MATERIAL SAFETY DATA SHEET

Alfrex Plate

SECTION 1: PRODUCT IDENTIFICATION

A. Product Name	Alfrex Plate
B. Recommended Use	Building wall cladding material
C. Restriction on Use	None
D. Manufacturer/Importer/Distributor	Alfrex, LLC 943 Gainesville Highway Bldg 100, Ste 4000 Buford, GA 30518 USA +1-470-589-7449
E. Emergency Phone Number	Chemtrec 1-800-424-9300
F. Website	www.alfrexusa.com
G. Initial Release Date	19-April-2019
H. Revision Date	01-July-2020
I. Version Number	2.0

SECTION 2: HAZARD IDENTIFICATION

A. Classification

Alfrex Plate is defined under OSHA Hazard Communications standard 29 CFR 1910.1200 as an “article”. As such, it is a manufactured item other than a fluid or particle, formed to a specific design during manufacture with end functions dependent in whole or in part upon its’ shape or design use during end use, and which under normal conditions of used does not release, or otherwise result in exposure to hazardous chemicals, nor pose a physical hazard or health risk to employees. Unless indicated otherwise, all classification information contained in this document regarding potential health, fire, or explosion hazards is in reference to hazardous elements that may be released during processing the Product including, but not limited to, dust, fumes, chips, and fines.

Specific target organ toxicity (repeated exposure) : Category 2
Chronic aquatic environment hazard : Category 1

B. GHS Label Elements

Symbols

Signal Word	Warning
Hazard Statement	H302 Harmful if swallowed H360 May damage fertility or the unborn child H373 May cause damage to organs H411 Toxic to aquatic life with long lasting effects

Precautionary Statement

- Prevention	P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P222 Do not allow contact with air. P231+P232 Handle under inert gas. Protect from moisture. P240 Ground/bond container and receiving equipment. P241 Use explosion-proof electrical/ventilating/lighting/…/ equipment. P260 Do not breathe dust/fume/gas/mist/vapours/ spray. P264 Wash … thoroughly after handling. P270 Do not eat, drink or smoke when using this product P271 Use only outdoors or in a well-ventilated area P273 Avoid release to the environment. P280 Wear protective gloves/protective clothing/eye protection/face protection.
- Response	P308+P313 IF exposed or concerned: Get medical advice/attention. P312 Call a POISON CENTER/doctor/…/if you feel unwell. P314 Get medical advice/attention if you feel unwell. P321 Specific treatment. P330 Rinse mouth. P335+P334 Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages. P370+P378 In case of fire: Use… to extinguish. P391 Collect spillage.
- Storage	P402 Store in a dry place. P407 Maintain air gap between stacks/pallets.
- Disposal	P501 Dispose of contents/container to in accordance with local regulation.

C. Hazards Not Otherwise Classified (NEPA)

Copper		Aluminum	
Health	2	Health	0
Fire	Not available	Fire	Not available
Reactivity	0	Reactivity	1
Manganese		Iron	
Health	0	Health	2
Fire	Not available	Fire	Not available
Reactivity	1	Reactivity	Not available
Silicon		Zinc	
Health	Not available	Health	0
Fire	2	Fire	Not available
Reactivity	Not available	Reactivity	1

SECTION 3: COMPOSITE/INFORMATION ON INGREDIENTS

Components	CAS Number	Percentages %
Aluminum	7429-90-5	97.49 max
Copper	7440-50-8	0.20 max
Manganese	7439-96-5	1.50 max
Iron	7439-89-6	0.70 max
Silicon	7440-21-3	0.60 max
Zinc	7440-66-6	0.10 max
Others	-	0.06 max
This product is a solidified product, which is not exposed to chemicals contained in the product. However, it may be partially exposed in the molten condition such as cutting or melting.		

SECTION 4: FIRST-AID MEASURES

A. Eye Contact	Dust from processing. Rinse eyes with water or saline solution for at least 15 minutes. Seek medical attention from a physician.
B. Skin Contact	Dust from processing. Wash skin with soap and water for at least 20 minutes while removing contaminated clothing and shoes. Seek medical attention from a physician. In the case of burns, immediately cool the affected area for as long as possible by cold water, and do not remove any clothing adhering to the skin.
C. Inhalation	Dust from processing. Move to fresh air. Seek medical attention from a physician.
D. Ingestion	Not inspected due to composition and form of product. If dust or fines are ingested, rinse mouth with water in case of ingestion of dust or fines. Seek medical attention from a physician.
E. Most Important Symptoms & Effects	Prolonged exposure to dust and fumes may aggravate pre-existing chronic conditions of the skin or respiratory system.
F. Indication if Immediate Medical Attention and Special Treatment Needed	Notify medical personnel of any situation and avoid overexposure to irritants.

SECTION 5: FIRE FIGHTING MEASURES

A. Suitable Extinguishing Media	Use Class D extinguishing agents on fines or molten metal. Do not use halogenated extinguishing agents on small chips, fines, or dust.
B. Specific Hazards	Dust from processing. Wash skin with soap and water for at least 20 minutes while removing contaminated clothing and shoes. Seek medical attention from a physician. When burned, dust may emit corrosive or toxic smoke, fumes, or vapors may be emitted. Substances are not easily ignited; they may be burned via direct flame application. Substances may be explosively decomposed in case of fire or over-heating.
C. Hazardous Combustion	Dust or fines dispersed in the air can be explosive. Even minor dust clouds are potentially dangerous. Chips, dust or fines in contact with water can generate flammable/explosive hydrogen gas. Hydrogen gas in a confined space or poorly ventilated space

	could present an explosion hazard. Fines and dust in contact with certain metal oxides (i.e. Rust). Thermite reactions can be initiated easily by weak ignition sources. Molten metal in contact with water/moisture or other metal oxides. Moisture entrapped by molten metal can be explosive. Contact of molten aluminum with other metal oxides can initiate a thermite reaction.
C. Special PPE and Precautions for Firefighters	NIOSH approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.

SECTION 6: ACCIDENTAL RELEASE MEASURES

A. Personal & Environmental Precautions	Avoid contact with sharp edges or heated metal. Wear protective gloves. No special environmental precautions are required.
B. Method and Materials for Containment and Cleaning	Clean releases of dust by sweeping the area and depositing in a closed container. Take measures to block dust from reaching surface water or grassy areas.

SECTION 7: HANDLING AND STORAGE

A. Precautions for Safe Handling	Avoid generating dust. Avoid contact with sharp edges or heated metal. There is no visual difference between hot and cold aluminum. Local ventilation and vacuum systems must be designed to handle explosive dusts. Dry vacuums and electrostatic precipitators must not be used, unless specifically approved for use with flammable/explosive dusts. Dust collection systems must be dedicated to aluminum dust only and should be clearly labeled as such. Do not co-mingle fines of aluminum with fines of iron, iron oxide (rust) or other metal oxides. Avoid all ignition sources and maintain good housekeeping practices. Do not use compressed air to remove material from floors and other surfaces.
B. Conditions for Safe Storage	No special storage precautions noted.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

A. OSHA Permissible Exposure Limit	Aluminum: 15mg/m3 (Total), 5mg/m3 (Respirable) Manganese: 5mg/m3 (Respirable Fume)
B. Appropriate Engineering Controls	A system of local and/or general exhaust is recommended to keep employee exposures below the Exposure Limits. If engineering controls fail to mitigate exposure to limits listed, use NIOSH approved respiratory protection.
C. Individual Protection Measures PPE	
Eye & Face Protection	Wear primary eye protection such as tight-fitting safety goggles with a secondary protection face shield.
Respiratory Protection	Use an approved respirator designed for the specific hazards where concentrations exceed exposure limits.
Skin and Protection	Wear cut resistant gloves and avoid contact with sharp edged objects and materials.
Thermal Protection	When handling heated materials, wear gloves and proper clothing to cover exposed areas and protect against thermal burns.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance	Solid, Various colors
B. Odor	Odorless
C. Odor Threshold	Not Applicable
D. pH	Not Applicable
E. Melting Point/Freezing Point	Aluminum: 482 ℃ - 660 ℃ (900 °F - 1221 °F)
G. Flash Point	Not Applicable
H. Evaporation rate	Not Applicable
I. Flammability (Solid, Gas)	Not Applicable
J. Upper/Lower Flammability or Explosive Limits	Not Applicable
L. Solubility	Insoluble
M. Vapor Density	Not Applicable
N. Specific Gravity	2.7 g/cm3
O. Partition Coefficient: n-Octanol/water	Not Applicable
P. Auto Ignition Temperature	590℃ (1,094 °F)
Q. Decomposition Temperature	Not Applicable
R. Viscosity	Not Applicable
S. Molecular Weight	Not Applicable

SECTION 10: STABILITY AND REACTIVITY

A. Chemical Stability	Stable under recommended storage and handling conditions.
B. Possibility of Hazardous Reactivity and Conditions to Avoid.	Dust formation. Heat, flames and sparks. Protect from water. Aluminum fines are attacked by strong acids and alkalis and by some halogenated organic compounds especially at elevated temperatures. Operations generating aluminum fines may produce hydrogen gas when exposed to moisture. Hydrogen gas is highly flammable and can accumulate in poorly ventilated areas. Liberates flammable hydrogen gas on contact with water, alcohols, acidic or basic materials, and metals or metallic compound
C. Incompatible Materials	Acids. Alkalis. Water. Halogenated compounds. Metal oxides. Iron powder and water: may cause an explosive reaction forming hydrogen gas when heated above 1470°F (800°C).
D. Hazardous Decomposition Products	Nickel oxides. Cadmium compounds. Fumes of aluminum or aluminum oxide. Welding of aluminum alloys may generate carbon monoxide, carbon dioxide, ozone, and nitrogen oxides. Lead oxides. Lead and chromium compounds.

SECTION 11: TOXICOLOGICAL INFORMATION

A. Acute Toxicity	Copper: LD50 481 mg/kg Rat (OECD TG 401, GLP) Aluminum: LD50 > 15900 mg/kg Rat (OECD TG 401) Manganese: LD50 > 2000 mg/kg Rat (OECD TG 420, GLP) Iron: LD50 98.6 mg/kg Rat (OECD TG 401, male) Silicon: LD50 3160 mg/kg Rat Zinc: LD50 > 2000 mg/kg Rat (OECD TG 401, GLP)
B. Carcinogenicity	Not classified as a carcinogen. Trace elements used in the paint coatings for this product may be known cancer causing agents.
C. Inhalation	Airborne particles of aluminum and or product materials may irritate the eyes and respiratory tract.
D. Skin Corrosion Property / Stimulativeness	The product is not known to cause human skin or respiratory sensitization. Contact with dust can cause mechanical irritation or drying of the skin.
E. Ingestion	No Applicable
F. Germ Cell Mutagenicity	Aluminum - The in-vitro DNA damage test shows that the negative similar substance of AlCl3obtained from Sigma when there is no metabolic activity. The chromosome abnormality test by using the myelocyte for the mammal shows that the negative similar substance of AlCl3 obtained from Sigma OECD TG 475 when there is no metabolic activity.
G. Reproductive Toxicity	Product not classified and dust from processing does not present any reproductive hazards. Elevated temperature processing with manganese compounds, such as welding, can present reproductive hazards for males.
H. Specific Organ Toxicity	Single Exposure, Product – the classification criteria are not met. For dusts, may cause damage to organs (kidneys, respiratory system). Repeated Exposure: May cause damage to organs through prolonged or repeated exposure (respiratory system). May cause allergic reactions in very susceptible persons, cause chronic effects, cause skin irritation and/or dermatitis and sensitization of susceptible persons. May cause adverse effects on the bone marrow and blood-forming system. May cause adverse liver effects. Elevated temperature processing such as welding and plasma arc cutting may release hazardous fumes. Overexposure to metal fumes may cause pulmonary edema (fluid in the lungs) and methemoglobinemia. May also cause pulmonary fibrosis and lung cancer. Lead compounds may be absorbed by ingestion, by inhalation and through the skin. Lead may damage kidney function, the blood forming system and the reproductive system. Inorganic lead compounds can cause developmental da
I. Eyes Critical Damage / Stimulativeness	Dust particles, chips, or fines contact with the eyes can lead to mechanical irritation.

SECTION 12: ECOLOGICAL INFORMATION

A. Ecotoxicity (Fish)	Not expected to be harmful to aquatic organisms. Copper: LC50 0.286 mg/ℓ 96 hr Oncorhynchus mykiss (LC50 = 0.28640% sewage treatment plant effluent, 0.164river water mg/L 96hr) Manganese: LC50 > 3.6 mg/ℓ 96 hr Oncorhynchus mykiss (OECD TG 203, GLP) Zinc: LC50 0.439 mg/ℓ 96 hr others (test specie: Cottus bairdii)
B. Persistence and Degradability	The product contains inorganic compounds which are not biodegradable.
C. Bio-accumulative Potential	The product is not bioaccumulative.
D. Soil Mobility	Not considered mobile.
E. Other Adverse Effects	Copper: Fish Oncorhynchus mykiss: NOEC = 11.4 µg/L 45d CrustaceanCeriodaphnia sp.: NOEC = 122 µg/Lmortality, 31.6 µg/Lreproduction OECD TG 21. Algaes Chlamydomonas reinhardtii: NOEC = 22 µg/Lgrowth rate 10d OECD TG 201 Aluminum: Crustacean Daphnia magna: NOEC = 0.076 mg/Reproduction, 0.137 mg/Limmobilisation 21d OECD TG 211, GLP Manganese: Crustacean Ceriodaphnia dubia: NOEC = 1.7 mg/L 8d OECD TG 211, GLP. Fish Oncorhynchus mykis: NOEC = 0.77 mg/L 100d. Algae Ditylum brightwellii: EC50 = 1.5 mg/L 5d Zinc: Fish Cottus bairdii: NOEC = 0.169 - 0.172 mg/L 30d. Crustacean Daphnia magna: NOEC = 0.048 - 0.156 mg/L 21d. Bird Ceramium tenuicore: NOEC = 7.2 - 18 µg/L 7d

SECTION 13: DISPOSAL INFORMATION

Disposal must be in accordance with current applicable laws and regulations and material characteristics at time of disposal. Recover and reclaim or recycle, if practical. Aluminum in the form of particle may be reactive. Its hazardous characteristics, including fire and explosion, should be determined prior to disposal.

SECTION 14: TRANSPORTATION

A. UN Number	Product: Does not require regulation
B. UN Proper Shipping Name	Product: Does not require regulation
C. Transport Hazard Class	Product: Does not require regulation
D. Packing Group	Product: Does not require regulation
E. Environmental Hazards	Product: Does not require regulation

SECTION 15: REGULATORY INFORMATION

OSHA: NOT Classified as hazardous under the criteria in 29 CFR 1910.1200, Hazard Communication.

U.S. SARA REPORTING REQUIREMENTS: The product components are not subject to the reporting requirements of Sections 302, and 304 of Title III of the Superfund Amendments and Reauthorization Act. Section 313 (TRI) reporting: Aluminum (CAS 7429-90-5) >80% by weight, Manganese (CAS 7439-96-5) <4% by weight.

U.S. TSCA INVENTORY STATUS: The components of this product are listed in the TSCA Inventory.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): There may be elements present in the dust generated from the processing of this product, trace amounts, that are on the California Proposition 65 list. Warning! This product contains chemicals known to the State of California to cause cancer.

CANADIAN DSL/NDSL INVENTORY STATUS: The components of this product are on the DSL Inventory, or are exempted from listing. CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: No component of this product is on the CEPA First Priorities Substance Lists.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: Not Applicable

SECTION 16: OTHER INFORMATION

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