

Mitsubishi Plastics Composites America, Inc.

ALPOLIC®

MATERIALS

1. Product Name

- ALPOLIC® Exotic Series Titanium Composite Material Panels (TCM)
- ALPOLIC® Exotic Series Stainless Steel Composite Material Panels (SCM)

2. Manufacturer

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3. Product Description

BASIC USE

ALPOLIC® Exotic Series Titanium Composite Material (TCM) and Stainless Steel Composite Material (SCM) panels are widely used as interior and exterior wall cladding in commercial and institutional applications. These panels offer flexibility in design through a wide variety of fabrication techniques.

COMPOSITION & MATERIALS

TCM and SCM are composite materials newly developed by Mitsubishi Plastics Composites America, Inc. TCM is 4 mm thick and is composed of polyethylene with a 3.4 mm thick noncombustible mineral filled core sandwiched between a surface skin of titanium 0.3 mm thick and backside skin of stainless steel 0.3 mm thick. SCM is also 4 mm thick and is composed of polyethylene with a 3.4 mm thick noncombustible mineral filled core sandwiched between two 0.3 mm thick stainless steel sheets.

SIZES

ALPOLIC Exotic Series TCM Panels

- Panel thickness - 4 mm
- Standard widths - 1000 mm
- Length - Less than 7200 mm

ALPOLIC Exotic Series SCM Panels

- Panel thickness - 4 mm
- Standard widths - 1000 mm
- Length - Less than 7200 mm

FINISHES

- ALPOLIC Exotic Series TCM Panels
 - Titanium dull finish
- ALPOLIC Exotic Series SCM Panels
 - Stainless steel polished finish
 - Stainless steel dull finish
 - Stainless steel hairline finish

SHAPES & FABRICATION

ALPOLIC SCM and TCM panels can be routed and formed using coated carbide cutting tools. Angle bends are formed by routing the back of the panel prior to shaping. The common pan shape is formed by routing the back edges, trimming the corners and bending and reinforcing the edges. Contact ALPOLIC for fabrication recommendations.

ALPOLIC can be rolled on a pyramid or 4-stand roll bender to a curved shape for curved corners or column covers. Bumping on a press brake also can be used to produce a curved surface. The bending radius of ALPOLIC 4 mm panels is as small as 4" (102 mm).

4. Technical Data

APPLICABLE STANDARDS

ASTM International

- ASTM C393 Standard Test Method for Flexural Properties of Sandwich Constructions
- ASTM D732 Standard Test Method for Shear Strength of Plastics by Punch Tool
- ASTM E8 Standard Test Methods for Tension Testing of Metallic Materials
- ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
- ASTM E108 (Modified) Standard Test Methods for Fire Tests of Roof Coverings
- ASTM E413 Classification for Rating Sound Insulation

PHYSICAL/CHEMICAL PROPERTIES

See Table 1.

FIRE PERFORMANCE

- Surface burning characteristics
- Flamespread (ASTM E84) - Pass
 - Smoke developed (ASTM E84) - Pass
 - Surface flammability (Modified ASTM E108) - Pass

5. Installation

PREPARATORY WORK

The manufacturer recommends field measurement prior to fabrication. Verify alignment of surfaces to receive panels.



APPLICATION

ALPOLIC surfaces can be attached to one another or to other materials by conventional methods of attachment - rivets, bolts or screws. For interior installation, flat surfaces of ALPOLIC can be attached to substrates such as gypsum board using double-faced tape or nonhardening adhesive.

PRECAUTIONS

ALPOLIC panels are prefinished architectural products requiring care in handling to avoid damage to the finish. Handle, store, install and clean panels following the manufacturer's instructions. Comply with manufacturer's recommendations regarding expansion and contraction in detailing and installing ALPOLIC.

6. Availability & Cost

AVAILABILITY

ALPOLIC panels are available worldwide through the regional offices of Mitsubishi Plastics Composites America, Inc., Composite Materials Division. Contact Mitsubishi for the location of an area ALPOLIC representative.

COST

Contact the area representative or the MPCA home office for ALPOLIC pricing. Costs vary due to project size, finish selection and panel sizes.

7. Warranty

Contact the manufacturer for information on panel and finish warranties.



8. Maintenance

Contact the manufacturer for complete maintenance information.

CORROSION PREVENTION

When TCM and SCM panels are to be used for architectural applications, caution in design, fabrication and installation is required. Galvanic corrosion can occur in moist conditions when less noble metals, such as aluminum, and stainless steel come into contact. To prevent galvanic corrosion, follow these recommendations:

- Ensure the design does not permit the accumulation of water on the backside of panels
- When possible, utilize stainless steel rivets, bolts, nuts, washers and screws for fastening and stainless steel angles for submaterials, etc.
- When aluminum fasteners are used, ensure an anodized finish or powder coating is applied to the aluminum to insulate it against other metal, or shim between metals, if possible

CLEANING

Cleaning recommendations differ for TCM and SCM panels. Contact the manufacturer for complete cleaning instructions.

9. Technical Services

Contact ALPOLIC for technical assistance with design and specification or for the name of a nearby representative.

TABLE 1 PHYSICAL PROPERTIES

	ALPOLIC TCM	ALPOLIC SCM
Metal panel weight, kg/m ²		
0.4 mm thick panel	9.3	10.2
Thermal expansion, mm/m/50°C	0.52	0.52
Tensile strength (ASTM E8), kg/mm ²	7.0	8.6
Yield strength (ASTM E8), kg/mm ²	6.1	7.0
Elongation (ASTM E8), %	11.1	12.6
Deflection temperature, °C	112	117
Sound transmission loss (ASTM E413), STC	25	30
Flexural elasticity (ASTM C393), kg/mm ²	5000	7200
Flexural rigidity (ASTM C393), kg × mm ² /mm	27 × 10 ³	38 × 10 ³
Punching shear resistance ¹ (ASTM D732), kg	3080	3517
Punching shear resistance (ASTM D732), kg/mm ²	4.9	5.6
Product Tolerance		
Width, mm	± 2.0	± 2.0
Length, mm	± 4.0	± 4.0
Thickness, mm	± 0.2	± 0.2
Bow ² , %	0.5	0.5
Squareness, mm	5.0 maximum	5.0 maximum
¹ Maximum load, 50 mm diameter.		
² Maximum % of the length and/or width.		

10. Filing Systems

- Reed First Source
- MANU-SPEC®
- Sweet's Catalog Files
- Additional product information is available from the manufacturer.