

Summary of Technical Data – ALPOLIC™ A2 TCM Titanium Composite Material

1. General

ALPOLIC A2 TCM is a titanium composite material with a high fire-retardant core, used as an exterior cladding and roof covering on new buildings and retrofit applications. The material is manufactured by Mitsubishi Chemical Infratec Co., Ltd. and furnished by approved dealers or distributors.

Note: Specification data may be changed in part without affection of material quality.

2. Product composition

ALPOLIC A2 TCM is composed of a high fire-retardant core sandwiched between 0.3mm thick titanium sheet on the topside and 0.3mm thick stainless steel sheet on the backside:

Composition

Topside skin material; 0.3mm thick pure titanium for industrial use, JIS Class 1 or equivalent
Core material; high mineral-filled fire-retardant core
Backside skin material; 0.3mm thick stainless steel, NSSC 220M, a highly rust-resistant ferric stainless steel

The core has the same contents as the established high fire-retardant core of ALPOLIC A2. The titanium surface is protected with a self-adhesive peel-off protective film consisting of two polyethylene layers of white and black. According to weathering tests under normal outdoor conditions, the protective film will withstand six months' exposure without losing its original peel-off characteristic or causing stains or other damages.

3. Surface finish

Dull finish

4. Product dimension and tolerance

- (1) Panel thickness: 4 mm
(2) Panel size: Width = 985 mm^{Note}
Length = less than 5000 mm

Note: 1205mm wide product is available upon request. Contact local distributors or our office.

(3) Product tolerance

Width: ± 2.0 mm
Length: ± 1.0 mm/ m
Thickness: ± 0.2 mm
Bow: Maximum 0.5% (5mm/m) of the length or width
Square-ness (diagonal difference): Maximum 5.0 mm

5. Principal properties

- | | | |
|---|-----------------------------------|-------------------------------|
| (1) Panel weight: | 10.0 kg/m ² | |
| (2) Thermal expansion (ASTM D696): | 11.6×10 ⁻⁶ /°C | |
| (3) Deflection temperature (ASTM D648): | 98°C | |
| (4) Sound transmission loss (ASTM E413): | 28 STC (Sound Transmission Class) | |
| (5) Mechanical properties of ALPOLIC A2 TCM | | |
| a. Tensile strength (ASTM E8): | 71 MPa or N/mm ² | |
| b. 0.2% proof stress (ASTM E8): | 64 MPa or N/mm ² | |
| c. Elongation (ASTM E8): | 18.1 % | |
| d. Flexural elasticity, E (JIS A1408): | 60.4 GPa or kN/mm ² | |
| (6) Mechanical properties of skin metals: | | |
| | Titanium, topside | Stainless steel, backside |
| a. 0.2% proof stress: | 165 MPa or N/mm ² | 295 MPa or N/mm ² |
| b. Flexural elasticity: | 109 GPa or kN/mm ² | 212 GPa or kN/mm ² |

6. General notes

(1) Processing method

The machinability of titanium and stainless steel is low. Therefore, we need special machines and tools for cutting and grooving TCM panels. Use a square shear or a CNC router for cutting, and use a CNC router or a V-cut machine (planer) for grooving. Refer to the fabrication manual for details.

(2) Prevention of galvanic corrosion

Titanium and stainless steel belong to the noble metal in corrosion potential. If dissimilar metals are used for assembling TCM panels, the corrosion of the less noble metal may be accelerated with galvanic corrosion under moist circumstances. Use stainless steel rivet and stainless steel bolt/nut for joining. Use stainless steel angle and flange for accessory, if possible. When aluminum extrusions are used for accessory, insulate the aluminum surface electrically with anodizing or coating.

(3) Color variation among production lots

It is possible that the color of TCM slightly varies among production lots and the inconsistent color is visible after installation. This is caused by the slight color difference between titanium coils. In order to prevent this problem, we recommend placing the total requirement in one order or allotting the panels with adequate grouping arrangement.

The material properties or data in this leaflet are portrayed as general information only and are not product specifications. Due to product changes, improvements and other factors, Mitsubishi Chemical Infratec Co., Ltd. reserves the right to change or withdraw information contained herein without prior notice.

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