

## Summary of Technical Data – ALPOLIC™/fr SCM Stainless Steel Composite Material

### 1. General

ALPOLIC/fr SCM is a stainless steel composite material with a 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/fr SCM is composed of a fire-retardant core sandwiched between two skins of 0.3mm thick stainless steel:

#### Composition

- Topside skin material: 0.3mm thick stainless steel, NSSC220M, a highly rust-resistant ferric stainless steel
- Core material: mineral-filled fire-retardant core
- Backside skin material: 0.3mm thick stainless steel sheet, NSSC220M, a highly rust-resistant ferric stainless steel

The core has the same contents as the established fire-retardant core of ALPOLIC/fr. The topside 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

Hairline Finish and Dull finish <sup>Note</sup>

**Note:** For other finishes, contact local distributors or our office.

### 4. Product dimension and tolerance

- (1) Panel thickness: 3mm and 4 mm
- (2) Panel size: Width = 1000 mm <sup>Note</sup>  
Length = less than 5000 mm

**Note:** 1219mm 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
- Squareness (diagonal difference): Maximum 5.0 mm

## 5. Principal properties

### (1) Panel weight:

Item	Unit	3mm	4mm
Panel weight	kg/m <sup>2</sup>	8.5	10.2

### (2) Thermal expansion ratio (ASTM D696):

Item	Unit	3mm	4mm
Thermal expansion ratio	1/°C	Not tested	12.3×10 <sup>-6</sup>

### (3) Tensile strength of ALPOLIC/fr SCM as an aluminum composite material:

Item	Unit	3mm	4mm
<b>Test Method</b>	-	Calculation	ASTM E8
Tensile strength	MPa or N/mm <sup>2</sup>	97	86
0.2% proof stress	MPa or N/mm <sup>2</sup>	59	69.8
Elongation	%	-	18.5

### (4) Flexural elasticity of ALPOLIC/fr SCM as an aluminum composite material:

Item	Unit	3mm	4mm
<b>Test Method</b>	-	Calculation	JIS A1408
Flexural elasticity	GPa or kN/mm <sup>2</sup>	103.0	78.3

- (5) Mechanical properties of skin metals: NSSC220M  
       0.2% proof stress: 295 MPa or N/mm<sup>2</sup>  
       Flexural elasticity: 212 GPa or kN/mm<sup>2</sup>

### (6) Deflection temperature (ISO 75-2):

Item	Unit	3mm	4mm
Deflection temperature	°C	Not tested	117

### (7) Sound transmission loss (ASTM E413):

Item	Unit	3mm	4mm
STC (Standard Transmission Class)	-	Not tested	28

### (8) Surface reflectivity:

Finish	Diffuse reflection (%) (Incident - received angle: 45-0 deg)	Specula reflection (%) (Incident angle: 25 deg)
Hairline finish	19	10
Dull finish	15	8

## 6. Fire performance

In Japan, SCM is approved as a non-combustible material for exterior and interior uses, based on the fire test results of the heat release test (ISO 5660-1) and the gas toxicity test. The tests done in accordance with the UK and USA standards are only general tests for building materials, but SCM is virtually approved as an eligible material for external claddings and roof coverings in most countries on the basis of the extensive fire test results on ALPOLIC/fr. SCM 4mm has passed the following fire tests. SCM 3mm is also covered in the below certificate in Japan.

Country	Test standard	Result & Classification
U.K.	BS476 Part 6	Class 0
	BS476 Part 7	Class 1
U.S.A.	Tunnel test (ASTM E-84)	Class A/Class 1
Japan	Heat release test (ISO 5660-1) & gas toxicity test	Non-combustible material. Certificate No. NM-0784

## 7. General notes

### (1) Processing method

The machinability of stainless steel is low. Therefore, we need special machines and tools for cutting and grooving SCM 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

Stainless steel belongs to the noble metal in corrosion potential. If dissimilar metals are used for assembling SCM 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 SCM slightly varies among production lots and the inconsistent color is visible after installation. This is caused by the slight color difference between stainless steel 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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