GERDAU AMERISTEEL

Material Safety Data Sheet

Material Name: Carbon and Alloy Steels

*** Section 1 - Chemical Product and Company Identification ***

Manufacturer Information

Gerdau Ameristeel
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Phone: (800) 876-3626

Emergency # 800-424-9300 CHEMTREC

*** Section 2 - Hazards Identification ***

Emergency Overview

Under normal handling and use, exposure to massive forms of steel presents no health hazards. Grinding, thermal cutting, and melting of steel may produce fumes containing elemental constituents, and breathing these fumes may present potentially significant health hazards.

Potential Health Effects: Eyes

Dust or powder may cause irritation and/or inflammation to the eye tissue. Rubbing may cause abrasion of cornea.

Potential Health Effects: Skin

Product may contain levels of components that may cause allergic skin reactions. Dust or powder may irritate the skin. This product may produce skin abrasions, lesions, or cuts.

Potential Health Effects: Ingestion

Ingestion of this product is unlikely; however if ingested may cause gastrointestinal disturbances, abdominal pain, fever, vomiting, and diarrhea. Ingestion of large amounts of product may produce more serious toxicities.

Potential Health Effects: Inhalation

Product may contain levels of components that may cause allergic respiratory sensitization and cancer. Dusts, vapors, and fumes generated during processing may irritate the respiratory system. Severe acute overexposure or chronic overexposure to dusts or processing fumes may produce more serious toxicities.

HMIS Ratings: Health: 1 **Fire:** 0 **HMIS Reactivity** 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

*** Section 3 - Composition / Information on Ingredients ***

CAS #	Component	Percent
1309-37-1	Iron oxide	>94
7440-02-0	Nickel	<2
7439-96-5	Manganese	<1.65
7440-47-3	Chromium	<1.2
7440-21-3	Silicon	<1
7439-98-7	Molybdenum	<1
1333-86-4	Carbon black	<1

*** Section 4 - First Aid Measures ***

First Aid: Eyes

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. In case of mechanical abrasions and cuts, seek medical attention.

First Aid: Skin

For skin contact, wash immediately with soap and water. Cuts or abrasions should be treated promptly with thorough cleansing of the affected area.

First Aid: Ingestion

Seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

First Aid: Inhalation

Remove the affected person to fresh air. If the affected person is not breathing, apply artificial respiration. Seek medical attention immediately.

* * * Section 5 - Fire Fighting Measures * * *

General Fire Hazards

See Section 9 for Flammability Properties.

Fire and explosion hazards are moderate when material is in the form of dust and is exposed to heat or flame, or attacked by chemical reaction. Fires have been reported in piles of fine scrap, probably due to contamination from oil or other materials which support combustion.

Hazardous Combustion Products

Fire or thermal processing may release products of hydrocarbon decomposition and metal fumes.

Extinguishing Media

Use special mixtures of dry chemicals or sand.

Fire Fighting Equipment/Instructions

Fire fighters should wear full-face, self contained breathing apparatus and impervious protective clothing. Fire fighters should avoid inhaling any combustion products.

NFPA Ratings: Health: 1 **Fire:** 0 **Reactivity:** 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

* * * Section 6 - Accidental Release Measures * * *

Containment Procedures

No special precautions are necessary for spills of bulk solid material.

Clean-Up Procedures

If large quantities of dust are spilled, remove by vacuuming or wet sweeping to prevent heavy concentrations of airborne dust. Cleanup personnel should wear respirators and protective clothing.

Evacuation Procedures

None necessary.

Special Procedures

This material may be regulated as a PCB Bulk Product Waste.

* * * Section 7 - Handling and Storage * * *

Handling Procedures

Avoid inhaling dusts or vapors produced during thermal processing. Avoid eye and excessive skin contact. Use only with adequate ventilation. As with all chemicals, good industrial hygiene practices should be followed when handling this material. Special care must be taken to avoid buildup of dusts.

Storage Procedures

Keep this material in a well-ventilated area. Keep this material slightly damp to avoid fire hazards.

* * * Section 8 - Exposure Controls / Personal Protection * * *

A: Component Exposure Limits

Iron oxide (1309-37-1)

ACGIH: 5 mg/m3 TWA (respirable fraction)
OSHA: 10 mg/m3 TWA (fume)
NIOSH: 5 mg/m3 TWA (dust and fume, as Fe)

Nickel (7440-02-0)

ACGIH: 1.5 mg/m3 TWA (inhalable fraction)
OSHA: 1 mg/m3 TWA
NIOSH: 0.015 mg/m3 TWA

Manganese (7439-96-5)

ACGIH: 0.2 mg/m3 TWA
OSHA: 1 mg/m3 TWA (fume)
3 mg/m3 STEL (fume)
5 mg/m3 Ceiling
NIOSH: 1 mg/m3 TWA (fume)
3 mg/m3 STEL

Chromium (7440-47-3)
ACGIH: 0.5 mg/m3 TWA
OSHA: 1 mg/m3 TWA
NIOSH: 0.5 mg/m3 TWA

Carbon black (1333-86-4)
ACGIH: 3.5 mg/m3 TWA
OSHA: 3.5 mg/m3 TWA
NIOSH: 3.5 mg/m3 TWA; 0.1 mg/m3 TWA (as PAH, carbon black in presence of polycyclic aromatic hydrocarbons)

Silicon (7440-21-3)
OSHA: 10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
NIOSH: 10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable dust)

Molybdenum (7439-98-7)
ACGIH: 10 mg/m3 TWA (inhalable fraction); 3 mg/m3 TWA (respirable fraction)
OSHA: 10 mg/m3 TWA

Engineering Controls

Use general and local exhaust ventilation to control airborne concentrations of dust or fumes.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Approved safety glasses or goggles should be worn when working with dusty material.

Personal Protective Equipment: Skin

Gloves and barrier creams may be necessary to prevent skin sensitization and dermatitis.

Personal Protective Equipment: Respiratory

When dusts or thermal processing fumes are generated and ventilation is not sufficient to effectively remove them, appropriate NIOSH/MSHA approved respiratory protection must be provided.

Personal Protective Equipment: General

Use good industrial hygiene practices in handling this material.

*** Section 9 - Physical & Chemical Properties ***

Appearance:	Metallic silver-grey	**Odor:**	None
Physical State:	Solid	**pH:**	NA
Vapor Pressure:	1 mm Hg @ 1787°C	**Vapor Density:**	NA
Boiling Point:	NA	**Melting Point:**	1371-1482°C
Solubility (H2O):	Insoluble	**Specific Gravity:**	7.84
Evaporation Rate:	NA	**VOC:**	NA
Octanol/H2O Coeff.:		**Flash Point:**	NA
Flash Point Method:	NA	**Upper Flammability Limit (UFL):**	NA
Lower Flammability Limit (LFL):	NA	**Burning Rate:**	NA
Auto Ignition:	NA		

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability

This is a stable material.

Chemical Stability: Conditions to Avoid

Dust presents moderate fire and explosion hazards.

Incompatibility

Material may be incompatible with acids, bases and oxidizers.

Hazardous Decomposition

Decomposition of this product may yield metallic oxides.

Possibility of Hazardous Reactions

Will not occur.

* * * Section 11 - Toxicological Information * * *

Acute Dose Effects

A: General Product Information

Chronic overexposure to iron oxide fumes may cause an early apparently benign pneumoconiosis (siderosis) with few or no symptoms. Overexposure to dusts and especially fumes containing elemental constituents of ferrous alloys may cause skin, nose, and eye irritation and lung changes in workers, potentially leading to pulmonary diseases.

Manganese fumes may cause metal fume fever with flu-like symptoms. Over exposure to manganese fumes can cause chronic manganese poisoning. Early symptoms include headaches, apathy, sleepiness, and weakness or cramps in the legs. Chronic overexposure can affect the central nervous system, ultimately leading to emotional disturbances, gait and balance difficulties, and paralysis.

Chromium and nickel compounds have been associated with allergic reactions and rashes, and lung changes. Nickel is a respiratory irritation and causes penumonitis. Hexavalent chromium compounds and some nickel compounds have been identified as potential human carcinogens.

B: Component Analysis - LD50/LC50

Iron oxide (1309-37-1)
Oral LD50 Rat: >10000 mg/kg

Nickel (7440-02-0)
Oral LD50 Rat: >9000 mg/kg

Manganese (7439-96-5)
Oral LD50 Rat: 9 g/kg

Carbon black (1333-86-4)
Oral LD50 Rat: >15400 mg/kg; Dermal LD50 Rabbit:>3 g/kg

Silicon (7440-21-3)
Oral LD50 Rat: 3160 mg/kg

Carcinogenicity

A: General Product Information

No information available for the product.

B: Component Carcinogenicity

Iron oxide (1309-37-1)

ACGIH: A4 - Not Classifiable as a Human Carcinogen
IARC: Supplement 7 [1987], Monograph 1 [1972] (Group 3 (not classifiable))

Nickel (7440-02-0)

ACGIH: A5 - Not Suspected as a Human Carcinogen
NIOSH: potential occupational carcinogen
NTP: Reasonably Anticipated To Be A Human Carcinogen (Possible Select Carcinogen)
IARC: Monograph 49 [1990], Supplement 7 [1987] (Group 2B (possibly carcinogenic to humans))

Chromium (7440-47-3)

ACGIH: A4 - Not Classifiable as a Human Carcinogen
IARC: Monograph 49 [1990] (listed under Chromium and Chromium compounds), Supplement 7 [1987] (Group 3 (not classifiable))

Carbon black (1333-86-4)

ACGIH: A4 - Not Classifiable as a Human Carcinogen
NIOSH: potential occupational carcinogen
IARC: Monograph 93 [in preparation], Monograph 65 [1996] (Group 2B (possibly carcinogenic to humans))

* * * Section 12 - Ecological Information * * *

Ecotoxicity

A: General Product Information

No information available for the product.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Nickel (7440-02-0)

Test & Species		Conditions
96 Hr LC50 Oncorhynchus mykiss	31.7 mg/L	adult
96 Hr LC50 Pimephales promelas	3.1 mg/L	
96 Hr LC50 Brachydanio rerio	>100 mg/L	
72 Hr EC50 freshwater algae (4 species)	0.1 mg/L	
72 Hr EC50 Selenastrum capricornutum	0.18 mg/L	
96 Hr EC50 water flea	510 µg/L	

Carbon black (1333-86-4)

Test & Species		Conditions
24 Hr EC50 Daphnia magna	>5600 mg/L	

* * * Section 13 - Disposal Considerations * * *

US EPA Waste Number & Descriptions

Component Waste Numbers

Chromium (7440-47-3)

RCRA: 5.0 mg/L regulatory level

Disposal Instructions

Dispose in accordance to local, state, and federal regulations.
See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

* * * Section 14 - Transportation Information * * *

US DOT Information

Shipping Name: Not Regulated

TDG Information

Shipping Name: Not Regulated

* * * Section 15 - Regulatory Information * * *

US Federal Regulations

Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Nickel (7440-02-0)

SARA 313: 0.1 % de minimis concentration

CERCLA: 100 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers); 45.4 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers)

Manganese (7439-96-5)

SARA 313: 1.0 % de minimis concentration

Chromium (7440-47-3)

SARA 313: 1.0 % de minimis concentration

CERCLA: 5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers)

State Regulations

A: General Product Information

Other state regulations may apply. Check individual state requirements.

B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
Iron oxide	1309-37-1	Yes	Yes	Yes	Yes	Yes	Yes
Nickel	7440-02-0	Yes	Yes	Yes	Yes	Yes	Yes
Manganese	7439-96-5	Yes	Yes	Yes	Yes	Yes	Yes
Chromium	7440-47-3	Yes	Yes	Yes	Yes	Yes	Yes
Carbon black	1333-86-4	Yes	Yes	Yes	Yes	Yes	Yes
Silicon	7440-21-3	No	Yes	Yes	Yes	Yes	Yes
Molybdenum	7439-98-7	Yes	Yes	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.

Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Iron oxide	1309-37-1	1 %
Nickel	7440-02-0	0.1 %
Manganese	7439-96-5	1 %
Chromium	7440-47-3	0.1 %

Additional Regulatory Information

A: General Product Information

No information available for the product.

B: Component Analysis - Inventory

Component	CAS #	TSCA	CAN	EEC
Iron oxide	1309-37-1	Yes	DSL	EINECS
Nickel	7440-02-0	Yes	DSL	EINECS
Manganese	7439-96-5	Yes	DSL	EINECS
Chromium	7440-47-3	Yes	DSL	EINECS
Carbon black	1333-86-4	Yes	DSL	EINECS
Silicon	7440-21-3	Yes	DSL	EINECS
Molybdenum	7439-98-7	Yes	DSL	EINECS

* * * Section 16 - Other Information * * *

Other Information

Reasonable care has been taken in the preparation of this information, but the manufacturer makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use.

Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists; ADG = Australian Code for the Transport of Dangerous Goods by Road and Rail; ADR/RID = European Agreement of Dangerous Goods by Road/Rail; AS = Standards Australia; DFG = Deutsche Forschungsgemeinschaft; DOT = Department of Transportation; DSL = Domestic Substances List; EEC = European Economic Community; EINECS = European Inventory of Existing Commercial Chemical Substances; ELINCS = European List of Notified Chemical Substances; EU = European Union; HMIS = Hazardous Materials Identification System; IARC = International Agency for Research on Cancer; IMO = International Maritime Organization; IATA = International Air Transport Association; MAK = Maximum Concentration Value in the Workplace; NDSL = Non-Domestic Substances List; NFPA = National Fire Protection Association; NOHSC = National Occupational Health & Safety Commission; NTP = National Toxicology Program; STEL = Short-term Exposure Limit; TDG = Transportation of Dangerous Goods; TLV = Threshold Limit Value; TSCA = Toxic Substances Control Act; TWA = Time Weighted Average

End of Sheet