

ALUCORE[®]

WORLD OF HONEYCOMB

Product information for ALUCORE[®] and ALUCORE[®] clad



Why use Honeycomb for Architecture Industry

Honeycomb cladding material has a lot of advantages over other commonly used cladding materials such as metal (aluminium, steel, zinc, copper, etc.) cladding materials including stone, tiles, HPL etc., especially in applications which require:

- > Withstanding high wind load pressures.
- > Larger panel sizes with minimal or no support structure.
- > Absolute flatness.
- > Carry the load of human traffic.
- > Superior sound and heat absorption.
- > No compromise on the aesthetics of the building design.

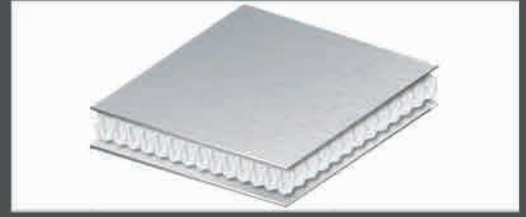
The applications typically are Façade, Roofing, Soffit, Ceiling, Wall panelling inside the buildings, to name a few.



S K Building | Korea

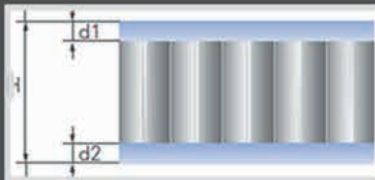
ALUCORE®

ALUCORE® is an aluminium composite panel with high rigidity and extremely low weight. In contrast to the conventional honeycomb composite panel, the system components, i.e. the "aluminium core" and the coil-coated "aluminium cover sheets" can be bonded in a continuous process or in a batch process.



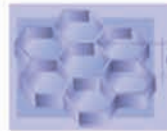
Features of ALUCORE®

- > The system components of ALUCORE® are bonded in a continuous/batch laminating process allowing larger panel sizes (up to 9m) maintaining superior flatness.
- > High level of color uniformity and surface finish due to high quality coating system.
- > Architects, Designers appreciate ALUCORE® because it combines high mechanical properties, such as the tensile strength of the cover sheets, with outstanding processing and aesthetic features.
- > Its characteristics make ALUCORE® the ideal choice not only for outdoor applications such as façade cladding, soffit, roofing, balconies, shelters, etc., but also for interior design like artistic ceilings.
- > Easy to fabricate with perfect details, while using ordinary tools.
- > Very high flexure rigidity compared to any other cladding materials.



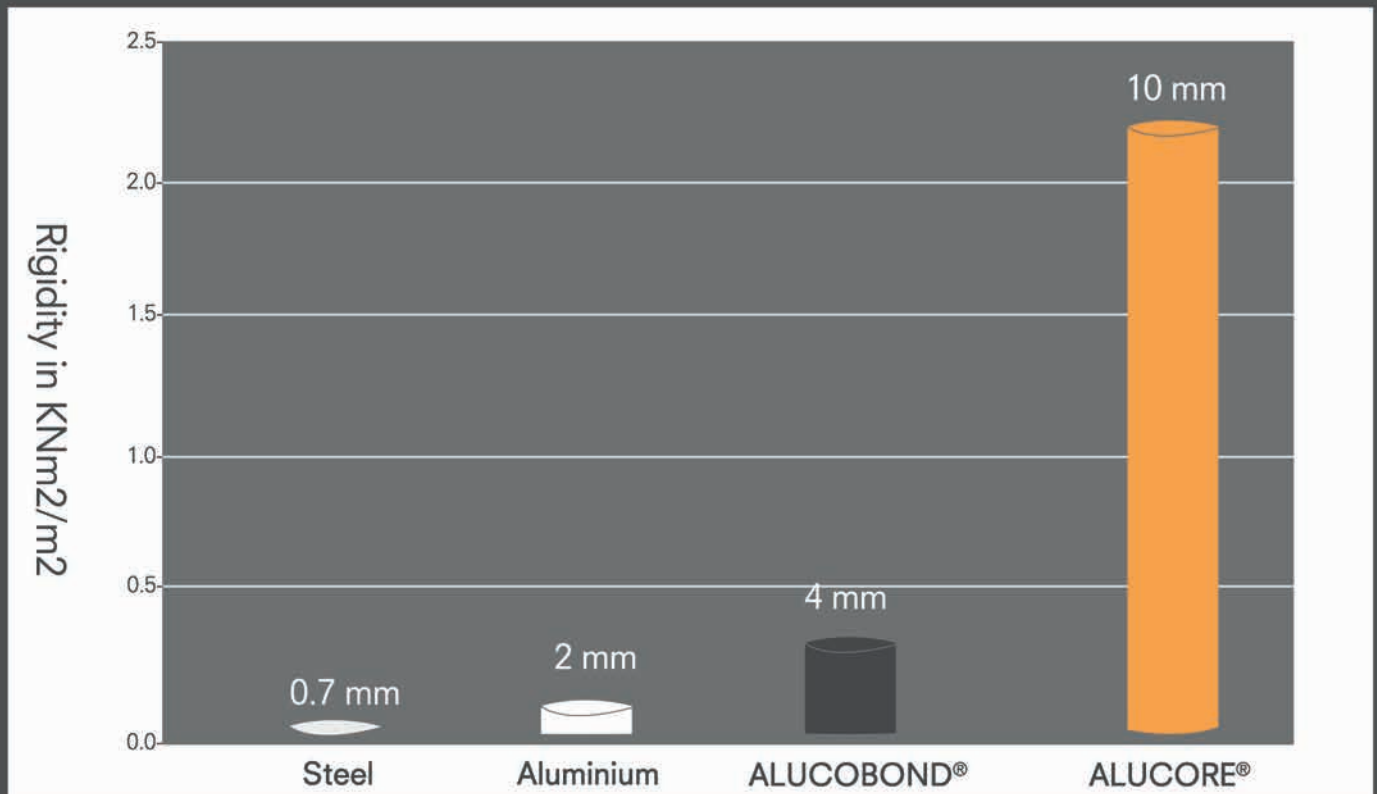
Structure

H: total thickness (from 6mm to 25mm)
d1: thickness of AL front sheet (1mm)
d2: thickness of Al back sheet (0.5/0.7/1mm)



Standard Core consists of Aluminium Foils
(cell size : 6.3-19mm)

Comparative Flexure Rigidity



Advantages of ALUCORE®

- > Low weight, high rigidity with perfect flatness on all kinds of applications including soffit and suspended ceilings.
- > Withstands heavy wind load pressure.
- > Withstands load bearing in case the application requires human traffic on the panels.
- > Provides freedom of design to architects and designers owing to its high formability.
- > Different panel thicknesses to suit all kinds of applications.
- > Has vibration-dampening hence no additional sound-dampening required.
- > Thermal insulation helps cut down heat transmission in the building.
- > Large variety of colors and finishes to choose from.
- > Simple to process using conventional tools.

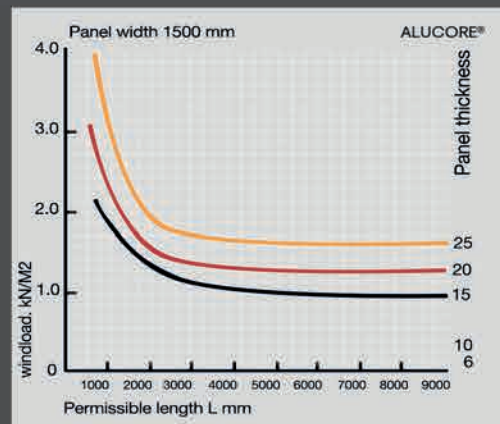
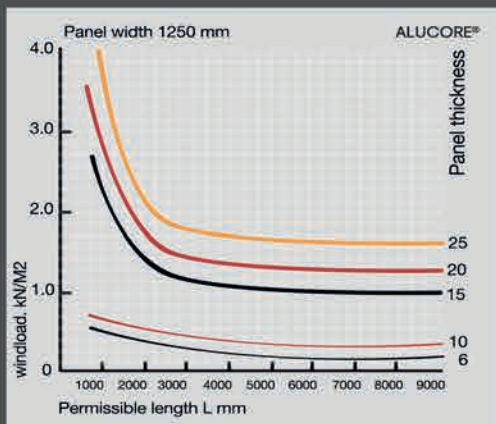
For more details on processing, please visit:
www.alucore.com.sg/products/alucore/processing/

For more details on the recommended fixing systems, please visit:
www.alucore.com.sg

Wind load and permissible panel sizes

The below diagrams indicate the available ranges of panel thickness and permissible range lengths at a given panel width (1250 or 1500 mm), depending on the loads applied.

The diagrams apply to panels supported on four sides (corners fixed). Dimensional values for other systems are available on request. www.alucore.com.sg



Suspended Ceilings Deflection due to dead load

Panel Size		ALUCORE® 6mm	ALUCORE® 10mm	ALUCORE® 15mm	ALUCORE® 20mm
Width {mm}	Length {mm}	deflection {mm}	deflection {mm}	deflection {mm}	deflection {mm}
1000	1000	0.3	-	-	-
	2000	0.7	0.2	-	-
	3000	0.8	0.3	-	-
1250	1250	0.7	0.2	-	-
	2500	1.7	0.6	0.2	-
	3750	2.1	0.7	0.3	0.2
1500	1500	1.6	0.5	0.2	-
	3000	3.6	1.3	0.5	0.3
	4500	4.3	1.5	0.6	0.3

ALUCORE® Technical Data

THICKNESS	ENTITY	6MM	10MM	15MM	20MM	25MM
Front Sheet	[mm]	1.0				
Back Sheet	[mm]	0.5	0.5	1.0	1.0	1.0
Weight	[kg/m ²]	4.7	5.0	6.7	7.0	7.3

TECHNICAL PROPERTIES	CODE	UNIT	6MM	10MM	15MM	20MM	25MM
Section Modulus	W	[cm ³ /m]	2.6	4.6	14	19	24
Rigidity E.J		[kNcm ² /m]	7.100	21.900	75.500	138.900	221.600
Alloy of Aluminium Sheets	ASTM B209-04		EN AW-3XXX / 5XXX				
Temper of Aluminium Sheets	ASTM B209-04		H22/H42				
Modulus of Elasticity	ASTM E8	[N/mm ²]	70.000				
Tensile Strength of Aluminium		[N/mm ²]	R _m ≥ 120 - 185				
0.2 % Proof Stress		[N/mm ²]	R _{p0.2} ≥ 80				
Elongation		%	A50 ≥ 5				
Linear Thermal Expansion			2.4 mm/m (at 100°C temperature difference)				

SURFACE	CODE	UNIT	6MM	10MM	15MM	20MM	25MM
Coating			PVDF / FEVE / HDP / Mill Finish				
Gloss Levels	ASTM D523	[%]	25-80				
Pencil Hardness	ECCA-T4		HB-F				

ACOUSTICAL PROPERTIES	CODE	UNIT	6MM	10MM	15MM	20MM	25MM
Sound Absorption Factor	as		0.05 - 0.07				
Airborne Sound Insulation Index (acc. to ISO 717-1, ISO 140-3)			21 - 25				

THERMAL PROPERTIES	CODE	UNIT	6MM	10MM	15MM	20MM	25MM
Thermal Conductivity (regarding total thickness, incl. cover sheets)		[W/mK]	0.95	1.35	1.80	2.25	2.70
Thermal Resistance		[m ² K/W]	0.0063	0.0074	0.0084	0.0089	0.0093
Temperature Resistance		[°C]	-40 to + 80				

Product Range

One side coil coated PVDF/FEVE/HDP		Dimensional Tolerances	
6 mm, 10 mm, 15 mm, 20 mm, 25 mm	Thickness		±0.2 mm
1250 mm, 1500 mm	Width		-0 / +4 mm
2000 - 9000 mm	Lengths	2000 - 4000 mm	-0 / +4 mm
	Lengths	4001 - 9000 mm	-0 / +6 mm

Fire Classification

Country	Test according to	Classification
Europe	EN 13501-1	Class B, s1, d0
Switzerland	VKF Fire regulations	Class 5.3 (VKF)
UK	BS 476, Part 6 BS 476, Part 7	Index 0 Class 1 Meets the requirements according to Class 0 of the national building regulations
Singapore	B5476 Part 4. Approved for indoor & outdoor wall cladding for any type of buildings without Non-Combustible height limits.	
Russia	GOST 30402-95 GOST 30244-94 GOST 12.1.044-89 GOST 12.1.044-89	G1 (combustibility) W1 (flammability) D2 (smoke emission) T1 (toxicity)

www.alucore.com.sg

Sustainability

ALUCORE® is manufactured under the strict non-hazardous emission directives and complies with all the major requirements of being an environmentally friendly product. For more details about the certifications, please access the QR codes below. *(use any QR code scanner to access these documents)*

ALUCORE® 6mm

ALUCORE® 10mm

ALUCORE® 15mm

ALUCORE® 20mm

ALUCORE® 25mm



Applications across the world



Coop Supermarket | Switzerland



Shanghai Oriental Art Centre | China



Emmi Butterzentrale | Switzerland



Walkway cover | Singapore



Nanhui Gymnasium | China



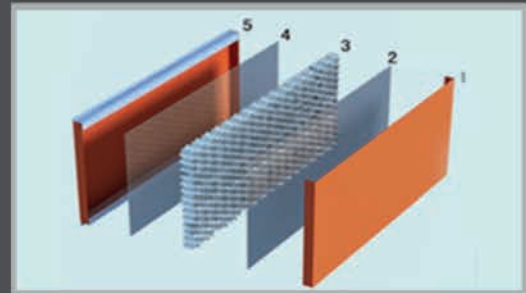
Shanghai Grand Theatre | China

ALUCORE® clad- a 'Ready to install Honeycomb Panel System'

ALUCORE® clad is a Value Added Solution from ALUCOBOND® which comprises of aluminium honeycomb panels that are pre-fabricated with aluminium extrusions which are Ready to Install.

It comprises of the following:

- 1: Pre-coated Aluminium front skin
- 2: Adhesive
- 3: Aluminium Honeycomb core
- 4: Adhesive
- 5: Pre-coated Aluminium back skin and fixing extrusion



Features of ALUCORE® clad

- It combines a custom solution with the best available architectural coating and lamination technology.
- Ready to Install panels which come in different configurations (Finishes/Coating/Thickness), made to suit individual project requirements.
- Panel perimeter fixing, anchors both panel skins to the supporting structure hence giving a better strength to the overall installation.
- Pre-fixed extrusions help in easy and quick installation be it horizontal or vertical orientation.
- The fixing system used in ALUCORE® clad allows for quick panel replacement/removal in different structures, rather than taking out all the panels in case there is a need for the same.

ALUCORE® clad is all the salient features of ALUCORE® combined with a high quality 'Ready to Install' system for a designed building!

Advantages of ALUCORE® clad

- Highest quality of materials and processes.
- Custom made and manufactured to meet each client's unique requirements.
- Reduction in cost with no wastage and lesser external fixing accessories required.
- Saves time by being Ready to Install and pre-fixed with the right extrusions at the production stage.
- Quality Assurance ensures that production is done under supervised and controlled factory environment.
- Risk mitigation is done by ensuring the best quality of materials is used and processed in the ALUCOBOND® factory, reducing chances of failure.
- No compromise on design aesthetics,
 - 1: Can be formed as per the design.
 - 2: Provides excellent flatness.
 - 3: Comes in a large variety of finishes/colors.

www.alucore.com.sg/products/alucore-clad

ALUCORE® clad Technical Data

THICKNESS	STANDARD	UNIT	Standard T12mm*		Standard T25mm*	
Front Sheet**		[mm]	1.0			
Back Sheet		[mm]	1.0	0.7	1.0	0.7
Weight		kg/m ²	6.5	5.7	8.0	7.0

SURFACE	STANDARD	UNIT	Standard T12mm*		Standard T25mm*	
Alloy	EN 573-3		AA5005A(ALMG1), H42 AA3003, H44			
Coil Coating System	Coil Coating		PVDF/FEVE/HDP			
Gloss (Initial Value)	ECCA T2	%	30-80			
Pencil Hardness	ECCA T4		HB-F			

CORE	STANDARD	UNIT	Standard T12mm*		Standard T25mm*	
Cell Size		[mm]	6.3 – 19			
Density		kg/mm ³	> 50			
Thickness of Al Foil		mm	0.076			
Bare Compressive Strength		N/mm ²	> 2.5			

MECHANICAL PROPERTIES	STANDARD	UNIT	Standard T12mm*		Standard T25mm*	
Modulus of Elasticity	EN 1999 1-1	N/mm ²	70,000			
Tensile Strength Cover Sheets	EN 485-2	N/mm ²	R _m ≥ 125			
0.2% Proof Stress	EN 485-2	N/mm ²	R _{p0.2} ≥ 80			
Elongation		%	A ₅₀ ≥ 3			
Linear Thermal Expansion	EN 1999 1-1		2.4 mm/m (at 100°C temperature difference)			

ACOUSTICAL PROPERTIES	STANDARD	UNIT	Standard T12mm*		Standard T25mm*	
Sound Absorption Factor	as		0.05			
Sound Insulation R _w	ISO 717-1 EN ISO 6721	dB	15		25	

THERMAL PROPERTIES	STANDARD	UNIT	Standard T12mm*		Standard T25mm*	
Thermal Conductivity λ	DIN 52612	W/mK	1.35		2.7	
Thermal Resistance R	DIN 52612	m ² K/W	0.0047		0.0093	
Heat Transition Coefficient U	DIN 4108	W/m ² K	5.65		5.58	

Footnotes:

* Based on any specific application, the thicknesses of ALUCORE® clad panel can be customized.

** The thickness of the front sheet can also be customized based on specific applications.

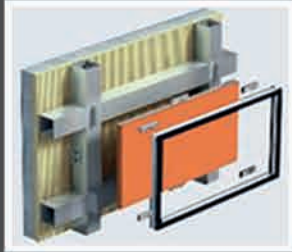
ALUCORE® clad Solutions

ALUCORE® clad solutions come in 3 different fixing systems to choose from based on the application and the design requirements of a given project. All these solutions can be adapted for a Vertical or Horizontal layout of panels.

Silicon Joint System

This fixing system is suited for exterior or interior wall cladding application in which the joints are covered with Silicon sealants.

- > Exterior and Interior Wall Cladding/Roofing
- > Between 12mm and 25mm
- > Vertical and Horizontal Installation



Metal Cover Joint System

This system is suited for exterior or interior wall cladding. The advantage of this system is that one can choose the metal strips to either match with the surface finish of ALUCORE® clad or according to any other color of choice.

- > Exterior and Interior Wall Cladding/Roofing
- > Between 12mm and 25mm
- > Vertical and Horizontal Installation



Interior Ceiling System

A system which is ideally suited for interior ceiling soffit applications

- > Interior ceilings
- > 12mm
- > Vertical and Horizontal Installation



Applications across the world



Dalian Stadium | China



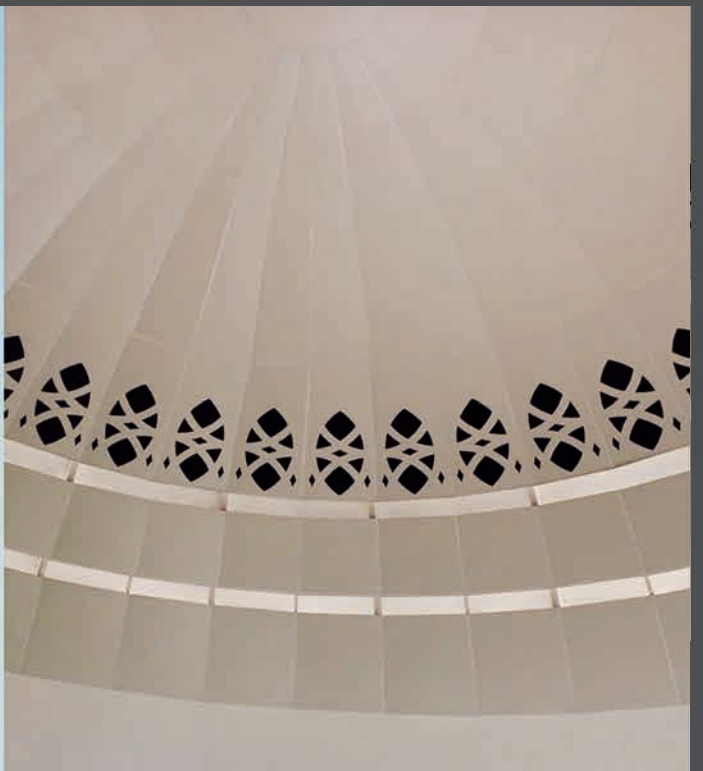
Marina Barrage | Singapore



Tianjin Digital TV Tower | China



Tianjin Numeral Broadcasting | China



Jurong West Mosque | Singapore

Your vision materialized.
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