

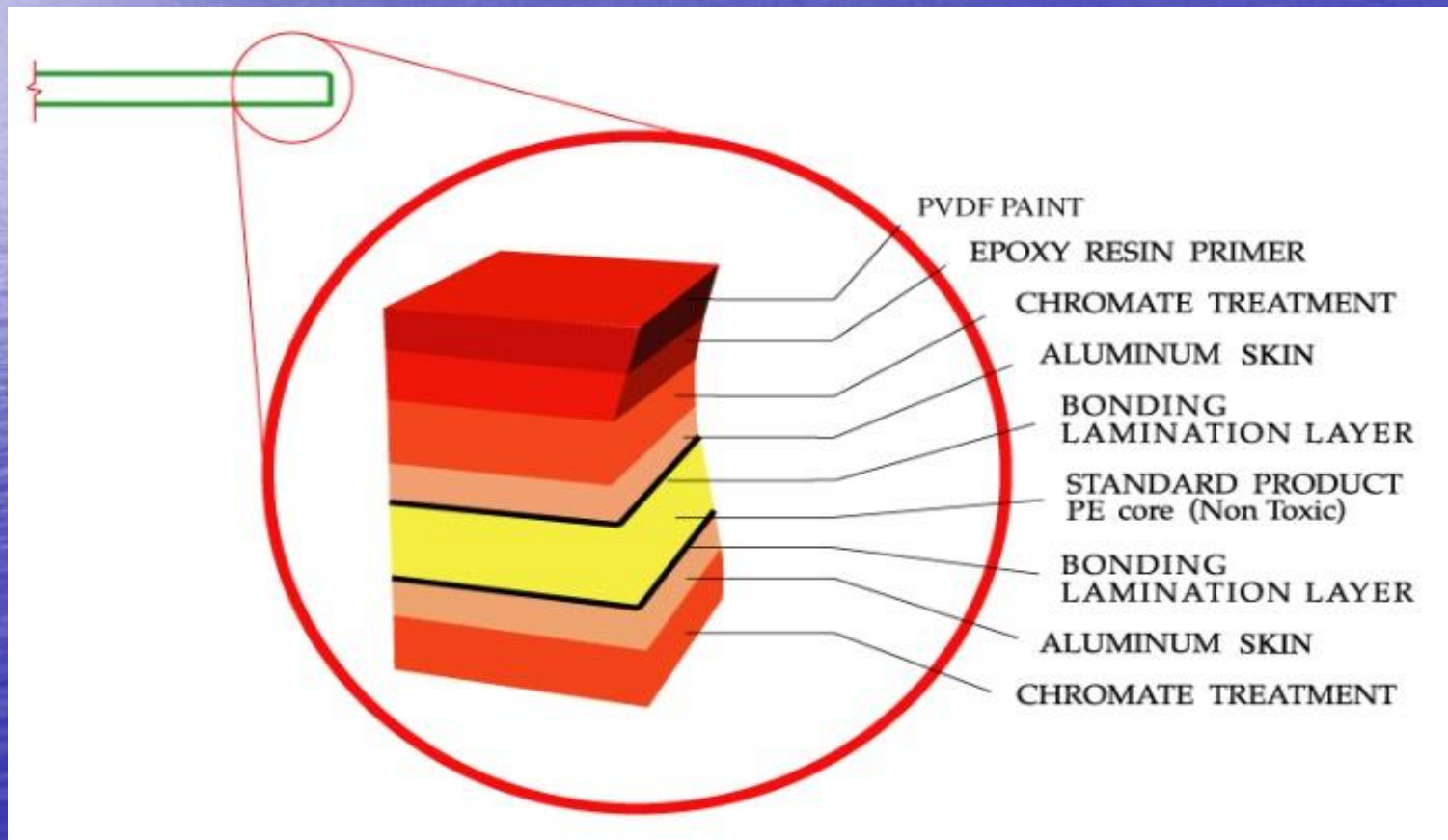


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MS 2571:2014

**Aluminium Composite
Panel for exterior and
interior wall**

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MS 2571:2014

1) WHY

2) WHAT

3) HOW



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WHY

- a) To establish a minimum standard for ACP.**
- b) To standardize the quality of ACP used**
- c) To curb use of sub-standard ACP**

Effects of using sub standard ACP



Undergauge aluminium skin



Wavy Effect / Pillow effect



Colour Variation

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OCT 2013



JAN 2011





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WHAT – KEY AREAS

a) Aluminium Alloy

AA3003, 3105, 5005

**b) Thickness: 0.5 and
0.4mm**



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b) Coating

Exterior – PVDF paint

70% PVDF resin

2 coat – Min. 23 micron

3 coat – Min. 33 micron

Interior – PE paint

2 coat - Min. 20 micron



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Special Treated Surface
Anodized
Hairline
Stainless steel
Titanium



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Core Material

- 1) Polyethylene (PE)
- 2) FR core - PE + Mineral



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Adhesive film

**High temperature bonding
film (PE)**

Appearance - Table 1



Table 1. Common surface defects

Defect name	Technical requirements
Press mark (Indentation)	Not allowed
Print mark (Stain)	Not allowed
Concave-convex	Not allowed
Exposed core on front and back	Not allowed
Uncoated surface on front	Not allowed
Wave	Not allowed
Bubble	Not allowed
Spot (Blemishes)	Maximum size ≤ 3 mm, less than $3/\text{m}^2$
Scratch	Not allowed
Color difference*	Not obvious for visual inspection, $\Delta E \leq 2$ for arbitration
Delamination between core and aluminium skin	Not allowed
* Except for decorative pattern and color.	

Tolerance - Table 2



Table 2. Allowable dimension deviation

Item	Technical requirements
Length (mm)	± 3
Width (mm)	± 2
Thickness (mm)	± 0.2
Diagonal deviation (mm)	≤ 5
Edge straightness (mm/m)	≤ 1
Warp (mm/m)	≤ 5
Flatness (mm/m)	± 2



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c) Performance Tests

**Coating to comply to
Table 4a (AAMA 2605)**

Mechanical Tests

To comply to Table 4b

Table 4a

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6.4 Performance

Performance of aluminium composite panel shall be consistent with requirements of Table 4a and Table 4b.

Table 4a. Performance requirements of coatings

Item		Technical requirements	
		Interior	Exterior
Surface pencil hardness		≥ Minimum H	Minimum F
Gloss deviation of coating (%)		± 5	± 5
Flexibility of coating/T-bend		≤ 2 (no tape off)	≤ 2 (no tape off)
Cross hatch adhesion	Dry	100 % adhesion	100 % adhesion
	Wet	100 % adhesion	100 % adhesion
	Boiling	NA	100 % adhesion
Impact resistance / (kg.cm)		No cracking/100 % adhesion	No cracking/100 % adhesion
Abrasion resistance/(L/μm)		NA	≥ 40 L/25 μm
Muriatic acid		No blister, no visual change	No blister, no visual change
Mortar resistance		No loss of film adhesion, no visual change	No loss of film adhesion, no visual change
Nitric acid resistance		NA	Color change < ΔE5
Solvent resistance		No exposure of bottom layer	No exposure of bottom layer
Artificial weathering aging resistance	Color difference ΔE	ΔE ≤ 2.0 at 1 000 h QUV_A	ΔE ≤ 5.0 at 5 000 h QUV_B
	Gloss retention	Minimum 30% at 1 000 h QUV_A	Minimum 50% at 5 000 h QUV_B
	Chalking	Minimum 6 at 1 000 h QUV_A	Minimum 6 at 5 000 h QUV_B for white Minimum 8 at 5 000 h QUV_B for colour
NOTE. Certificate from the manufacturer warranting compliance to the above specifications can be accepted in view of the lengthy period involved in the above tests.			
Cyclic corrosion testing /grade		1 000 h minimum rate of few of size 8 blisters	2 000 h minimum blister rating of 7 on cut edges and minimum blisters rating of 8 on test specimen
NOTE. Certificate from the manufacturer warranting compliance to the above specifications can be accepted in view of the lengthy period involved in the above tests.			

Table 4b. Technical performance requirement

Item			Technical requirement	
			Interior	Exterior
Flexural strength (MPa)			≥ 100	≥ 100
Bending elastic modulus (MPa)			≥ 2.0 x 10 ⁴	≥ 2.0 x 10 ⁴
Breakthrough resistance (kN)			≥ 7.0	≥ 7.0
Shear strength (MPa)			≥ 22.0	≥ 22.0
Peeling strength (Nmm/mm)	Min.		≥ 110	≥ 110
Effect of differential temperature	Reduction rate of peeling strength (%)		≤ 10	≤ 10
	Adhesion force of coating grade	Grid test	0	0
		Circle test	1	1
		Appearance		No change
Thermal expansion coefficient (°C ⁻¹)			≤ 4.00 x 10 ⁻⁵	≤ 4.00 x 10 ⁻⁵
Heat distortion temperature (°C)			≥ 95	≥ 95
Hot water resistance			No abnormality	-
Fire rating performance grade			Minimum Class B	Minimum Class B
FR panel with 0.5 mm aluminium skin			Minimum 6.9 kg/m ²	Minimum 6.9 kg/m ²



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Testing Method

Part 7.1 to 7.10



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Marking (on the case)

- 1) Manufacturer's name**
- 2) Product name**
- 3) Batch no.**
- 4) Quantity**
- 5) MS 2571:2014**



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Marking on Panel

4mm(0.5+3+0.5)/FR/PVDF

Manufacturer's name and address





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HOW to apply for MS

- 1) SIRIM
- 2) Submit application for certification (raw material, production process, QA, etc)
- 3) Factory Audit
- 4) Testing of samples



Thank you