Corrugated Aluminum Products

SAFETY DATA SHEET
(Complies with OSHA 29 CFR 1910.1200)

SECTION I: PRODUCT IDENTIFICATION

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SDS CON3
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Product(s): Corrugated Aluminum Pipe and Accessories, Extruded Products, and Aluminum Structural Plates

Product Use: Industrial use or Construction Use

SECTION II - HAZARD IDENTIFICATION

Hazard-determining components of labeling:
Corrugated aluminum products are considered articles under Reach regulation (REACH REGULATION (EC) No 1907/2006) and is not subject to classification under CLP regulation (REGULATION (EC) No 1272/2008). However, corrugated aluminum products are 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
Not Classified
2.2a Signal word Warning
2.2b Hazard Statements
May form combustible dust concentrations in the air.
The mixture does not meet the criteria for classification.
2.2c Pictograms
None

2.2d Precautionary statements
Avoid breathing dust/fume.
Prevent dust accumulation to minimize explosion hazard.
Immediately seek medical attention if symptoms are significant or persist.
Dispose of material in accordance with all regulations.
2.3 Additional Information
Small chips, fine turnings and dust from processing may be readily ignitable.
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
Aluminum	7429-90-5	≥ 92
Zinc	7440-66-6	≤2.8
Manganese	7439-96-5	≤2.0
Silicon	7440-21-3	≤1.9
Magnesium	7439-95-4	≤1.6
Iron	7439-89-6	≤1.1
Chromium	7440-47-3	≤0.5
Nickel	7440-02-0	≤0.1
Lead	7439-92-1	≤0.1

Additional Information
Nickel & Lead – Present as impurity. While Nickel or Lead is not intentionally added to this mixture, it could potentially enter through the recycle stream.

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: Chronic overexposure can cause scarring of the lungs.
Skin contact: None known
Eye Contact: None known
Ingestion: None known
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 readily ignitable.

5.2 Suitable extinguishing agents: Use Class D extinguishing agents on fines, dust or molten metal. Use coarse water spray on chips and turnings.

5.3 Special hazards arising from the substance or mixture: None known

5.3a Products of Combustion: None

5.3b Explosion Hazards in Presence of Various Substances: Take precautionary measures against static discharges when there is a risk of dust explosion.

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: Keep material dry. Avoid generating dust.

Information about storage in one common storage facility: Do not allow chips, fines or dust to contact water, particularly in enclosed areas.

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

	Type	mg/M^3
Chromium (CAS 7440-47-3)	TWA	1
Nickel (CAS 7440-02-0)	TWA	1
Silicon (CAS 7440-21-3)	TWA	5 (resp) 15 (total)

Compounds Formed During Processing

	Type	mg/M^3
Aluminum Oxide (CAS1344-28-1)	TWA	5 (resp)
Lead Compounds, inorganic	TWA	15 (total) 0.05 (as Pb)
Manganese Compounds, inorganic	Ceiling	5 (as Mn fume)
Nickle Oxide (CAS 1313-99-1)	PEL	1 (as Ni)

Nitric Oxide (CAS 10102-43-9)	TWA	30
Oil mist, mineral (CAS 8012-95-1)	TWA	5 (mist)

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: Silver Odor: None
pH-value at 20°C (68 °F):	Not applicable
Boiling point/Boiling range:	Not applicable
Melting point/Freezing Point:	1149.8-1220 ^{o}F (621 – 660 ^{o}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):	2.70 – 2.75 g/cm3
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

Information on likely routes of exposure

Eye contact	Dust and fumes from processing: Can cause mechanical irritation.
Skin contact	Contact with residual oil/oil coating: Can cause irritation. Prolonged or repeated skin contact may cause irritation, dermatitis and sensitization. Dust and fumes from processing: Can cause irritation. Prolonged or repeated skin contact may cause allergic contact dermatitis.
Inhalation	Health effects from mechanical processing (e.g., cutting, grinding): Dust: Can cause irritation of the upper respiratory tract. Additional health effects from elevated temperature processing (e.g., welding, melting): Dust and fume: Can cause irritation of the respiratory tract. Acute overexposure: Can cause metal fume fever (nausea, fever, chills, shortness of breath and malaise), reduced ability of the blood to carry oxygen (methemoglobin), and the accumulation of fluid in the lungs (pulmonary edema). Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis), central nervous system damage, Secondary Parkinson's disease reproductive harm in males, respiratory sensitization and lung cancer.
Ingestion	Not relevant, due to the form of the product.

Health effects associated with ingredients

Aluminum dust/fines and fumes: Low health risk by inhalation. Generally considered to be biologically inert (milling, cutting, grinding).

Silicon (inert dusts): Chronic overexposures: Can cause chronic bronchitis and narrowing of airways.

Chromium dust and fumes: Can cause irritation of eye, skin and respiratory tract. Metallic chromium and trivalent chromium: Not classifiable as to their carcinogenicity to humans by IARC.

Nickel dust and fume: Can cause irritation of eyes, skin and respiratory tract. Eye contact: Can cause inflammation of the eyes and eyelids (conjunctivitis). Skin contact: Can cause sensitization and allergic contact dermatitis. Chronic overexposures: Can cause perforation of the nasal septum, inflammation of the nasal passages (sinusitis), respiratory sensitization, asthma and scarring of the lungs (pulmonary fibrosis). Nickel alloys IARC/NTP: Reviewed and not recommended for listing by NTP. Listed as possibly carcinogenic to humans by IARC (Group 2B).

Lead dust or fume: Can cause irritation of eyes and upper respiratory tract. Acute overexposures: Can cause nausea and muscle cramps. Chronic overexposures: Can cause weakness in the extremities (peripheral neuropathy), abdominal cramps, gastrointestinal tract effects, kidney damage, liver damage, central nervous system damage, damage to the blood forming organs, blood cell damage and reproductive harm. Can cause reduced fertility and fetal toxicity in pregnant women. IARC/NTP: Listed as "reasonably anticipated to be a human carcinogen" by the NTP. Listed as possibly carcinogenic to humans by IARC (Group 2B).

Some products are supplied with an oil coating or have residual oil from the manufacturing process. Oil: Can cause irritation of skin. Skin contact (prolonged or repeated): Can cause dermatitis.

Health effects associated with compounds formed during processing

The following could be expected if welded, remelted or otherwise processed at elevated temperatures:

Alumina (aluminum oxide): Low health risk by inhalation. Generally considered to be biologically inert.

Zinc oxide fumes: Can cause irritation of upper respiratory tract. Acute overexposures: Can cause metal fume fever (nausea, fever, chills, shortness of breath and malaise).

Manganese oxide fumes: Can cause irritation of the eyes, skin, and respiratory tract. Acute overexposures: Can cause metal fume fever (nausea, fever, chills, shortness of breath and malaise).

Manganese compounds: Chronic overexposures: Can cause inflammation of the lung tissues, scarring of the lungs (pulmonary fibrosis), central nervous system damage, Secondary Parkinson's Disease and reproductive harm in males.

Silica, amorphous: Acute overexposures: Can cause dryness of eyes, nose and upper respiratory tract.

Iron oxide: Chronic overexposures: Can cause benign lung disease (siderosis). Ingestion: Can cause irritation of gastrointestinal tract, bleeding, changes in the pH of the body fluids (metabolic acidosis) and liver damage.

Magnesium oxide fumes: Can cause irritation of the eyes and respiratory tract. Acute overexposures: Can cause metal fume fever (nausea, fever, chills, shortness of breath and malaise).

Chromium (III) compounds: Can cause irritation of eye, skin and respiratory tract. IARC/NTP: Not classifiable as to their carcinogenicity to humans by IARC.

Hexavalent chromium compounds (Chromium VI): Can cause irritation of eye, skin and respiratory tract. Skin contact: Can cause irritant dermatitis, allergic reactions and skin ulcers. Chronic overexposures: Can cause perforation of the nasal septum, respiratory sensitization, asthma, the accumulation of fluid in the lungs (pulmonary edema), lung damage, kidney damage, lung cancer, nasal cancer and cancer of the gastrointestinal tract. IARC/NTP: Listed as "known to be a human carcinogen" by the NTP. Listed as carcinogenic to humans by IARC (Group 1).

Nickel compounds: Associated with lung cancer, cancer of the vocal cords and nasal cancer. IARC/NTP: Listed as "known to be a human carcinogen" by the NTP. Listed as carcinogenic to humans by IARC (Group 1).

Lead (inorganic compounds): IARC/NTP: Listed as "reasonably anticipated to be a human carcinogen" by the NTP. Listed as probably carcinogenic to humans by IARC (Group 2A).

If the product is heated well above ambient temperatures or machined, oil vapor or mist may be generated.
Oil vapor or mist: Can cause irritation of respiratory tract. Acute overexposures: Can cause bronchitis, headache, central nervous system effects (nausea, dizziness and loss of coordination) and drowsiness (narcosis).

Welding, plasma arc cutting, and arc spray metalizing can generate ozone.
Ozone: Can cause irritation of eyes, nose and upper respiratory tract. Acute overexposures: Can cause shortness of breath, tightness of chest, headache, cough, nausea and narrowing of airways. Effects are reversible on cessation of exposure. Acute overexposures (high concentrations): Can cause respiratory distress, respiratory tract damage, bleeding and the accumulation of fluid in the lungs (pulmonary edema). Effects can be delayed up to 1-2 hours. Additional information: Studies (inhalation) with experimental animals have found genetic damage, reproductive harm, blood cell damage, lung damage and death.

Welding fumes: IARC/NTP: Listed as possibly carcinogenic to humans by IARC (Group 2B). Additional information: In one study, occupational asthma was associated with exposures to fumes from aluminum welding.

Plasma arc cutting of aluminum can generate oxides of nitrogen.
Oxides of nitrogen (NO and NO2): Can cause irritation of eyes, skin and respiratory tract. Acute overexposures: Can cause reduced ability of the blood to carry oxygen (methemoglobin). Can cause cough, shortness of breath, accumulation of fluid in the lungs (pulmonary edema) and death. Effects can be delayed up to 2-3 weeks.
Nitrogen dioxide (NO2): Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis).

Information on toxicological effects

Components	Species	Test Results
Aluminum (CAS 7429-90-5)		
Acute		
Oral		
LD50	Rat	> 10000 mg/kg

Aluminum (CAS 7440-02-0)

Acute

Oral

LD50	Rat	> 9000 mg/kg

Acute Toxicity: Not classified
Skin Corrosion: Duet and fume from processing: Non-corrosive
Serious Eye Damage: Dust in the eyes: May cause minor irritation on eye contact.
Respiratory or Skin Sensitization: Not classified.
Germ cell mutagenicity: Not classified
Pre-Existing Conditions Aggravated by Exposure: Asthma, chronic lung disease and skin rashes.
Reproductive Toxicity: Does not present any reproductive hazards.

SECTION XII – ECOLOGICAL INFORMATION

12.1 Ecotoxicity

Not expected to be harmful to aquatic organisms.

Components		Species	Test Results
Chromium (CAS 7440-47-3)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	0.01 - 0.7 mg/l, 48 hours
Fish	LC50	Carp (Cyprinus carpio)	14.3 mg/l, 96 hours
Iron (CAS 7439-89-6)			
Aquatic			
Crustacea	LC50	Cockle (Cerastoderma edule)	100 - 330 mg/l, 48 hours
		Common shrimp, sand shrimp (Crangon crangon)	33 - 100 mg/l, 48 hours
Fish	LC50	Channel catfish (Ictalurus punctatus)	> 500 mg/l, 96 hours
Lead (CAS 7439-92-1)			
Aquatic			
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	1.17 mg/l, 96 hours
Manganese (CAS 7439-96-5)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	40 mg/l, 48 hours
Nickel (CAS 7440-02-0)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	1 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	2.923 mg/l, 96 hours
Zinc (CAS 7440-66-6)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	2.8 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	0.56 mg/l, 96 hours

12.2 Persistence and degradability

Not inherently biodegradable.

12.3 Bioaccumulative potential:
No further relevant information available.
12.4 Mobility in soil
Not considered mobile.
12.5 Other Adverse Effects
No further relevant information available.

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
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
15.2 US Federal Information
SARA 302/311/312/313 Components
Not regulated
15.3 State Right to Know Laws
California Prop. 65 Components

WARNING: This product can expose you to chemicals including lead which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

SECTION XVI – OTHER INFORMATION

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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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