper (Cu)	7440-50-8	0.01-1.5
Manganese (Mn)	7439-96-5	0.01-2.0
Nickel (Ni)	7440-02-0	0.01-3.0
Molybdenum (Mo)	7439-98-7	0.01-0.5
Silicon (Si)	7440-21-3	1.0-4.0

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Tin (Sn)	7440-31-5	0.01-0.30
Titanium (Ti)	7440-32-6	0.01-0.50
Note: The above listing is a summary of the principle elements. Various grades of iron will contain varying amounts or combinations of these elements. Other elements may also be present in minute amounts.		

4. FIRST AID MEASURES

Cast iron in the final manufactured state does not present inhalation, ingestion, or contact hazards. The following recommendations are for overexposure to dust or fumes generated by machining, grinding, welding or thermal cutting of castings.

Eyes Contact: Exposure to high concentrations of metal dust and fume can cause irritation to the eyes. Immediately flush eyes gently with large amounts of water for at least 15 minutes. Retract eyelids often. Check for and remove any contact lenses. Get medical aid.

Skin Contact: Dust may cause irritation. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists. Wash clothing before reuse.

Ingestion: Not expected to occur. If significant amounts of metal are ingested, seek medical attention.

Inhalation: Inhalation of fume or dust from machining, cutting, grinding, welding, brazing and flame cutting is the primary route of exposure. Exposure to fume and particulate may produce irritation of the eyes and respiratory system. Inhalation of high concentrations of freshly formed oxides of the metals iron, manganese or copper may cause metal fume fever characterized by metallic taste in the mouth, dryness and irritation of the throat and influenza-like symptoms. This material may contain trace concentrations of nickel, chromium that may be released during processing. Nickel and chromium compounds have been identified as carcinogenic substances. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Carcinogenicity: This material may contain trace concentrations of components that have been listed as carcinogens by ACGIH, IARC, NTP or CA Prop 65 including nickel and chromium.

5. FIRE FIGHTING MEASURES

Conditions of Flammability

These castings will not burn or explode. However, metal working dusts present a moderate fire and explosion hazard, when exposed to heat, flames, chemical reaction or in contact with powder oxidizers. To extinguish, use mixtures of dry chemical or sand. Fire fighters should wear self-contained breathing apparatus and protective clothing.

Suitable extinguishing media

Use Class D agent to extinguish a particulate fire, of small chips and fines. DO NOT use halogenated extinguishing media. DO NOT use water on fires involving ignited particulate or molten metal. These extinguishing agents may react with burning metal resulting in an explosion.

Hazardous Decomposition Products

Hot processes such as welding and burning may generate metal fumes. Mechanical action, grinding, cutting, machining may generate metal fumes and dust leading to a release of irritating gases and vapors (See Section 10). In the event of fire and/or explosion do not breath fumes. May cause sensitization by inhalation and skin contact.

Fire Fighting Instructions

Do not enter fire area without proper protection. Wear self contained breathing apparatus (pressure-demand MSHA/NIOSH) approved or equivalent. See Section 10 - decomposition products possible. Fight fire from safe distance/protected location. To extinguish, use mixtures of dry chemical or sand.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Cast iron in formed state is not expected to pose a hazard. For fumes and dusts follow exposure controls in Section 8.

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Environmental Precautions

Cast iron in formed state is not expected to pose a release hazard.

Methods and Materials for Containment and Cleaning Up

Avoid dust formation. Collect scrap for recycling. If product is molten contain the flow using dry sand or salt flux as a dam. Allow spill to cool before remelting as scrap.

See section 1 for emergency contact information and section 13 for waste disposal.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with skin and eyes. Avoid contact with sharp edges or heated material.

Conditions for Safe Storage

Store away from chemicals or oxidizers.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

HAZARDOUS COMPONENT	OSHA PEL		ACGIH TLV		Other
Iron (Fe) 7439-89-6	10 mg/m ³	fume	5 mg/m ³	fume	
Carbon (C) 7440-44-0	N/E		N/E		
Chromium (Cr) 7440-47-3	0.5 mg/m ³		0.5 mg/m ³		
Copper (Cu) 7440-50-8	0.1 mg/m ³ 1 mg/m ³	fume dust	0.2 mg/m ³ 1 mg/m ³	fume dust	
Manganese (Mn) 4739-96-5	5 mg/m ³	ceiling	0.2 mg/m ³	fume	
Nickel (Ni) 7440-02-0	1 mg/m ³		0.1 mg/m ³	fume	
Molybdenum (Mo) 7439-98-7	15 mg/m ³		10 mg/m ³		
Silicon (Si) 7440-21-3	5 mg/m ³		5 mg/m ³	dust	
Tin (Sn) 7440-31-5	2 mg/m ³	metal oxide	2 mg/m ³	metal oxide	
Titanium (Ti) 7440-32-6	N/E		N/E		
N/E means none established					

Engineering Controls

Ductile and gray iron casting in their final manufactured state do not present inhalation, ingestion, or contact hazards. However, operations such as welding, burning, flame or laser cutting, brazing, grinding, sanding or sawing may release fume and other particulate, which should be captured with adequate local exhaust ventilation such as a fume extractor or vented down draft table. Evaluate jobs done on this product and meet requirements of all OSHA and environmental standards.

Respiratory Protections

No respiratory protection is needed unless processing releases fume or particulate. Where exposures cannot be adequately controlled through exhaust ventilation provide respiratory protection in accordance with OSHA and NIOSH recommendations. A NIOSH approved respirator should be used when cutting, grinding, welding or burning if a PEL or TLV is exceeded.

Eye Protection

Goggles or safety glasses with side shields and face shields should be used for protection against flying particulate and fume during processing of cast iron products. Provide appropriate welding helmet with eye protection during welding.

Skin and Body Protection

Protective clothing including long sleeves and long pants are recommended for protection during processing. Sturdy cut-resistant gloves should be worn when handling solid materials. Provide welding gloves, aprons or jackets, and other skin protection when welding, cutting, brazing or banding.

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Other hygienic practices

Hands and face should be washed before eating or smoking. Fume and other particulate should be removed from clothing by HEPA vacuuming. Compressed air MUST NOT be used for particulate removal. Contaminated clothing should not be worn off the job site.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Form	Solid
Color	Grey or grey black
pH	Not applicable
Melting/Freezing Temperature	> 2,750 °F for iron
Boiling Point	Nonflammable
Flash Point	Nonflammable
Ignition Temperature	Not applicable
Autoignition Temperature	Not applicable
Lower explosive limit: Not applicable	Upper explosive limit: Not applicable
Vapor Pressure	Not applicable
Vapor Density (air=1)	Not applicable
Specific Gravity (water=1 @39.2F)	7.86 for iron
Evaporation Rate (Bac=1)	Not applicable
Solubility	Not applicable
Odor	Odorless
Odor threshold	Not applicable
Percent Volatile	Not applicable

10. STABILITY AND REACTIVITY

Chemical Stability

Stable

Possibility of Hazardous Reactions

Will not occur

Conditions to Avoid

Metal working dusts present a moderate fire and explosion hazard, when exposed to heat, flames, chemical reaction or in contact with powder oxidizers. May cause violent decomposition of hydrogen peroxide (52% by weight or greater).

Materials to Avoid

Chemicals and oxidizers

Hazardous Decomposition Products

Hazardous decomposition products can include hazardous metallic dust (particulate) and fume may be generated from welding, brazing, cutting, burning, grinding, sanding, sawing and machining.

Toxic metal oxides and carbon and nitrogen oxides may be produced during a fire involving metal alloys. Alloys with nickel may also produce poisonous nickel carbonyl.

11. TOXICOLOGY INFORMATION

Toxicity Data

Cast iron in a solid state does not present a toxicity hazard. The following represents toxicity of components if released as a fume or dust.

Acute Toxicity

Iron	(7439-89-6)	Oral LD50	Rat	984 mg/kg
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Carbon	(7440-44-0)	Oral LD50	Rat	> 1,000 mg/kg
Silicon	(7440-21-3)	Oral LD50	Rat	3,160 mg/kg
Manganese	(7439-96-5)	Oral LD50	Rat	9 g/kg
Nickel	(7440-02-0)	Oral LD50	Rat	9,000 mg/kg
Chromium	(7440-47-3)	Oral LD50	Rat	80 mg/kg
Molybdenum	(7439-98-7)	Oral LD50	Rat	4,233mg/kg

Skin Irritation/Sensitizer

Skin (fume and dust) Irritant/Sensitizer May cause allergic reaction.

Serious Eye Irritation

Eye (fume and dust) Irritant

Respiratory

Respiratory (fume and dust) Irritant/Sensitizer Inhalation may cause metal fume fever see section 4.

Mutagenicity

Some components are suspected of causing genetic defects.

Carcinogenicity

This material may contains trace concentrations of components that have been listed as carcinogens by ACGIH, IARC, NTP or CA Prop 65 including nickel and chromium.

12. ECOLOGICAL INFORMATION

Cast iron in a solid state does not present an ecological hazard. The following represents toxicity of components if released as a fume or dust.

Aquatic Ecotoxicity

Iron	(7439-89-6)	96 hr Semi static LC50	Fish	> 0.56 mg/l
Nickel	(7440-02-0)	96 hour LC50	Fish	0.4 mg/l
		96 Semi static LC50	Fish	1.3 mg/l
Copper	(7440-50-8)	96 hr LC50	Fish	0.0068 - 0.0156 mg/l
Molybdenum	(7439-98-7)	96 hr LC50	Fish	609 mg/l

Biodegradability

Persistent. Not readily biodegradable - Metal powders may cause ecological damage through silting or sediment effects.

Mobility in soil

Metal powder is immobile in soils but may be transported with ground water.

13. DISPOSAL CONSIDERATIONS

Waste Disposal

When recycled cast iron is not regulated. When disposed it is not a RCRA (Resource Conservation and Recovery Act) hazardous waste. Dispose of per local, state and federal requirements.

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14. TRANSPORTATION INFORMATION

DOT (US)

Cast iron products in their final manufactured state are not a U.S. Department of Transportation (DOT) regulated hazardous material requiring labeling or a placard.

IMDG

Not Regulated

TDG

Not Regulated

15. REGULATORY INFORMATION

TSCA INVENTORY STATUS

TSCA: All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory.

OSHA HAZARDS

Solid cast iron products are classified as "articles and do not constitute an OSHA hazardous material in a solid form.

OSHA Standards for General Industry (29 CFR 1910), Shipyard Standard (29 CFR 1915), and Construction Standards (29 CFR 1926) apply to processing of cast iron products

	HMIS Classification	NFPA Rating
Health Hazard;	0	0
Flammability	0	0
Physical Hazards	0	0

SARA TITLE III: Section 311/312 Hazard Class

Solid metallic products are classified as "articles and are not subject to Section 311 and Section 312.

SARA TITLE III: Section 313 (40CFR370)

This product contains the following materials at or above the de minimus concentrations that may be subject to SARA Section 313 Reporting: chromium, copper, manganese, nickel.

CERCLA Information (40CFR302.4)

This material contains chromium, copper and nickel at or above the de minimus concentrations as defined by CERCLA or SARA Title III.

Clean Air Act

Manganese, Nickel, Chromium

CLEAN WATER ACT

Chromium, copper, nickel

California Proposition 65 Information:

This material may contains trace concentrations of components that have been listed as carcinogens by ACGIH, IARC, NTP or CA Prop 65 including nickel and chromium.

16. OTHER INFORMATION

Some of the information presented and conclusions drawn herein are from sources other than direct test data on the product itself. The information in this SDS was obtained from sources, which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected

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with the handling, storage, use or disposal of the product. This SDS was prepared and is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable. This SDS has been prepared in accordance with the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200).