ALCOBOND® Aluminum Composite Panel

TECHNICAL DATA SHEET

FIRE RETARDANT ALCOBOND®-FR (CLASS B-s1, d0)

PRODUCT COMPOSITION

ALCOBOND® FR is composed of a modified mineral-filled fire retardant core with polymer adhesives sandwiched between two sheets of coated aluminum.

Skin : 0.5mm Coated Aluminum Sheet
Core Material : B-s1, d0 – Modified mineral-filled fire retardant core

DIMENSION, WEIGHT AND TOLERANCE (STANDARD)

Panel Thickness : 4 mm

Panel Size : Width: 1000 mm, 1250 mm, 1500 mm
Length: Based upon customer request

Tolerance : Width ± 2.0 mm
Length ± 3.0 mm
Thickness ± 0.2 mm
Diagonal/Squareness ≤ 5 mm
Warp/Bow ≤ 5 mm/m

Panel Weight: : 7.5 ± 0.5 kg/m^2

TECHNICAL PROPERTIES

A. Technical properties of aluminum alloy (3000 series):

PROPERTY	STANDARD METHOD	UNIT	RESULT
Density	-	g/cm^3	2.71
0.2% Proof Stress	ASTM E8	N/mm^2	163
Tensile Strength	ASTM E8	N/mm^2	180
% Elongation	ASTM E8	%	12

B. Technical properties of aluminum composite panel:

PROPERTY	STANDARD METHOD	UNIT	RESULT
Bending Strength	ASTM C393/C393M-16	MPa	110
Bending Elastic Module	ASTM C393/C393M-16	MPa	20,538
Shear Strength	ASTM C393/C393M-16	MPa	26
Shear Strength by Punch Tool	ASTM D732	MPa	26.01
Tensile Strength	ASTM E8	N/mm^2	46.48
180 deg. Peel Strength	ISO 8510-2 / ASTM D903	N/mm	12.7
Drum Peel Strength	ASTM D1781-98(2012)	N-mm/mm	485
Sound Transmission	ASTM E90, ASTM E413	STC	28
Air Permeability	BS EN 14509:2013	N/A	Impermeable to air

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THERMAL PROPERTIES

PROPERTY	STANDARD METHOD	UNIT	RESULT
Heat Deflection Temperature	ISO 75-2	°C	92
Linear Thermal Expansion	ASTM D696	um/m°C	128
Thermal Conductivity	ASTM C518	W/mK	0.4515
Thermal Resistance	ASTM C518	m^2K/W	0.236

COATING SURFACE PROPERTIES

COATING THICKNESS	
Primer	5 um ± 2um
Top Coat	20 um ± 5um
Bottom Coat	7um ± 2um

PROPERTY	STANDARD METHOD	UNIT / SPECIFICATION	RESULT
Gloss Deviation	ISO 2813	≤ 10	2
Pencil Hardness	ISO 15184	≥HB	4H
Coating Flexibility	ISO 17132	no sign of any crack and deformation was observed after 180 degree bending	2T
Adhesion	ISO 2409	No film adhesion failure	Grade 0 (No removal of coating film)
Impact Resistance	ISO 6272	No Cracks	No sign of cracks or debonding was observed
Abrasion Resistance	ASTM D 968	L/um	2
Brush Resistance	ISO 11998	Shall be resistant	Resistant
Acid Resistance	ISO 2812-1	Shall be resistant	Resistant
Alkaline Resistance	ISO 2812-1	Shall be resistant	Resistant
Oil Resistance	ISO 2812-1	Shall be resistant	Resistant
Hot Water Resistance	ISO 2812-2	Shall be resistant	Resistant
Humidity Resistance	AAMA 2605-05 Clause 7.8.1	4000 hours Exposure	No formation of Blisters
Salt Fog Resistance	ISO 11997-1 (2000 hours)	No cracking, no blistering, no flaking, no spot rusting	Passed
	AAMA 2605 Clause 7.8.2, ASTM D1654, ASTM B117 (4000 hours)		Scribed: Rating 9 Inscribed: Rating 10 (No failure)
Accelerated Weathering	ISO 16474-2	No change	No loss of film adhesion or no visible change in appearance

***Above paint thickness and gloss effect may vary based on the type of paint finish**

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FIRE TESTS

FIRE REACTION TESTS

ASTM E84-19a - *"Standard Test Method for Surface Burning Characteristics of Building Materials"*

ASTM E84-19a Test Result:

FLAME SPREAD INDEX (FSI)	**0**	**CLASS A**
SMOKE DEVELOPED INDEX (SDI)	**0**	**CLASS A**

BS EN 13501-1:2018 - *"Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests"*

Test Result for BS EN 13501-1:2018: Classified as **B-s1, d0**

ASTM D1929-16 - *"Self-ignition Test"*

Test Result for ASTM D1929-16:

Passed – 466°C (Aluminum Composite Panel)

Passed – 468°C (Core)

FIRE RESISTANCE TEST

NFPA 285:2019 - *"Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components"*

Test Result for NFPA 285:2019: The result of the fire performance evaluation conducted on the wall assembly described here in indicates that the test assembly has **met the acceptance criteria** stated in the standard.