

## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<b>Product Identifier</b>  Gray Iron Casting		<b>HMIS Hazard Index</b>  4 Severe Hazard 3 Serious Hazard 2 Moderate Hazard 1 Slight Hazard 0 Minimal Hazard		<div><div>HEALTH</div><div>FLAMMABILITY</div><div>REACTIVITY</div><div>PERSONAL PROTECTION</div></div> <div><div>1*</div><div>0</div><div>0</div><div>E</div></div>	
<b>Supplier</b> Bibby Ste-Croix 6200, rue Principale Sainte-Croix, Québec G0S 2H0 Emergency telephone: (418)926-3262 Monday - Friday, 7:00 - 16:00 Eastern Time		<b>WHMIS Classification:</b> Not controlled (manufactured article)  <			

WHMIS Classification: **Not controlled (manufactured article)**

\*Refer to Section 11 "Effects of Chronic Exposure to Material"

## Section 2 - COMPOSITION, INFORMATION ON INGREDIENTS

Ingredients	Percentage (by weight)	CAS Numbers	LD50 (species and route)	LC50 (species and route)
Iron <sup>1</sup>	88.0 – 94.0	7439-89-6	(orl-rat) 30g/kg	Not available
Carbon <sup>2</sup>	2.6 – 3.4	7440-44-0	(int-mus) 440mg/kg	Not available
Silicium <sup>3</sup>	1.8 – 2.4	7440-21-3	(orl-rat) 3160mg/kg	Not available
Manganese <sup>4</sup>	<0.8	7439-96-5	(orl-rat) 9g/kg	Not available
Nickel <sup>5</sup>	<0.15	7440-02-0	(orl-rat) >9g/kg	Not available
Chromium <sup>6</sup>	<0.10	7440-47-3	Not available	Not available

### Notes:

(1) RTECS Number: NO4565500 (3) RTECS Number: VW0400000 (5) RTECS Number: QR5950000  
(2) RTECS Number: FF5250100 (4) RTECS Number: OO9275000 (6) RTECS Number: GB4200000

Refer to Section 8 for exposure guidelines.

## Section 3 - HAZARDS IDENTIFICATION

### Emergency Overview

Grey metal castings.

In normal conditions, there are no chemical hazards from these castings in solid form. Operations such as machining, grinding or welding on the casting may pose acute or chronic health effects through the release of hazardous products. Contains material which can cause, if absorbed, cancer in animals. Risk of cancer depends on duration and level of exposure.

Do not breath dust or fumes. Dust may be irritating to respiratory tract, skin and eyes. Dust may form flammable or explosive dust-air mixtures. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Use only with adequate ventilation.

**Potential health effects**

**Principal routes of entry:** Inhalation. Eye and skin contact. Ingestion.

**Eyes:** Metal particles and ultraviolet radiation from welding operations may cause irritation. Additional effects may include glaucoma. Metallic iron foreign bodies in cornea may produce "rust ring" characterized by yellow-brown staining.

**Skin:** May cause irritation. Machining, grinding, and welding operations may cause skin burns.

**Ingestion:** May cause gastrointestinal irritation, vomiting, diarrhea and shock.

**Inhalation:** May cause irritation. May cause difficulty breathing and benign pneumoconiosis at long term. Severe inhalation: metallic taste in the mouth, chills, fever, nausea, vomiting, diarrhea, frequent urination and headache.

**Medical conditions aggravated by exposure:**

Medical conditions aggravated by exposure may be pre-existing problems with eyes, skin and respiratory system.

## Section 4 - FIRST AID MEASURES

**First aid procedures**

**Eyes:** Flush any eye contact with plenty of water for at least 15 minutes. If wearing contact lenses, remove them immediately and continue flushing, occasionally lifting upper and lower lids, until no evidence of product remains. Refer to physician for removal of embedded metallic particles or if irritation or symptoms persist.

**Skin:** Flush any skin contact with plenty of water for at least 15 minutes while removing contaminated clothing. Wash with soap or mild detergent and water until no evidence of product remains. Refer to physician if irritation or symptoms persist.

**Ingestion:** Do not induce vomiting unless advised and/or performed by qualified medical personnel. Immediately call Poison Control Center or physician for guidance. Never give anything by mouth if patient is unconscious. Obtain medical attention immediately.

**Inhalation:** In case of excessive inhalation, or if exposed to excess concentrations of dust or fumes, remove subject to fresh air. If breathing stopped, begin artificial respiration. Keep victim warm and at rest. Seek medical attention if symptoms persist.

**Note to physicians**

No specific antidote. Treatment may vary with condition of victim and specifics of incident. Treat symptomatically and supportively. The following treatment of superficial "rust ring", or deposits in cornea from iron foreign bodies, has been recommended: deferoxamine and ophthalmic ointment or eyedrops have been used and found to hasten disappearance of rust rings. However, the decision as to whether the severity of situation requires administration of any antidote and actual dose required should be made by qualified medical personnel.

## Section 5 - FIRE FIGHTING MEASURES

**Flammable properties**

**Flammability:** MINIMAL HAZARD: Material will not burn in air when exposed to a temperature of 815.6°C (1500°F) for a period of 5 minutes.

<b>Flash point and method:</b>	Not Applicable
<b>Upper explosion limit (% by volume):</b>	Not Applicable
<b>Lower explosion limit (% by volume):</b>	Not Applicable
<b>Auto ignition temperature:</b>	Not Applicable
<b>Hazardous combustion products:</b>	Irritating fumes of metallic oxides

**Fire and explosion hazard**

Dust of material, if dispersed in air, may form explosive mixture under almost all ambient temperatures.

<b>Sensitivity to static discharge:</b>	Not Applicable
<b>Sensitivity to mechanical impact:</b>	Not Applicable
<b>Extinguishing media:</b>	Dry sand, dolomite, graphite, or appropriate metal-extinguishing powder. Do not apply water on molten metals.

**Fire fighting instructions**

Protect fire fighters from toxic products of combustion by wearing self-contained breathing apparatus (SCBA) and full fire-fighting turn-out gear (Bunker gear). Move containers from fire area if it is safe to do so. If unable to move, cool sealed containers with water spray or fog. Do not let product, or water used to control fire to enter drains, lakes, or potable water supplies. Plug drains and block waterways. Pick up fire control water for later disposal.

## Section 6 - ACCIDENTAL RELEASE MEASURES

### Spill Mitigation Procedures:

**Procedures may vary according to physical form of material. This procedure applies to product in a granulated or dust form.**

Stop leak without risk. Thoroughly ventilate area of spill or leak. Spilled material may cause floors and contact surfaces to become slippery. Contain spill and prevent from entering sewers and water bodies. Personnel involved in clean up should wear personal protective equipment to prevent skin, eye and respiratory exposure. Use self-contained breathing apparatus and wear boots to prevent contact with shoes. Pick up using dry cleaning methods to avoid dispersion of dust, if applicable. Place material in clean, dry containers for reclamation or later disposal. Each container should be identified with a label indicating the correct waste code and its description, appropriate cover applied and sealed closed. Dispose of material in accordance to all applicable regulations. Residuals may be collected by vacuum equipped with a HEPA filter.

## Section 7 - HANDLING AND STORAGE

### Handling procedures and equipment

Avoid contact with skin and eyes, and avoid breathing dust or fumes. Use only with adequate ventilation. Use in a manner or application different than that described here or in the product's technical literature may result in a potential hazard to the user and result in serious injury. Good hygienic practices should be observed after handling. Wash thoroughly with soap and water before eating, drinking, smoking, or using toilet facilities. Avoid contact with clothing. Take off immediately all contaminated clothing. Launder contaminated clothing before reuse. Keep out of the reach of children.

### Storage requirements

Store in dry area away from incompatibles (see section 10). Castings are subject to low-temperature oxidation (rusting) in the presence of water, thus dew point conditions or other conditions causing the presence of humidity will cause the formation of reddish-brown oxides during storage. Protect castings from physical damage.

## Section 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

### Engineering controls

Use natural cross-ventilation, local (mechanical) pick-up, and/or general area (mechanical) ventilation to prevent an accumulation of dust and fumes. The ventilation should be sufficient to keep total dust and fume concentrations below the exposure limits.

### Personal protective equipment

#### Eye/face protection:

Avoid contact with eyes and face. During the handling of this material, spectacle-type safety glasses are recommended to prevent contact with this product. In dusty environments, wear dust-resistant safety goggles and a faceshield.

#### Skin protection:

Avoid prolonged contact with skin. During the handling of this material, impervious clothing and gloves or barrier creams are recommended to prevent contact with this product.

#### Respiratory protection:

Avoid prolonged breathing of dust and fumes. Normal ambient air circulation or ventilation is usually adequate and respiratory protective equipment should not be required. If adequate ventilation is not afforded, or if work process generates excessive quantities of dust or fumes, wear NIOSH/MSHA approved respiratory equipment for nuisance dusts and fumes.

#### General:

Dependent upon process (machining, grinding or welding) being performed on material. Each operation must be addressed for suitable equipment. Where there is any possibility that an employee's eyes and/or skin may be exposed to this substance, the employer should provide an eye wash fountain and quick drench shower within the immediate work area for emergency use. Contaminated clothing should be immediately removed and not worn until laundered.

### Exposure guidelines\*

Ingredients	Percentage (by weight)	CAS Numbers	OSHA		ACGIH	
			PEL - TWA	STEL	TLV - TWA	TLV - STEL
Iron	88 - 94	7439-89-6	10mg/m <sup>3</sup> (total particulates)		5mg/m <sup>3</sup>	
Carbon	2.6 – 3.4	7440-44-0			2mg/m <sup>3</sup> (respirable dust)	
Silicium	1.8 – 2.4	7440-21-3	10mg/m <sup>3</sup> (total dust)		10mg/m <sup>3</sup> (total dust)	
Manganese	<0.8	7439-96-5			1mg/m <sup>3</sup> (fumes)	3mg/m <sup>3</sup> (fumes)
Nickel	<0.15	7440-02-0	1mg/m <sup>3</sup>		1mg/m <sup>3</sup>	
Chromium	<0.1	7440-47-3	1mg/m <sup>3</sup>		0.5mg/m <sup>3</sup>	

\* For ease of reading table, empty space indicates data is "Not Available".

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### Physical state:

Solid

### Molecular weight:

Not Applicable

### Odor and appearance:

Metallic silver gray solid, with no odor.

### Odor threshold:

Not Applicable

### Specific gravity (H<sub>2</sub>O = 1):

3.07 – 7.73

### Bulk density @ 25°C:

Not Applicable

### Vapor pressure:

Iron: 1 mmHg @ 1787°C (3249°F)

### Vapor density (Air = 1):

Not Applicable

### Evaporation rate (Water = 1):

Not Applicable

### Boiling point (H<sub>2</sub>O = 100°C):

Iron: 2750°C (4982°F)

### Freezing point (H<sub>2</sub>O = 0°C):

1150°C (2102°F)

### Melting point:

1150°C (2102°F)

### Solubility in water:

Insoluble

### % Volatile by weight (30min @ 275°F):

Not Applicable

### Volatile organic compounds:

Not Applicable

### pH in water @ 25°C:

Not Applicable

### Coefficient of water / oil distribution:

Not Applicable

## Section 10 - STABILITY AND REACTIVITY

### Chemical stability

Stable under ambient temperature and pressure.

### Conditions to avoid

Contact with incompatibles. Avoid dispersion of dust in air. Ignition sources (in the presence of finely divided metallic particles in air).

### Incompatibility with other materials

Mineral and organic acids. Violent decomposition of hydrogen peroxide may occur by contact with iron.

### Hazardous decomposition products

Thermal decomposition products may include mixture of toxic metal oxides and fumes.

### Hazardous polymerization

Will not occur.

## Section 11 - TOXICOLOGICAL INFORMATION

### Acute effects of exposure to material

Fine particulates/dust may be irritating to eyes and skin due to mechanical abrasion. Iron particulates imbedded in eye tissues may cause ocular siderosis. Effects may include discoloration of the cornea and iris. Manganese and silicium have caused slight eye irritation in rabbit. Penetration of iron particles in the skin may cause an exogenous siderosis which may be characterized by a red-brown pigmentation of the affected area. Mild irritation resulted when rabbit skin was exposed to 500mg of manganese for 24 hours.

Severe ingestion of iron compounds may lead to intoxication where the principal manifestations of poisoning are vomiting, diarrhea, and circulatory collapse. Inhalation of metallic dust may be irritating to respiratory tract via mechanical abrasion. Inhalation of freshly formed iron oxide particulates sized below 1.5 microns and usually between 0.02-0.05 microns, may lead to metal fume fever, an influenza-like illness. Symptoms may be delayed 4 - 12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, excessive urination and diarrhea may also occur. All symptoms usually subside within 24 - 36 hours. Lowest published toxic concentration (TCLo) of manganese by human inhalation is 2300µg/m<sup>3</sup>.

### Effects of chronic exposure to material

Prolonged or repeated exposure to dust, fine particules, vapors or fumes of the product may cause conjunctivitis, skin sensitization, hemosiderosis or hemochromatosis, benign pneumoconiosis, chronic bronchitis, emphysema, and dyspnea on exertion.

### Carcinogenicity:

Nickel is classified 2B carcinogen (limited human evidence; sufficient animal evidence) by the International Agency for Research on Cancer (IARC) and is reasonably anticipated as a carcinogen (R) by the National Toxicology Program (NTP). Chromium is not classified carcinogen (group 3) by IARC or by the American Conference of Governmental Industrial Hygienists (ACGIH), but NTP considers chromium as a carcinogen (K).

All other ingredients are not classified as carcinogenic by the American Conference of Governmental Industrial Hygienists (ACGIH) or the International Agency for Research on Cancer (IARC), not regulated as carcinogen by the Occupational Safety and Health Administration (OSHA), and not listed as carcinogen by the National Toxicology Program (NTP).

### Reproductive toxicity:

No information available or adequate to evaluate the possible effects of the product's ingredients on the reproductive function.

### Teratogenicity:

No information available or adequate to evaluate the possible teratogenic effects of the product's ingredients.

### Mutagenicity:

No information available or adequate to evaluate the possible mutagenic effects of the product's ingredients.

### Synergistic materials

Synergistic or additive effects of the above chemicals are unknown, as are the effects of exposure to these chemicals in addition to others present in the workplace.

## Section 12 - ECOLOGICAL INFORMATION

### Ecotoxicity

No specific studies have been conducted on the ecotoxicity or environmental fate of this material. Accordingly, all appropriate measures should be taken to avoid uncontrolled releases of this material to the environment, and any spills or other uncontrolled releases that may occur should be contained and cleaned up immediately in accordance with Section 6. Waste from this product may present long-term environmental hazards. Disposal of this product should be in accordance with Section 13. Releases of volatile components to the atmosphere are not believed to entail significant ecological consequences provided such releases are within the exposure levels set forth in Section 8.

### Environmental fate

Biochemical oxygen demand (BOD):	Not Available
Chemical oxygen demand (COD):	Not Available

### Physical / chemical

Hydrolytic stability:	Not Available
Photolytic stability:	Not Available

## Section 13 - DISPOSAL CONSIDERATIONS

### Waste disposal

If damaged, return castings to supplier for reclamation. Verify if waste residues may be reclaimed/recycled. Use only approved disposal methods in accordance with all federal, provincial, and local waste disposal regulations to dispose of dust collected from grinding, machining, welding, or other operations. Do not dispose of waste with normal garbage, or to sewer systems. Consult with local municipal officials, or provincial Ministry of the Environment office nearest to your location, for approved disposal methods.

## Section 14 - TRANSPORTATION INFORMATION

### Transportation and hazardous materials description

Not regulated by the Transportation of Dangerous Goods Regulations (Clear Language).

### Special shipping information

Ensure that all castings are secured to prevent shifting during transport.

## Section 15 - REGULATORY INFORMATION

### Canadian federal regulations

#### Hazardous Products Act

##### Workplace Hazardous Materials Information System (WHMIS)

Gray Iron Castings are manufactured articles under the definitions of the Hazardous Products Act. They are formed to a specific shape or design during manufacture, the intended use of which when in that form is dependent in whole or in part on its shape or design. Under normal conditions of use, castings will not release or otherwise cause a person to be exposed to a controlled product.

This MSDS contains all of the information required by the CPR (Sections 12 - 13).

##### Consumer Chemicals and Containers Regulations (CCCR)

This material is packaged as a commercial product and is not regulated by the CCCR.

#### Transportation of Dangerous Goods Act

##### Transportation of Dangerous Goods Regulations (TDG)

In respect of transportation by any means of transport, this product is not regulated under TDG.

#### Canadian Environmental Protection Act (CEPA)

All ingredients contained in this product are listed in the DSL and acceptable for use under the provisions of CEPA.

### International regulations

#### United States of America

##### Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

Any accidental release of this material equal to or greater than the reportable quantities must be immediately reported to the National Response Center (NRC) at (800)424-8802 or (202)426-2675 in the metropolitan Washington D.C. area (40 CFR 302.40).

	<u>Reportable quantity (RQ)</u>
Chromium	2268 kg (5000 lbs)
Nickel	45,4 kg (100 lbs)

##### Superfund Amendments and Reauthorization Act (SARA)

Section 304 requires that any accidental release of this material equal to or greater than the reportable quantities must be immediately reported to the local emergency planning committee and the state emergency response commission (40 CFR 355.40).

##### Toxic Substances Control Act (TSCA)

All ingredients contained in this product are listed in the TSCA inventory, and acceptable for use under the provisions of the Environmental Protection Act (EPA).

##### OSHA Hazard Communication Standard

This document is prepared pursuant to OSHA Hazard Communication Standard [OSHA (29 CFR 1910.1200)].

##### Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA)

Not available

##### Resource Conservation and Recovery Act (RCRA)

Not available

## Section 16 - OTHER INFORMATION

### Label information

Not applicable

### Hazard rating and rating systems

#### Hazardous Materials Identification System (HMIS)

This information is intended solely for the use of individuals trained in this particular system.

HEALTH = 1\*. Slight Hazard. Irritation or minor reversible injury possible. Presence of chronic effects.

FLAMMABILITY = 0. Minimal Hazard. Materials that will not burn.

REACTIVITY = 0. Minimal Hazard. Materials which in themselves are normally stable, even under fire exposure conditions and which are not reactive with water.

PERSONAL PROTECTION = E. Spectacle-type safety glasses, impervious gloves, and NIOSH/MSHA approved respiratory equipment for nuisance dusts are considered as minimum equipment for personal protection, and recommended only for normal and intended conditions of product use with adequate ambient air circulation or ventilation.

### Preparation and revision information

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**Limitations and disclaimer**

THE INFORMATION PRESENTED HEREIN IS SUPPLIED AS A GUIDE TO THOSE WHO HANDLE OR USE THIS PRODUCT AND HAS BEEN PREPARED IN GOOD FAITH BY TECHNICALLY KNOWLEDGEABLE PERSONNEL. IT IS NOT INTENDED TO BE ALL - INCLUSIVE. THE MANNER AND CONDITIONS OF USE AND HANDLING MAY INVOLVE OTHER AND ADDITIONAL CONSIDERATIONS. SAFE WORK PRACTICES MUST BE EMPLOYED WHEN WORKING WITH ANY MATERIALS. IT IS IMPORTANT THAT THE END USER MAKES A DETERMINATION REGARDING THE ADEQUACY OF THE SAFETY PROCEDURES EMPLOYED DURING THE USE OF THIS PRODUCT.

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**Abbreviations**

ACGIH = American Conference of Governmental Industrial Hygienists  
CAS = Chemical Abstracts Service  
CPR = Controlled Product Regulations, Hazardous Product Act - Canada  
LC<sub>50</sub> = Lethal Concentration 50  
LD<sub>50</sub> = Lethal Dose 50  
MSHA = Mine Safety and Health Administration  
NIOSH = National Institute for Occupational Safety and Health  
OSHA = Occupational Safety and Health Administration  
RTECS = Registry of Toxic Effects of Chemical Substances  
STEL = Short Term Exposure Limit  
TLV = Threshold Limit Values  
TWA = Time-Weighted Average  
WHMIS = Workplace Hazardous Materials Information System - Canada

**References**

1. Registry, via STN International
2. Hazardous Substances Data Bank (HSDB), via STN International
3. Occupational Health Services Inc. (MSDS-OHS), via STN International
4. Registry of Toxic Effects of Chemical Substances (RTECS), via STN International
5. Reptox (CSST)
6. ChemFinder.com

**Notes**

This MSDS is prepared in accordance with the American National Standards Institute (ANSI) "Standard for the Preparation of Material Safety Data Sheets" (ANSI Z400.1-1993).

*Text in italics is information added by Manager Automated Systems Inc.*

Cette fiche signalétique est disponible en français.