TENOPEX
The Plastic Films Specialist

PolyGreen™ ACP Aluminium Composite Panel Technical Data Sheet

Description and Applications

PolyGreen™ ACP sheet is a composite material made from aluminum and polyethylene, coated with 70% Kynar5000® PVDF layer backed by performance warranty upto 20 years. The PVDF coating provides excellent weatherability and UV stability, this surface is both aesthetically appealing as well as easy to maintain. With its high rigidity, light weight and exceptional flatness, PolyGreen™ ACP is a versatile decorative materials and cost-effective material well suited for applications on advertisement, signage, recreational vehicles, etc, These are also commonly used in construction and renovation industries such as building decorative facades, retail showrooms, exhibitions & entertainment construction deco, interior deco, column wraps & beams, curtainwall, walkways facades, tunnel walls, bus and train interiors.

PolyGreen™ ACP is produced with recycled offcuts and side trim to champion against wasteful disposal, stepping our commitment to a greener environment.

Typical Property Values

Panel Size	Standard	Custom	Tolerance
Panel Thickness	2mm, 3mm, 4mm	< 6mm	+/-0.2mm (3-4mm) ; 0.3mm (5-6mm)
Aluminum Thickness	0.1mm, 0.2mm, 0.4mm, 0.5mm		
Panel Width	1220mm	< 1525mm	+/-2.0mm
Length	2440mm, 3660mm, 4880mm, 6100mm, 10370mm		+/-4.0mm
Surface Coating	PE, PVDF		
Weight (1220mm x 2440mm)	3mm (with 0.3mm Al) : 3kg/m^2 ; 4mm (with 0.3mm Al) : 4.75kg/m^2		
Bow	Max 0.5% of panel length / width		
Squareness	Max 0.5mm		

Property	Test Method	Units	Value
Coating Performance			
Gloss @ 60°	ASTM D523 / ECCA T2	GU	13 - 15
Pencil Hardness	ASTM D3363 / ECCA T4		≥ F
Impact Resistance (of organic coating)	ASTM D2794 / ECCA T5	J	> 5 (on Al)
Bending Rate	ASTM D4145	T	≤ 2
Solvent Resistance (Test with MEK)	ASTM D5402	Number of double rubs	≥ 100
Adhesion (Cross Hatch)	ASTM D3359		5B
Salt Spray (Corrosion Resistance)	ASTM B117	Hours	2000
QUV-A (Accelerated Weathering)	ASTM G154 / ECCA T10	Hours	4000 (UVA-340)
Gloss Retention after accelerated aging	ASTM D523	%	≥ 80
Color Retention under UV exposure	ASTM D2244	ΔE	ΔE < 2
Chalking Retention after exposure	ASTM D4214	units	8
Florida Exposure	ASTM D1014	Years	2
Solar Reflectance Index	ASTM C1549-04	Um/m.°C	74.5

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Property	Test Method	Units	Value
Mechanical (Aluminium)			
Alloy Thickness	ASTM B483 / B209	mm	0.4 and 0.5
Alloy Type	ASTM B209 / B928	-	5005H14
Tensile Strength	ASTM E8/E8M	N/mm^2	≥ 135
Proof Stress (Yield Strength @0.2% offset)	ASTM E8/E8M	N/mm^2	≥ 110
Elongation	ASTM E8/E8M	%	≥ 1%
Modulus of Elasticity	ASTM E111	N/mm^2	70000
Mechanical (4mm Panel)			
Tensile Strength	ASTM E8-03	MPa	44.2
Tensile Strength at Yield	ASTM E8-03	MPa	36.2
Flatwise Tensile Strength	ASTM C297-04	Mpa	5.17
Elongation at Break	ASTM E8-03	%	13.7 (G.L. = 2 in)
Flexural Modulus	ASTM C393-00	MPa	104
Climbing Drum Peel	ASTM 1781-98 (2004)	in-lb/in	62.71
Acoustic			
Sound Insulation	ISO 140/3	Rw	26
Sound Transmission	ASTM E90-97	STC	25
Outdoor – Indoor Transmission	ASTM E90-97	OITC	21
Thermal			
Deflection Temperature under Load	ASTM D648-07	°C	158.5
Coefficient of Linear Thermal Expansion	ASTM D696-03	Um/m.°C	249
Thermal Conductance	ASTM C518-04	$Btu/(hr.ft^2.°F)$	1.2576
Thermal Resistance	ASTM C518-04	$Hr.ft^2.°F/Btu$	0.7952
Temperature Resistance	ASTM D2246	°C	-50 to 80
Water Penetration & Wind Load			
Water Penetration / Permeability	ASTM E331-86	Kg/m^2	4.48×10^{-4}
Wind Load Pressure Resistance	ASTM E330-86	Kg/m^2	448

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Property		Test Method	Units	Value
Chemical Resistance				
Muriatic Acid		AMMA 2605.987.7.1		No blistering no Visual Change
Mortar		AMMA 2605-987.7.2		No effect
Nitric Acid		AMMA 2605-987.7.3		ΔE < 0.5
Detergent		AMMA 2605-987.7.4		No effect
Fire Classification				
Fire Propagation	Malaysia (SIRIM Tested)	BS 476 : Part 6	Indec 6.0	Index 6.0
Surface Spread of Flame		BS 476 : Part 7	Class One	Class One
Ignitability	Singapore (PSB Tested)	BS 476 : Part 5	Class P	70000
Fire Propagation		BS 476 : Part 6	Index 0.0	
Surface Spread of Flame		BS 476 : Part 7	Class One	70000
Approve for usage for building groups VI & VII less than 10 metres high				

Processing Techniques

- Routing / Folding : PolyGreen™ ACP can be shaped cold by a very simple technique by hand or panel saws, then folding to produce various shapes and sizes. Rout a groove along the foling edge using a disk or end-milling cutter. 0.3mm – 1.0mm core material should remain at the base of the groove. The panel can be folded by hand
- Clamping : With serrated corner joint or butt joint sections between aluminum extrusions.
- Roll Bending : PolyGreen™ ACP can be bent with a roll-bending machine. Please use ground rolls in perfect conditions only.
- Shearing : Shearing can be done with a guillotine. Please make sure the blanking tools are padded. Shearing causes indentation of the panel cover sheet*.
- Riveting :` PolyGreen™ ACP can be riveted.
- Punching : Any sheet thickness of PolyGreen™ ACP can be punched with conventional sheet punching machine. For clean cuts, please use evenly ground tools and the narrowest possible cutting gap. Punching cause an indentation of the panel cover sheet*.
- Cutting : PolyGreen™ ACP can be cut with jigsaw, circular band or a vertical panel saw.
- Contour Cutting : PolyGreen™ACP can be cut to size with water jets, profile milling machines, contour saw and jigsaw.
- Screwing : Can be applied on conventional wood, sheet metal or machine screws made of stainless steel. For outdoor use make allowance for thermal expansion.

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Processing Techniques

- Routing / Folding : Bending is possible with a folding table or brake press. The inside bending radii is roughly 10 time of the PolyGreen™ ACP thickness. Please use protective film. The spring-back effect is higher than with solid sheet. A prototype should be made prior to mass production for installation.
- Gluing : This is done with the usual metal adhesives. There is no adhesion to the plastics core. Alternatively double-sided tape may be used.
- Welding : Hot air welding is also suitable for joining PolyGreen™ ACP. The plastic core and plastic welding rod are heated and welded with electric hot air welding sets.

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