

interior warranty / exterior performance guarantee

This Limited Warranty and Performance Guarantee state that MAXMETAL will be free from manufacturing defects including DELAMINATION and finish PAINT FAILURE under normal installation conditions and non-severe weather environments. Routing, bending and direct printing are not covered by this Limited Warranty or Performance Guarantee due to inconsistencies in methods and techniques of application. Extreme weather conditions as well as hanging, welding, painting, cutting and fastening methods may void this Limited Warranty and/or Performance Guarantee. Delamination means product delaminated in normal conditions and not as a result of external factors such as routing, bending or installation method. The paint finish on MAXMETAL may show normal paint degradation or chalking under normal weather conditions and wear and tear. Refer to the Manufacturer's Fabrication Manual for more information on Safety, Storage and Handling, Visual Consistency and Sawing, Saw Equipment, Routing and Folding, Corner Cutting and Bending, Joining Techniques, Coating, Printing, Cleaning and other technical specifications that may prevent damaging the product and voiding this Limited Warranty and Performance Guarantee during installation and fabrication. Maxmetal product warranty does not include ink and paint and laminate adhesion or the life of these items outside of the manufacturer's parameters.

maxmetal	interior Warranty	exterior performance guarantee
One-Sided	10	5
6mm	10	5
Heavy Duty (HD)	10	5
Lite	5	1
Element-Steel* **	5	0
Digitally Printable (DP)***	10	5
Brushed Silver**	5	1
Brushed/Mirror Gold**	5	0

*Assuming all edges are primed/sealed correctly.

**Not recommended for exterior use.

***Printed UV/Latex inks not included in warranty.



Maxmetal ASTM Test Results

TESTING ITEM	STANDARD	RESULT
UNIT WEIGHT	ASTM D792	T3MM=4.6KG/m ² T4MM=5.5KG/m ²
OUTDOOR TEMPERATURE RESISTANCE	ASTM D1654	NO ABNORMITY
THERMAL EXPANSION	ASTM D696	3.0×10 ⁻⁵ °C ⁻¹
THERMAL DEFORMATION TEMPERATURE	ASTM D648	115 °C
THERMAL CONDUCTION	ASTM 976	0.102KCAL/M.HR°C
FLEXURAL RIGIDITY	ASTM C393	14.0×10 ⁵
IMPACT RESISTANCE	ASTM D732	1650KGF
ADHESIVE STRENGTH	ASTM D903	0.74KGF/MM
SOUND-INSULATING RATE	ASTM E413	29DB
FLEXURAL ELASTICITY	ASTM D790	4055KG/M m ²
SHEAR RESISTANCE	ASTM D732	2.6KGF/M m ²
MINIMUM BENDING RADIUS	ASTM D790	≥300MM
FIRE PROPAGATION	ASTM E84	QUALIFIED
SMOKE DEVELOPED	ASTM E84	<45
WIND-PRESSURE RESISTANCE	ASTM E330	PASSED
PROPERTIES AGAINST WATER	ASTM E331	PASSED
PROPERTIES AGAINST AIR	ASTM E283	PASSED



GRIMCO INC

11745 Sappington Barracks Rd, St. Louis MO 63127

MAX METAL

Structural panels/siding

Conditions of Use:

1. Environmental Suitability: Wet, Damp or Dry Location.
2. A letter made from a structural panel shall have at least two points of support and shall have no point more than 10 in. from a point of support.
3. Environmental Suitability: Wet, Damp or Dry Location.
4. Have been evaluated for wet location with 50°C ambient.
5. Illustrate the proper cutting, pointing, installation, component securement and securement to a building surface of a structural panel.
6. May be employed as external decorative faces and are acceptable for support of complete electrical enclosures, plastic faces, and moldings that are reliably secured to the panel.
7. Not suitable to be used as the enclosure of bare live parts or wiring.
8. Nuts and bolts must be used when fastening a ballast or transformer weighing more than 7-1/2 lbs (3.4 kg).

Report Date: 2019-02-26

Last Revised: 2019-03-04

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Material Safety Data Sheet

Product Name: MAX METAL ALUMINUM COMPOSITE MATERIAL

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

Chemical Formula: Mixture

Product Use: Architectural panels, specialty applications

Supplier:

Grimco, Inc.

1585 Fencorp Drive

Fenton, Missouri 63026

Tel: 800 542 9941

Fax: 800 760 5575

*** * * Section 2 – Composition / Information on Ingredients * * ***

Component	Percent
Aluminum Face Sheets	-
Aluminum	30-60
Manganese	< 1
Composite may contain	-
Thermoplastic polymer	< 60
Aluminum oxid	< 25
Petroleum distillates	< 4
If coated, may contain	-
Titanium compounds	< 2
Cobalt compounds	< 2
Antimony compounds	< 1
Nickel compounds	< 1
Chromium compounds	< 1
Carbon black	< 1
Silica, amorphous	< 1
Lead compounds	< 1

Component Related Regulatory Information

This Product may be regulated, have exposure limits or other information identified as the following: Cobalt, Nickel, Inorganic compounds, insoluble, Nickel insoluble compounds, Chromium (III) Compounds, Chromium (vi) compounds (certain water insoluble forms), chromium (vi) compounds-water soluble, Chromates, Antimony, Lead chromate, Silica fume (amorphous), Manganese compounds, n.o.s..

Component Information

Additional compounds which may be formed during processing or recycling are listed in Section 8.

Emergency Overview

Solid. Various colors. Odorless. Non-flammable as supplied. Small chips, fine turning and dust from processing may be readily ignitable.

Explosion / fire hazards may be present when (See Sections 5, 7 and 10 for additional information):

- * Dust or fines are dispersed in the air.
- * Chips, dust or fines are in contact with water.
- * Dust or fines are in contact with certain metal oxides(e.g. rust)
- * Molten metal is in contact with water / moisture or certain metal oxides.

Dust and fume from processing can cause irritation of eyes, skin and upper respiratory tract; metal fume fever and lung disease. Combustion of the coatings can generate toxic and irritating gases.

Potential Health Effects

(If dusts or fumes are generated by processing)

Eyes

Can cause irritation

Skin

Can cause irritation

Inhalation

Can cause irritation of upper respiratory tract, metal fume fever and other health effects listed below. Cancer and reproductive hazard.

Health Effects of Ingredients

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

Manganese dust of fumes Chronic overexposures: Can cause inflammation of the lung tissue, scarring of the lungs (pulmonary fibrosis), central nervous system damage, secondary Parkinson's disease and reproductive harm in males.

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

Titanium dioxide Can cause irritation of eyes and respiratory tract. Chronic overexposures: Can cause chronic bronchitis

Cobalt Can cause irritation of eyes, skin and respiratory tract. Skin contact:: Can cause allergic reactions. Acute and chronic overexposures: Can cause respiratory sensitization, asthma, scarring of the lungs (pulmonary fibrosis) and damage to the heart muscle (cardiomyopathy).

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Antimony and antimony trioxide Can cause irritation of eyes, skin, mucous membranes and upper respiratory tract. Acute overexposures: Can cause fever, chills, shortness of breath and malaise (metal fume fever). Chronic overexposures: Can cause dermatitis, ulcers in the mouth, chemical pneumonia, lung damage, liver damage and kidney damage. Ingestion: Can cause abdominal cramps, diarrhea, dizziness, abnormal heart rhythm (arrhythmia) and death.

Nickel dust and fumes 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 compounds** Associated with lung cancer, cancer of the vocal cords and nasal cancer.

Chromium dust Can cause irritation of eyes, skin and respiratory tract. **Chromium and trivalent chromium**

Hexavalent chromium (Chrome VI) Can cause irritation of eyes, 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, fluid in the lungs (pulmonary edema), lung damage, kidney damage, lung cancer, nasal cancer and cancer of the gastrointestinal tract.

Carbon black Can cause mechanical irritation of eyes, skin and upper respiratory tract. Chronic overexposures: Can cause chronic bronchitis and lung disease.

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. Chronic overexposures: Can cause weakness in the extremities (peripheral neuropathy), abdominal cramps and other gastrointestinal tract effects, kidney damage, liver damage, central nervous system damage, damage to blood forming organs, blood cell damage and reproductive harm. Can cause reduced fertility and fetal toxicity in pregnant women.

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

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* IARC Classification Definitions

Group 1: the agent is carcinogenic to humans. There is sufficient evidence that a causal relationship existed between exposure to the agent and human cancer.

Group 2B: The agent is possibly carcinogenic to humans. Generally includes agents for which there is limited evidence in the absence of sufficient evidence in experimental animals.

Medical Conditions Aggravated By Exposure to the Product

Asthma, chronic lung disease, skin rashes and secondary Parkinson's disease.

* * * Section 4 – First Aid Measures * * *

First Aid: Eyes

Flush eyes with plenty of water or saline for at least 15 minutes. Consult a physician.

First Aid: Skin

Wash skin with soap and water for at least 15 minutes. Consult a physician if irritation persists.

First Aid: Inhalation

Remove to fresh air. If unconscious or severely injured, check for clear airway, breathing and presence of pulse.

Perform CPR if there is no pulse or respiration. Consult a physician.

* * * Section 5 – Fire Fighting Measures * * *

Flammable Properties

This Product does not present fire or explosion hazards as shipped. Small chips, turnings, dust and fines from processing may be readily ignitable.

Fire / Explosion

May be a potential hazard under the following conditions:

- * Dust or fines dispersed in the air can be explosive. Even a minor dust cloud can explode violently.
- * Chips, dust or fines in contact with water can generate flammable / explosive hydrogen gas. Hydrogen gas could present an explosion hazard in confined or poorly ventilated spaces.
- * Dust or fines in contact with certain metal oxides(e.g., rust). A thermite reaction, with considerable heat generation, can be initiated by a weak ignition source.
- * Molten metal in contact with water / moisture or other metal oxides(e.g.,rust). Moisture entrapped by molten metal can be explosive. Contact of molten aluminum with other metal oxides can initiate a thermite reaction.

Extinguishing Media

Use Class D extinguishing agents on dusts, fines or molten metal. Use coarse water spray on chips and turnings. DO NOT USE: Halogenated agents on small chips, dusts or fines. Water around molten metal.

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Fire Fighting Equipment / Instructions

Fire fighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.

* * * Section 6 – Accidental Release Measures * * *
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Small / Large Spill:

Collect scrap for recycling. If molten: Contain the flow using dry sand or salt flux as a dam. Do not use shovels or hand tools to halt the flow of molten aluminum. Allow the spill to cool before remelting as scrap.

* * * Section 7 – Handling and Storage * * *

Handling / Storage

Avoid generating dust. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different.

Requirements For Processes Which Generate Dusts or Fumes

If processing of these products includes operations where dust or extremely fine particulate is generated, Cover and reseal partially empty containers. Use non-sparking handling equipment. Provide grounding and bonding where necessary to prevent accumulation of static charges during dust handling and transfer operations.

Local ventilation and vacuum systems must be designed to handle explosive dusts. Dry vacuums and electrostatic precipitators must not be used. 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.

Do not allow chips, fines or dust to contact water, particularly in enclosed areas.

Avoid all ignition sources. Good housekeeping practices must be maintained.

Requirements for Remelting of Scrap Material and / or Ingot

Molten metal and water can be an explosive combination. The risk is greatest when there is sufficient molten metal to entrap or seal off the water. Water and other forms of contamination on or contained in scrap or remelt ingot are known to have caused explosions in melting operations. While the products may have minimal surface roughness and internal voids, there remains the possibility of moisture contamination or entrapment. If confined, even a few drops of water can lead to violent explosions.

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All tooling and containers which come in contact with molten metal must be preheated or specially coated and rust free. Molds and ladles must be preheated or oiled prior to casting. Any surfaces that may contact molten metal (e.g., concrete) should be specially coated.

Drops of molten metal in water (e.g. from plasma arc cutting), while not normally an explosion hazard, can generate enough flammable hydrogen gas to present an explosion hazard. Vigorous circulation of the water and removal of the particles minimize the hazards.

During melting operations, the following minimum guidelines should be observed:

- * Inspect all materials prior to furnace charging and completely remove surface contamination such as water, ice, snow, deposits of grease and oil or other surface contamination resulting from weather exposure, shipment, or storage.
- * Store materials in dry, heated areas with any cracks or cavities pointed downwards.
- * Preheat and dry large or heavy items such as ingot adequately before charging into a furnace containing molten metal. This is typically done by use of a drying oven or homogenizing furnace. The drying cycle should bring the internal metal temperature of the coldest item of the batch to 400°C and then hold at that temperature for 6 hours.

* * * Section 8 – exposure Controls / Personal Protection * * *
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Engineering Controls

Use with adequate explosion-proof ventilation to meet the limits listed in Section 8, exposure Guidelines.

Personal Protective Equipment

Respiratory Protection

Use NIOSH-approved respiratory protection as specified by an Industrial Hygienist or other qualified professional if concentrations exceed the limits listed in Section 8, Exposure Guidelines.

Eye Protection

Wear safety glasses/goggles to avoid eye contact.

Skin Protection

Wear appropriate gloves to avoid any skin injury.

General

Sampling to establish lead exposures is advised where exposures to airborne particulate or fumes are possible.

Personnel who handle and work with molten metal should utilize primary protective clothing like face shields, fire resistant topper's jackets, leggings, spats and similar equipment to prevent burn injuries. In addition to primary protection, secondary or day-to-day work clothing that is fire resistant and sheds metal splash is recommended for use with molten metal.

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*** Section 9 – Physical & Chemical properties ***

Physical State:	Solid panels	Appearance:	Various colors
Boiling Point:	Not applicable	Melting Point:	Aluminum: 482 –649 °C Plastic ~ 104°C
Vapor Pressure:	Not applicable	Vapor Density:	Not applicable
Solubility in water:	None	Specific Gravity:	See Density
Density:	Range: generally 1.10-2.27 G/cm3	PH Level:	Not applicable
Odor:	Odorless	Odor Threshold:	Not applicable
Octanol-Water Coefficient:	Not applicable		

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

Stability

Stable under normal conditions of use, storage, and transportation as shipped.

Conditions to Avoid

Chips, fines dust and molten metal are considerably more reactive with the following:

- * **Water:** Slowly generates flammable / explosive hydrogen gas and heat. Generation rate is greatly increased with smaller particles (e.g., fines and dusts). Molten metal can react violently / explosively with water or moisture, particularly when the water is entrapped.
- * **Heat:** Oxidizes at a rate dependent upon temperature and particle size.
- * **Strong oxidizers:** Violent reaction with considerable heat generation. Can react explosively with nitrate (e.g., ammonium nitrate and fertilizers containing nitrate) particularly when heated or molten.
- * **Acid and alkalis:** Reacts to generate flammable / explosive hydrogen gas. Generation rate is greatly increased with smaller particles (e.g., fines and dusts).
- * **Halogenated compounds:** Many halogenated hydrocarbons, including halogenated fire extinguishing agents, can react violently with finely divided aluminum.
- * **Iron oxide (rust) and other metal oxides(e.g., copper and lead oxides):** A violent thermite reaction generating considerable heat can occur. Reaction with aluminum fines and dusts requires only very weak ignition sources for initiation. Molten aluminum can react violently with iron oxide without external ignition source.
- * **Iron powder and water:** An explosive reaction forming hydrogen gas occurs when heated above 1470°F (800°C)

Hazardous Decomposition

Combustion of the coatings can generate carbon monoxide, carbon dioxide, aldehydes and oxides of nitrogen.

*** Section 11 – Toxicological Information ***

Product Name: MAX METAL ALUMINUM COMPOSITE MATERIAL

Health Effects of Ingredients

A: General Product Information

No information available for product.

B: Component Analysis- LD/LC50

Cobalt compounds (Not Available)

Oral LD50 Rat: 6171 mg/kg (related to Cobalt)

Antimony compounds (Not Available)

Oral LD50 Rat: 7 mg/kg (related to Antimony)

Lead compounds (Not available)

Oral LD50 Mouse: >12mg/kg(related to Chromic acid, lead(2+)salt(1:1))

Carbon black (1333-86-4)

Oral LD50 Rat: >15400mg/kg

Dermal LD50 Rabbit: >3mg/kg

Manganese (7439-96-5)

Oral LD50 Rat:: 9 mg/kg

Carcinogenicity

A: General Product Information

No information available for product.

B: Component Carcinogenicity

Aluminum oxide (Trade Secret)

Titanium compounds (Not Available)

Cobalt compounds (Not Available)

Nickel compounds (Not Available)

Chromium compounds (Not Available)

Lead compounds (Not Available)

* * * Section 12 – Ecological Information * * *

Ecotoxicity

A: General Product Information

No information available for product.

B: component Analysis – Ecotoxicity –Aquatic Toxicity

Lead compounds (Not Available)

Environmental Fate

No information available for product.

*** * * Section 13 – Disposal Considerations * * ***

Disposal Instruction

Reuse or recycle material whenever possible. For disposal, characterize material and dispose of at an industrial landfill or other facility permitted to manage such material.

*** * * Section 14 – Transportation Information * * ***

Special Transportation

	PSN#1	PSN#2	PSN#3	PSN#4
Notes:	(1)			
Proper Shipping Name:	Not Regulated			
Hazard Class:				
UN NA Number:				
Packing Group:				
RQ:				
Other-Tech Name:				
Other-Marine Pollutant				

Notes:

- (1) When “Not Regulated”, either the proper freight classification, “MSDA Number:”, and “Product Name” on the shipping paperwork.

MAX METAL ALUMINUM COMPOSITE MATERIAL



W A R N I N G

Hazards: Small chips, fine turnings and dust may ignite readily. Explosion potential may be present when: (1) dusts or fines are dispersed in the air, (2) fines, dust or molten aluminum are in contact with certain metal oxides or (3) chips, fines, dust or molten aluminum are in contact with water or moisture.

Dust can cause irritation of the eyes, skin, and upper respiratory tract.

Overexposure to fumes (fine dusts) of manganese oxide and antimony may cause metal fume fever by inhalation.

Chronic overexposures to manganese dust can cause central nervous system damage, scarring of the lungs and reproductive harm in males.

Chronic overexposures to titanium dioxide dust can cause chronic bronchitis.

Overexposures to cobalt dust can cause respiratory sensitization (asthma) and damage to the heart and lungs.

Chronic overexposures to antimony dust can cause damage to the lungs, liver and kidneys.

Chronic overexposure to carbon dust may cause scarring of lungs.

Overexposure to dust or fume (fines dusts) containing nickel may cause nasal and / or lung cancer

Overexposures to lead dusts or fumes (fines dusts), by inhalation or ingestion, can cause reproductive harm and damage to the blood cells, liver, kidneys, and central nervous system.

Overexposure to dust or fume (fines dusts) containing hexavalent chromium compounds may cause nasal and / or lung cancer.

Wear appropriate eye and skin protection to prevent injury. Use appropriate respiratory protection if exposures exceed the permissible limits.

First Aid: EYES: Flush eyes with plenty of water or saline for at least 15 minutes. Consult a physician. SKIN: Wash skin with soap and water for at least 15 minutes. Consult a physician if irritation persists. INHALATION: Remove to fresh air. If unconscious or severely injured, check respiration. Consult a physician.

Read MAX METAL Material Safety Data Sheet for more information about use and disposal.

Grimco, Inc.

1585 Fencorp – Drive Fenton, MO 63026