

## Summary of Technical Data Sheet - ALPOLIC® A2

### 1. General

ALPOLIC® A2 is an aluminum composite material (ACM) with a high fire retardant core, used as exterior and interior claddings and roof covering in new buildings and retrofit applications. The material is manufactured by Mitsubishi Plastics, Inc., and furnished by approved dealers or distributors.

**Note:** This summary of technical data is about ALPOLIC® A2. If you need that of ALPOLIC®/fr composed of conventional fire-retardant core, contact local distributors or our office.

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

### 2. Product composition

ALPOLIC A2 is composed of a non-combustible mineral high 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:	Non-combustible mineral high filled core

The surface is finished with a high-performance Lumiflon-based fluorocarbon coating as standard, and 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 NaturArt Series. In these finishes, Lumiflon-based fluorocarbon 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 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. Product dimension and tolerance

- (1) Panel thickness: 4 mm
- (2) Panel size: Width = 1270 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:	±4.0 mm
Thickness:	±0.2 mm
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: 8.1 kg/m<sup>2</sup>  
 (2) Thermal expansion ratio: 19 × 10<sup>-6</sup> /°C

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

Item	Unit	
Tensile strength (ASTM E8)	MPa or N/mm <sup>2</sup>	43
0.2% proof stress (ASTM E8)	MPa or N/mm <sup>2</sup>	41
Elongation (ASTM E8)	%	3.8
Flexural elasticity (ASTM C393)	GPa or kN/mm <sup>2</sup>	38.5

(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): 110 °C

(6) Sound transmission loss (ASTM E413): STC (Standard Transmission Class) 27

#### 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	Results & classification
EU	EN 13823, EN ISO 1716, EN 13501-1	Class A2-s1, d0

#### 6. Paint finish

(1) Coating system

The surface is finished with Lumiflon-based fluorocarbon 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 NaturArt Series (Stone, Timber, Metal, and Abstract). In these finishes, Lumiflon-based fluorocarbon 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 fluorocarbon 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. "NaturArt Series" 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 fluorocarbon coating including the image transfer layer.

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

**Note 2:** ALPOLIC A2 is finished with Lumiflon-based fluorocarbon 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 15-80% for Sparkling Colors, Prismatic Colors and NaturArt Series (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 fluorocarbon coating meets the following criteria:

Table 6-1 **General properties**

Dry film property	Test method	Criteria
Gloss (60°)	ASTM D523-89	15 to 80%
Formability (T-bend)	NCCA II-19 ASTM D1737-62	2T, no cracking
Reverse impact-crosshatch	NCCA II-5	No pick off
Hardness-pencil	ASTM D3363-92a	H
Adhesion		
Dry	ASTM D3359	No pick off
Wet	37.8°C, 24 hrs.	No pick off
Boiling water	100°C, 20 min.	No pick off
Abrasive resistance	ASTM D968-93 (Falling sand)	40 liters/mil
Chemical resistance:		
Muriatic acid, 10% HCl, 72hrs	ASTM D1308-87	No change
Sulphuric acid, 20% H <sub>2</sub> SO <sub>4</sub> , 18hrs	ASTM D1308-87	No change
Sodium hydroxide, 20% NaOH, 1hr	ASTM D1308-87	No change
Mortar, pat test, 24hrs	AAMA2605	No change
Detergent, 3% solution, 38°C, 72hrs	ASTM D2248-93	No change

Table 6-2 **Weatherability**

Dry film property	Test method	Criteria
Weather-o-meter test		
Colour retention:	ASTM D2244-93	Maximum 5 units after 4000 hrs.
Gloss retention:	ASTM D523-89	70% after 4000 hrs.
Chalk resistance:	ASTM D4214-89	Maximum 8 units after 4000 hrs.
Salt spray resistance:	ASTM B117-90	Blister-10, scribe-8, after 4000 hrs, 35°C salt fog
Humidity-thermal	ASTM D2246-87	No blister, no cracking After 15 cycles of 38°C 100%RH for 24hrs and -23°C for 20hrs
Humidity resistance:	ASTM D2247-94	No change After 4000 hrs, 100%RH, 35°C

The material properties or the test data in this leaflet are portrayed as general information only and a guide without warranty. Due to product changes, improvements and other factors, Mitsubishi Plastics, Inc. reserves the right to change or withdraw information contained herein without prior notice.

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