Aluminized Steel Products

SAFETY DATA SHEET
(Complies with OSHA 29 CFR 1910.1200)

SECTION I: PRODUCT IDENTIFICATION

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SDS CON5
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Product(s): Aluminized steel products – **Type I and II**

Product Use: Industrial use or Construction Use

SECTION II - HAZARD IDENTIFICATION

Hazard-determining components of labeling:
Steel is considered an article under Reach regulation (REACH REGULATION (EC) No 1907/2006) and is not subject to classification under CLP regulation (REGULATION (EC) No 1272/2008). However, Steel is not exempt as an article under OSHA's Hazard Communication Standard (29 CFR 1910.1200) due to its downstream use, thus this product is considered a mixture and a hazardous material. Therefore, the categories of Health Hazards as defined in "GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS), Third revised edition ST/SG/AC.10/30/Rev. 3" United Nations, New York and Geneva, 2009 have been evaluated. Refer to Section 3, 8 and 11 for additional information.
This formed solid metal product poses little or no immediate health or fire hazard. When product is subjected to welding, burning, melting, sawing, brazing, grinding or other processes, potentially hazardous airborne particulate and fumes may be generated. The hazards identified below are only relevant to these processes.

2.1 Classification of the substance or mixture
Skin Sensitization – Category 1
Specific Target Organ Toxicity Repeat Exposure – Category 1 (lung)
Carcinogen – Category 2
Toxic to Reproduction – Category 2
Eye Irritation – Category 2B
Specific Target Organ Toxicity: Single Exposure – Category 3 (Lung)
Acute Toxicity – Oral – Category 4

2.2a Signal word DANGER!

2.2b Hazard Statements

May cause an allergic skin reaction
May cause damage to lungs and central nervous system through prolonged or repeated inhalation
Suspected of causing cancer
Suspected of damaging fertility or the unborn child
Dust, particles and fumes cause eye irritation
May cause respiratory irritation
Harmful if swallowed.

2.2c Pictograms

2.2d Precautionary statements

Do not handle until all safety precautions have been read and understood.
Obtain special instructions before use.
Wear impervious gloves, eye protection, and protective clothing.
Do not eat, drink or smoke when using this product.
Wash thoroughly after handling.
Wash contaminated clothing after use, before re-use, and before removing from workplace.
Concentration in air of the various contaminants determines the extent of respiratory protection needed. Half-face, air-negative-pressure purifying respirator equipped with P100 filter is acceptable for concentrations up to 10 times the exposure limit. Full-face, negative-pressure, air-purifying respirator equipped with P100 filter is acceptable for concentrations up to 50 times the exposure limit. Respirators should be selected by and used under the direction of a trained health and safety professional, following requirements found in OSHA's respirator standard (29 CFR 1910.134) and ANSI's standard for respiratory protection (Z88.2).
Do not breathe dust / fumes.
If swallowed: Rinse mouth. Do NOT induce vomiting.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If on skin (or hair): Wash thoroughly with water.
If significant skin irritation or rash occurs: get medical advice or attention.
Immediately seek medical attention if symptoms are significant or persist.
Dispose of material in accordance with all regulations.

2.3 Additional Information

None

2.3a HNOC – Hazards not otherwise classified: None known

2.3b Unknown Acute Toxicity: None known

SECTION III - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components	CAS No.	% by Weight
Iron	7439-89-6	>95
Manganese	7439-96-5	<2.0
Nickle	7440-02-0	<0.2
Metallic Coating		
Aluminum *	7429-90-5	100

 Commercial steel products contain small amounts of various elements in addition to those specified. These small quantities frequently referred to as “trace” or “residual” elements generally originate in the raw materials used and/or are alloying metals. Individual trace elements vary in concentration by weight, and may include boron, calcium, carbon, columbium (niobium), copper, molybdenum, phosphorus, sulfur, titanium, and vanadium.

 Percentages are expressed as typical ranges or maximum concentrations for the purpose of communicating the potential hazards of the finished product. Consult product specifications for specific composition information.

* Aluminized Steel Type 1 consists of aluminum coating that covers the surface of a cold roll steel sheet at a coating weight of 0.2 to 0.6 ounces per square foot. Aluminized Steel Type 2 consists of aluminum coating that covers the surface of a cold roll steel sheet with a coating weight of 0.6 to 1.02 ounces per square foot. % weight for individual components is for the metallic coating, not the base metal and coating. Some products may have a light coating of oil This coating is applied for rust inhibition and comprises less than 1% of the total weight of the product.

SECTION IV – FIRST AID MEASURES

4.1 Description of the first-aid measures

General information: This formed solid metal product poses little or no immediate health or fire hazard. When product is subjected to welding, burning, melting, sawing, brazing, grinding or other processes, potentially hazardous airborne particulate and fumes may be generated. The hazards identified below are only relevant to these processes.

After inhalation: Remove person to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration. In case of unconsciousness, place patient stably in side position for transportation.

After skin contact: Wash skin with cool water and pH-neutral soap or a mild detergent. If significant skin irritation or rash occurs: get medical advice or attention.

After eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

After swallowing: Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms/effects, acute and delayed

Inhalation: May cause damage to lungs through prolonged or repeated inhalation

Skin contact: May cause an allergic skin reaction

Eye Contact: Dust, particles and fumes cause eye irritation

Ingestion: Harmful if swallowed.

4.3 Indication of immediate medical attention and special treatment needed:

None known.

SECTION V - FIRE FIGHTING MEASURES

This formed solid metal product poses little or no immediate health or fire hazard. When product is subjected to welding, burning, melting, sawing, brazing, grinding or other processes, potentially hazardous airborne particulate and fumes may be generated. The hazards identified below are only relevant to these processes.

5.1 Flammability of the Product: Non-flammable and non-combustible. Finely divided dust is combustible.

5.2 Suitable extinguishing agents: Treat for surrounding material

5.3 Special hazards arising from the substance or mixture: None

5.3a Products of Combustion: None

5.3b Explosion Hazards in Presence of Various Substances: Non-explosive in presence of shocks

SECTION VI – ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Wear personal protective equipment (See section VIII). Keep unprotected persons away.

6.2 Methods and material for containment and cleaning up:

For spills involving finely divided particles, clean-up personnel should be protected against contact with eyes and skin. IF material is in a dry state, avoid inhalation of dust. Dispose of unwanted materials and containers properly in accordance with all regulations.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND STORAGE

7.1 Handling

Precautions for safe handling: Wear protective equipment for hands to protect from sharp edges. Wear protective equipment to protect feet and body from injury due to the weight of this material. Further processing including welding, burning, & grinding, etc., has the potential for generating high concentrations of airborne particulates and fumes and should be evaluated and controlled as necessary. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

7.2 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: Keep out of the reach of children...

SECTION VIII – EXPOSURE CONTROL MEASURES / PERSONAL PROTECTION

8.1 Components with limit values that require monitoring at the workplace:

Hazardous Components	PEL (OSHA) mg/M^3	TLV (ACGIH) mg/M^3
Iron	10 (as FeOx fume)	5.0
Manganese	5.0 (as fume, Mn compounds)	0.2
Nickel	1.0 (as Ni & insoluble) 15 (total dust) 5 (resp)	1.5 (resp metal), 0.2 (resp inorganics)

8.2 Exposure Controls

Use ventilation adequate to keep exposures below recommended exposure limits.

8.3 General protective and hygienic measures

Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.

8.3a Personal protective equipment

Protection of hands:

Wear gloves of adequate length to offer appropriate skin protection. Cut resistant gloves have been found to offer adequate protection for incidental contact.

Eye protection:
Wear approved eye protection (properly fitted dust- or splash-proof chemical safety glasses.
Respiratory protection:
Concentration in air of the various contaminants determines the extent of respiratory protection needed. Half-face, air-negative-pressure purifying respirator equipped with P100 filter is acceptable for concentrations up to 10 times the exposure limit. Full-face, negative-pressure, air-purifying respirator equipped with P100 filter is acceptable for concentrations up to 50 times the exposure limit. Respirators should be selected by and used under the direction of a trained health and safety professional, following requirements found in OSHA's respirator standard (29 CFR 1910.134) and ANSI's standard for respiratory protection (Z88.2).

SECTION IX - PHYSICAL/CHEMICAL CHARACTERISTICS

General Information

Appearance	Form: Metallic Color: Gray Odor: None
pH-value at 20°C (68 °F):	Not applicable
Boiling point/Boiling range:	1700 °F (927 °C)
Melting point/Freezing Point:	~2750°F (~1510°C)
Flash point:	Not applicable
Auto igniting:	Product is not self-igniting
Vapor pressure at 21°C (70°F)	Not available
Density at 25°C (77 °F):	7.85 g/cc
Solubility in Water:	Insoluble
VOC content:	Not applicable

SECTION X – STABILITY AND REACTIVITY

10.1 Reactivity
No dangerous reaction known under conditions of normal use.
10.2 Chemical stability
Stable under normal storage conditions. Keep in dry storage.
10.3 Possibility of hazardous reaction
No dangerous reaction known under conditions of normal use.
10.4 Thermal decomposition / conditions to be avoided
No decomposition if used according to specifications.
10.5 Incompatible materials
Will react with strong acids to form hydrogen. Iron oxide dusts in contact with calcium hypochlorite evolve oxygen and may cause an explosion.
10.6 Hazardous Decomposition or By-products
Thermal oxidative decomposition of steel products can produce flames containing oxides of iron and manganese as well as other alloying elements.

SECTION XI – TOXICOLOGICAL INFORMATION

11.1 Exposure Routes: Skin contact, skin adsorption, eye contact, inhalation, or ingestion.

Hazard Classification	Hazard Category		Hazard Symbols	Signal Word	Hazard Statement
	EU	OSHA			
Acute Toxicity Hazard (covers Categories 1-4)	NA*	4[a]		**Warning**	Harmful if swallowed.
Eye Damage/ Irritation (covers Categories 1, 2A and 2B)	NA*	2B[c]	No Pictogram	**Warning**	Causes eye irritation.
Skin/Dermal Sensitization (covers Category 1)	NA*	1[d]		**Warning**	May cause an allergic skin reaction.
Carcinogenicity (covers Categories 1A, 1B and 2)	NA*	2[g]		**Warning**	Suspected of causing cancer.
Toxic Reproduction (covers Categories 1A, 1B and 2)	NA*	2[h]		**Warning**	Suspected of damaging fertility or the unborn child.
Specific Target Organ Toxicity (STOT) Following Single Exposure (covers Categories 1-3)	NA*	3[i]		**Warning**	May cause respiratory irritation.
STOT following Repeated Exposure (covers Categories 1 and 2)	NA*	1[j]		**Danger**	Causes damage to lungs and central nervous system through prolonged or repeated inhalation exposure.
* Not Applicable - Semi-formed steel products are considered articles under Reach regulation (REACH REGULATION (EC) No 1907/2006) and are not subject to classification under CLP regulation (REGULATION (EC) No 1272/2008).					

11(a-e) Information on toxicological effects (continued):
Toxicological data listed below are presented regardless to classification criteria. Individual hazard classification categories where the toxicological information has met or exceeded a classification criteria threshold are listed above.

a. No LC50 or LD50 has been established for Aluminized Steel Type 1 and Type 2. The following data has been determined for the components:

- Iron: Rat LD50 =98.6 g/kg (REACH)
  Rat LD50 =1060 mg/kg (IUCLID)
  Rat LD50 =984 mg/kg (IUCLID)
  Rabbit LD50 =890 mg/kg (IUCLID)
  Guinea Pig LD50 =20 g/kg (TOXNET)
- Nickel: LD50 >9000 mg/kg (Oral/Rat)
- Manganese: Rat LD50 > 2000 mg/kg (REACH)
  Rat LD50 > 9000 mg/kg (NLM Toxnet)

b. No Skin (Dermal) Irritation data available for Aluminized Steel Type 1 and Type 2 as a as a mixture or its individual components.
c. No Eye Irritation data available for Aluminized Steel Type 1 and Type 2 as a mixture. The following Eye Irritation information was found for the components:

- Iron: Causes eye irritation.
- Nickel: Slight eye irritation from particulate abrasion only.

d. No Skin (Dermal) Sensitization data available for Aluminized Steel Type 1 and Type 2 as a mixture. The following Skin (Dermal) Sensitization information was found for the components:

- Nickel: May cause allergic skin sensitization.

e. No Respiratory Sensitization data available for Aluminized Steel Type 1 and Type 2 as a mixture or its components.
f. No Germ Cell Mutagenicity data available for Aluminized Steel Type 1 and Type 2 as a mixture. The following Mutagenicity and Genotoxicity information was found for the components:

- Iron: IUCLID has found some positive and negative findings in vitro.
- Nickel: EU RAR has found positive results in vitro and in vivo but insufficient data for classification.

g. Carcinogenicity: IARC, NTP, and OSHA do not list Aluminized Steel Type 1 and Type 2 as carcinogens. The following Carcinogenicity information was found for the components:

- Welding Fumes - IARC Group 2B carcinogen, a mixture that is possibly carcinogenic to humans.
- Nickel and certain nickel compounds – Group 2B - metallic nickel Group 1 - nickel compounds ACGIH confirmed human carcinogen. Nickel –EURAR Insufficient evidence to conclude carcinogenic potential in animals or humans; suspect carcinogen classification Category 2 Suspected of causing cancer.

h. No Toxic Reproduction data available for Aluminized Steel Type 1 and Type 2 as a mixture. The following Toxic Reproductive information was found for the components:

- Nickel: Effects on fertility.

i. No Specific Target Organ Toxicity (STOT) following a Single Exposure data available for Aluminized Steel Type 1 and Type 2 as a mixture. The following STOT following a Single Exposure data was found for the components:

- Iron: Irritating to Respiratory tract.

j. No Specific Target Organ Toxicity (STOT) following Repeated Exposure data was available for Aluminized Steel Type 1 and Type 2 as a whole. The following STOT following Repeated Exposure data was found for the components:

- Nickel: Rat 4 wk inhalation LOEL 4 mg/m3 Lung and Lymph node histopathology. Rat 2 yr inhalation LOEL 0.1 mg/ m3 Pigment in kidney, effects on hematopoiesis spleen and bone marrow and adrenal tumor. Rat 13 Week Inhalation LOAEC 1.0 mg/m3 Lung weights, and Alveolar histopathology.
- Manganese: Inhalation of metal fumes - Degenerative changes in human Brain; Behavioral: Changes in motor activity and muscle weakness (Whitlock et al., 1966).

The above toxicity information was determined from available scientific sources to illustrate the prevailing posture of the scientific community. The scientific resources includes: The American Conference of Governmental Industrial Hygienist (ACGIH) Documentation of the Threshold Limit Values (TLVs) and Biological Exposure indices (BEIs) with Other Worldwide Occupational Exposure Values 2009, The International Agency for Research on Cancer (IARC), The National Toxicology Program (NTP) updated documentation, the World Health Organization (WHO) and other available resources, the International Uniform Chemical Information Database (IUCLID), European Union Risk Assessment Report (EU-RAR), Concise International Chemical Assessment Documents (CICAD), European Union Scientific Committee for Occupational Exposure Limits (EU-SCOEL), Agency for Toxic Substances and Disease Registry (ATSDR), Hazardous Substance Data Bank (HSDB), and International Programme on Chemical Safety (IPCS).

The following health hazard information is provided regardless to classification criteria and is based on the individual component(s) and potential resultant components from further processing:

Acute Effects:

- Inhalation: Excessive exposure to high concentrations of metal dust may cause irritation to the eyes, skin and mucous membranes of the upper respiratory tract. Excessive inhalation of fumes of freshly formed metal oxide particles sized below 1.5 micrometer and usually between 0.02-0.05 micrometers from many metals can produce an acute reaction known as “metal fume fever”. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), metallic taste in the mouth, dryness and irritation of the throat followed by weakness and muscle pain. The symptoms come on in a few hours after excessive exposures and usually last from 12 to 48 hours. Long-term effects from metal fume fever have not been noted. Freshly formed oxide fumes of manganese have been associated with causing metal fume fever.
- Eye: Excessive exposure to high concentrations of metal dust may cause irritation to the eyes.
- Skin: Skin contact with metal dusts may cause irritation or sensitization, possibly leading to dermatitis. Skin contact with metallic fumes and dusts may cause physical abrasion.
- Ingestion: Ingestion of harmful amounts of this product as distributed is unlikely due to its solid insoluble form. Ingestion of metal dust may cause nausea or vomiting.

Acute Effects by component:

 Iron and iron oxides: Iron is harmful if swallowed, causes skin irritation, and causes eye irritation. Contact with iron oxide has been reported to cause skin irritation and serious eye damage. Particles of iron or iron compounds, which become imbedded in the eye, may cause rust stains unless removed fairly promptly.
 Manganese and manganese oxides: Manganese and Manganese oxide is harmful if swallowed.
 Nickel and nickel oxides: Nickel may cause allergic skin sensitization. Nickel oxide may cause an allergic skin reaction.

Delayed (chronic) Effects by component:
 Iron and iron oxides: Chronic inhalation of excessive concentrations of iron oxide fumes or dusts may result in the development of a benign pneumoconiosis, called siderosis, which is observable as an X-ray change. No physical impairment of lung function has been associated with siderosis. Inhalation of excessive concentrations of ferric oxide may enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens. Iron oxide is listed as a Group 3 (not classifiable) carcinogen by the International Agency for Research on Cancer (IARC).
 Manganese and manganese oxides: Chronic exposure to high concentrations of manganese fumes and dusts may adversely affect the central nervous system with symptoms including languor, sleepiness, weakness, emotional disturbances, spastic gait, mask-like facial expression and paralysis. Animal studies indicate that manganese exposure may increase susceptibility to bacterial and viral infections. Occupational overexposure (Manganese) is a progressive, disabling neurological syndrome that typically begins with relatively mild symptoms and evolves to include altered gait, fine tremor, and sometimes, psychiatric disturbances. May cause damage to lungs with repeated or prolonged exposure. Neurobehavioral alterations in worker populations exposed to manganese oxides include: speed and coordination of motor function are especially impaired.
 Nickel and nickel oxides: Exposure to nickel dusts and fumes can cause sensitization dermatitis, respiratory irritation, asthma, pulmonary fibrosis, edema, and may cause nasal or lung cancer in humans. Nickel causes damage to lungs through prolonged or repeated inhalation exposure. IARC lists nickel and certain nickel compounds as Group 2B carcinogens (sufficient animal data). ACGIH 2015 TLVs® and BEIs® lists insoluble nickel compounds as confirmed human carcinogens. Nickel is suspected of damaging the unborn child.

SECTION XII – ECOLOGICAL INFORMATION

12(a) Ecotoxicity (aquatic & terrestrial): No Data Available for Aluminized Steel Type 1 and Type 2 as sold/shipped. However, individual components of the product when processed have been found to be toxic to the environment. Metal dusts may migrate into soil and groundwater and be ingested by wildlife as follows:
 Iron Oxide: LC50: >1000 mg/L; Fish 48 h-EC50 > 100 mg/L (Currenta, 2008k); 96 h-LC0 ≥ 50,000 mg/L. Test substance: Bayferrox 130 red (95 – 97% Fe_2O_3; < 4% SiO_2 and Al_2O_3) (Bayer, 1989a).
 Hexavalent Chrome: EU RAR listed as category 1, found acute EC50 and LD50 to algae and invertebrates < 1 mg.
 Nickel Oxide: IUCLID found LC50 in fish, invertebrates and algae > 100 mg/l.

12(b) Persistence & Degradability: No Data Available for Aluminized Steel Type 1 and Type 2 as sold/shipped or individual components.
12(c) Bioaccumulative Potential: No Data Available for Aluminized Steel Type 1 and Type 2 as sold/shipped or individual components.
12(d) Mobility (in soil): No data available for Aluminized Steel Type 1 and Type 2 as sold/shipped. However, individual components of the product have been found to be absorbed by plants from soil.
12(e) Other adverse effects: None Known
Additional Information:
Hazard Category: Not Reported Signal Word: No Signal Word
Hazard Symbol: No Symbol
Hazard Statement: No Statement

SECTION XIII – DISPOSAL CONSIDERATIONS

13.1 Waste Disposal Method

The material should be recycled whenever possible, but may be land filled. This product is not classified as a hazardous waste under the authority of the RCRA (40CFR 261) or CERCLA (40CFR 117&302). Disposal must be made in accordance with local, state and federal regulations.

13.2 Other disposal considerations

Uncleaned packaging

Recommendation: Disposal must be made in accordance with local, state and federal regulations.

Recommended cleansing agent: Not applicable

SECTION XIV – TRANSPORT INFORMATION

	DOT (U.S.)	TDG (Canada)
UN-Number	Not Regulated	Not Regulated
UN proper shipping name	Not Regulated	Not Regulated
Transport Hazard Class(es)	Not Regulated	Not Regulated
Packing Group (if applicable)	Not Regulated	Not Regulated

14.1 Environmental hazards:

Not Available

14.2 Transport in bulk according to Annex II of Marpol 73/78 and the IBC Code

Not available

14.3 Special precautions for user

Do not handle until all safety precautions have been read and understood.

SECTION XV – OTHER REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislations specific for the chemical

Canada

WHMIS Classification: Considered to be a hazardous material under the Hazardous Products Act as defined by the Hazardous Products Regulations and subject to the requirements of Health Canada's Workplace Hazardous Material Information (WHMIS). This document complies with the WHMIS requirements of the Hazardous Products Act (HPA) and the HPR.

15.2 US Federal Information

SARA 302/311/312/313 Components

The product contains the following toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372:

CAS	Chemical	% by Weight
7440-50-8	Zinc	<0.1 max
7439-96-5	Manganese	2.0 max
7440-02-0	Nickel	0.4 max

15.3 State Right to Know Laws

California Prop. 65 Components

WARNING: This product can expose you to chemicals including nickel which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

SECTION XVI – OTHER INFORMATION

Last Updated: January 28, 2019

NOTE: The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein.

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End of SDS