

## Summary of Technical Data Sheet – ALPOLIC™ A2

### 1. General

ALPOLIC™ A2 is an aluminum composite material (ACM) with a high fire-retardant core, suitable for exterior or interior claddings, soffit linings and roof covering in new buildings and retrofit applications. The ALPOLIC A2 material is manufactured by Mitsubishi Chemical Infratec Co., Ltd. and is furnished by approved distributors and authorised dealers.

**Note:** Technical data may be changed in part without affecting the material quality.

### 2. Product composition

ALPOLIC A2 is composed of high mineral filled core sandwiched between two skins of 0.5mm thick aluminum alloy (3105-H14):

Composition	Skin material:	0.5mm thick aluminum alloy (3105-H14)
	Core material:	High mineral filled fire-retardant core

The surface is finished with a high-performance Lumiflon™-based fluoropolymer coating as standard. ALPOLIC A2 is available in finishes of: Solid Colors, Metallic Colors, Sparkling Colors, Prismatic Colors and Patterns. In these finishes, Lumiflon-based fluoropolymer paints are applied in manufacturer's continuous coil coating lines.

The back side of ALPOLIC A2, which will face the structural wall or steel when it is installed as a cladding panel, has a polyester-based wash coating or a service coating to protect it from possible corrosion problems.

The surface is protected with a co-extruded (white/black) removable, self-adhesive protection film. 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. Product dimension and tolerance

- (1) Panel thickness: 3 mm, 4 mm and 6 mm
- (2) Panel size: Width = 1245, 1270, 1550 and 1575 mm  
Length = less than 7200 mm

**Note:** Custom width can be accepted between 914 mm and 1575 mm subject to minimum quantity. Please contact local distributors or our office.

#### (3) Product tolerance

- Width: ±2.0 mm
- Length: ±1.0 mm/ m
- Thickness: ±0.2 mm in 3 and 4 mm thick, ±0.3 mm in 6 mm thick
- Bow: Maximum 0.5% (5mm/m) of the length or width
- Diagonal difference: Maximum 5.0 mm
- Surface defect: The surface shall not have any irregularities such as roughness, buckling and other imperfections in accordance with our visual inspection rules. ALPOLIC A2 is supplied with a cut edge and without aluminum sheet displacement or core protrusion.

#### 4. Principal properties

(1) Panel weight:

Item	Unit	3mm	4mm	6mm
Panel weight	kg/m <sup>2</sup>	6.4	8.1	11.7

(2) Thermal expansion ratio (ASTM D696):

Item	Unit	3mm	4mm	6mm
Thermal expansion ratio	1/°C	23 × 10 <sup>-6</sup>	19 × 10 <sup>-6</sup>	23 × 10 <sup>-6</sup>

(3) Mechanical properties of ALPOLIC A2 as an aluminum composite material:

Item	Unit	3mm	4mm	6mm
Tensile strength (ASTM E8)	MPa or N/mm <sup>2</sup>	61	43	33
0.2% proof stress (ASTM E8)	MPa or N/mm <sup>2</sup>	56	41	-
Elongation (ASTM E8)	%	4.3	3.8	0.0
Flexural elasticity (ASTM C393) / JIS A1408	GPa or kN/mm <sup>2</sup>	Not tested	38.5	35.7

(4) Mechanical properties of aluminum skin metal (3105-H14 alloy):

0.2% proof stress: 150 MPa or N/mm<sup>2</sup>  
Elasticity: 70 GPa or kN/mm<sup>2</sup>

(5) Deflection temperature (ISO 75-2):

Item	Unit	3mm	4mm	6mm
Deflection temperature	°C	125	110	96

(6) Sound transmission loss (ASTM E413):

Item	Unit	3mm	4mm	6mm
STC (Standard Transmission Class)	-	27	27	30

#### 5. Summary of fire tests

ALPOLIC A2 has passed the following fire tests:

Table 5-1 Fire tests for general and external cladding material

Country	Test standard	ALPOLIC A2 specimen	Results & classification
EU	EN 13823, EN ISO 1716, EN 13501-1	4mm	Class A2-s1, d0

## 6. Paint finish

### (1) Coating system

The surface is finished with Lumiflon-based fluoropolymer coating as standard; the back side is a wash coating or a service coating. ALPOLIC A2 is available in finishes of: Solid Colors, Metallic Colors, Sparkling Colors, Prismatic Colors and Patterns (Stone, Timber, Metal, and Abstract). In these finishes, Lumiflon-based fluoropolymer paints are applied in the manufacturer's coil coating lines.

The coating system of each finish is:

- A. "Solid Colors" are three-coat three-bake system.  
The thickness is 30 microns (1.18 mils) minimum and consists of a conversion coating, an inhibitive primer, a Lumiflon-based fluoropolymer coating and a clear coating.
- B. "Metallic Colors", "Sparkling Colors" and "Prismatic Colors" are a three-coat three-bake system.  
The thickness is 28 microns (1.1 mils) minimum and consists of a conversion coating, an inhibitive primer, a Lumiflon-based metallic coating and a clear coating.
- C. "Patterns" is coated with a unique image transfer process.  
The thickness is 45 microns (1.77 mils) minimum and consists of a conversion coating, an inhibitive primer and a Lumiflon-based fluoropolymer coating including the image transfer layer.

**Note 1:** Lumiflon-based fluoropolymer coating has a coating warranty for maximum 20 years.

**Note 2:** ALPOLIC A2 is finished with Lumiflon-based fluoropolymer paint as standard, but polyester and other coatings are also available as an option.

### (2) Colors and gloss level

Standard colors are provided in the Color Chart. Custom colors are available for all finishes upon request subject to respective minimum quantities. The standard gloss is 30% for Solid and Metallic Colors, and 30-80% for Sparkling Colors, 80 % for Prismatic Colors and 15-80% for Patterns (Stone, Timber, Metal, and Abstract). Custom gloss is available between 15 and 80% in all colors upon request subject to minimum quantities. Please contact local distributors or our office for custom color requests.

### (3) Coating performance

The Lumiflon-based fluoropolymer coating meets the following criteria:

Table 6-1 **General properties**

Dry film property	Test method	Criteria
Gloss (60°)	ASTM D523	15 to 80%
Formability (T-bend)	NCCA II-19 ASTM D1737	2T, no cracking
Reverse impact-crosshatch	NCCA II-5	No pick off
Hardness-pencil	ASTM D3363	H
Adhesion Dry Wet Boiling water	ASTM D3359 37.8°C, 24 hrs. 100°C, 20 min.	No pick off No pick off No pick off
Abrasive resistance	ASTM D968 (Falling sand)	40 liters/mil
Chemical resistance: Muriatic acid, 10%HCl, 72 hrs. Sulphuric acid, 20%H <sub>2</sub> SO <sub>4</sub> , 18 hrs. Sodium hydroxide, 20%NaOH, 1 hr. Mortar, pat test, 24 hrs. Detergent, 3% solution, 38°C, 72 hrs.	ASTM D1308 ASTM D1308 ASTM D1308 AAMA2605 ASTM D2248	No change No change No change No change No change

Table 6-2 Weatherability

Dry film property	Test method	Criteria
Weather-o-meter test Colour retention: Gloss retention: Chalk resistance:	ASTM D2244 ASTM D523 ASTM D4214	Maximum 5 units after 4000 hrs. 70% after 4000 hrs. Maximum 8 units after 4000 hrs.
Salt spray resistance:	ASTM B117	Blister-10, scribe-8, after 4000 hrs., 35°C salt fog
Humidity-thermal	ASTM D2246	No blister, no cracking After 15 cycles of 38°C 100%RH for 24 hrs. and -23°C for 20 hrs.
Humidity resistance:	ASTM D2247	No change After 4000 hrs., 100%RH, 35°C

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