

## 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, Patterns, Matte Colors and Premium Aluminum series. 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. Premium Aluminum series Gold and Copper are available maximum 1270 mm width. Consult panel width in case of Premium Aluminum hairline finishes.

#### (3) Product tolerance

Width:  $\pm 2.0$  mm

Length:  $\pm 1.0$  mm/ m

Thickness:  $\pm 0.2$  mm in 3 and 4 mm thick,  $\pm 0.3$  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	$23 \times 10^{-6}$	$19 \times 10^{-6}$	$23 \times 10^{-6}$

##### (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, Patterns (Stone, Timber, Metal, and Abstract), Matte Colors and Premium Aluminum series (hairline and mill finishes). 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 39 microns (1.54 mils) minimum and consists of a conversion coating, an inhibitive primer and a Lumiflon-based fluoropolymer coating including the image transfer layer. Matte finish is also available.

D. "Matte Colors" are 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 fluoropolymer coating and a clear coating.

E. "Premium Aluminum series" are two-coat two-bake system.

The thickness is 36 microns (1.42 mils) minimum and consists of a conversion coating, a clear or tinted primer and a Lumiflon-based fluoropolymer clear coating.

**Note 1:** Lumiflon-based fluoropolymer coating has basically a coating warranty for 10 years. However, except Matte Colors and Matte Patterns, 20 year-coating warranty is available subject to several conditions. Please contact local distributors or our office.

**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, 15-80% for Patterns (Stone, Timber, Metal, and Abstract) and 5% for Matte Colors. Premium Aluminum series are available High Gloss and Low Gloss. Custom gloss is available between 15 and 80%, except Premium Aluminum series, 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:

### Solid Colors, Metallic Colors, Sparkling Colors, Prismatic Colors, Patterns and Matte Colors

Table 6-1 General properties

Dry film property	Test method	Criteria
Gloss (60°)	ASTM D523	15 to 80% (Matte 5%)
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 Method B 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 (except Matte data not available)
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

### Premium Aluminum series

Table 6-3 General properties

Dry film property	Test method	Criteria
Impact	JIS K 5600-5-3	No pick off
Hardness-pencil	JIS K 5600-5-4	H
Adhesion Dry Wet, 50°C, 240 hrs. Boiling water, 100°C, 8 hrs.	JIS K 5600-5-6 ditto ditto	No pick off No pick off No pick off
Chemical resistance: Sulphuric acid, 5% H <sub>2</sub> SO <sub>4</sub> , 24 hrs. Sodium hydroxide, 1% NaOH, 24 hrs.	JIS H4001 (reference) ditto	No change No change

Table 6-4 Weatherability

Dry film property	Test method	Criteria
Weather-o-meter test Colour retention: Gloss retention:	JIS B7753 JIS Z8730 JIS Z8741	Maximum 5 units after 4000 hrs. 50% after 4000 hrs.
Cyclic corrosion resistance	ASTM G85 A.5	Rating No. Area $\geq$ 8, Scribe $\geq$ 7
Humidity resistance	JIS K 5600-7-2	No change After 240 hrs., 95%RH, 60°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 Chemical Infratec Co., Ltd. reserves the right to change or withdraw information contained herein without prior notice.

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