

Next & Beyond.
ALUCOBOND®

ALUCOBOND®

AT ITS CORE

Unravelling the range



3A Composites Asia Pacific Pte. Ltd.

300 Beach Road
#10-06 The Concourse
Singapore 199555
Telephone: (65) 6303 9750
Telefax: (65) 6303 9751
Email: sales@alucobond.com.sg
www.alucobond.com.sg

3A Composites India Pvt. Ltd.

Bldg. No. 11, Unit No. 1112, 1st Floor
Solitaire Corporate Park
Mathuradas VasANJI Marg
Andheri (East)
Mumbai - 400 093, India
Telephone: (91) 22 4256 4500
Telefax: (91) 22 4010 4132
Email: alucobond.india@3acomposites.com
www.alucobond.in

3A Composites GmbH

Alusingenplatz 1
78224 Singen
Germany
Telephone: (49) 7731 941 2060
Telefax: (49) 7731 941 2845
Email: info@alucobond.com
www.alucobond.com

3A Composites Middle East (Branch)

Almas Tower, JLT
P.O. Box: 343522
Dubai, UAE
Mobile: (97) 1 58 535 1721
Email: basel.massis@3acomposites.com
www.alucobond.com

3A Composites (China) Ltd.

Room 1902-1903
Hongkong Prosperity Tower
Mengzi Road No. 763
Huangpu Shanghai
China
Telephone: (86) 21 6315 8550
Email: alucobond.china@3acomposites.com
www.alucobond.com.cn

3A Composites USA

721 Jetton Street, Suite 325
Davidson, NC 28036
United States of America
Tel: (1) 800 626 3365
Email: info.usa@3acomposites.com
www.alucobondusa.com





ALUCORE® | Max Towers – Noida, India
Architect: Gensler | Fabricator: Ashbee Industries India Pvt. Ltd.
Photography: Rohit Kumar





ALUCOBOND® PLUS | Paläon, Schöninger Speere - Schöningen, Germany
Architect: Architekturbüro Holzer Kobler Architekturen (Zürich), PBR Magdeburg
Fabricator: HMF, Hübener + Möws, Jerchel | Photography: © Jan Bitter

Index

About The Company:

• About Us	06
• Environment, Social & Governance	08
• Why Choose ALUCOBOND®	10

Product Section:

• ALUCOBOND® PLUS	14
• ALUCOBOND® A2	15
• ALUCORE®	22
• ALUCORE® CLAD	26
• ALUCOLUX®	28
• SANDWICH WALL SYSTEM	30

Value Added Services	32
----------------------	----

Fixing Systems	36
----------------	----

Useful Information	37
--------------------	----

- Installation
- Cleaning And Maintenance
- Storage
- Warranty

About Us



As a global leader in composite materials, with its head office in Switzerland, affiliated with Schweizer Technologies Group, 3A Composites employs more than 4400 people in Europe, America and Asia. Presently, 3A Composites is a house of 20+ leading brands in their respective material and application categories. Among them, the flagship product lines used in architectural applications are:

ALUCOBOND® Aluminium Composite Material (cladding & curtain walls, interior walls, ceilings, column decoration)

ALUCORE® Aluminium Honeycomb Panels (cladding & curtain walls, roofing & ceilings)

ALUCOLUX® Solid Aluminium Sheets (cladding & curtain walls, interior walls, ceilings, column decoration)



Alusuisse developed the first Aluminium Composite Material in collaboration with BASF and named it ALUCOBOND®



ALUCOBOND® production commenced at the Alusuisse facility in Singen, Germany



Second site began the production of ALUCOBOND® in Benton, Kentucky, USA



Third ALUCOBOND® manufacturing base started production in Shanghai, PRC



Inception of the fourth ALUCOBOND® manufacturing base in Pune, India

Environment, Social & Governance

Environment

3A Composites targets continuous improvement in areas such as environmental impact, energy consumption, waste management and production. We have developed and implemented environmental management systems which are regularly certified by third-party auditors. Having been successfully and continuously re-certified since 2006 speaks for itself.

Social

Being a global player, regional talents and skills are employed worldwide with an emphasis on professional development, health and safety. 3A Composites has developed a number of protocols,

procedures and programs to ensure guidelines are followed across the group. In addition, 3A Composites strives to be an active and responsible community member across all the locations worldwide.

Governance

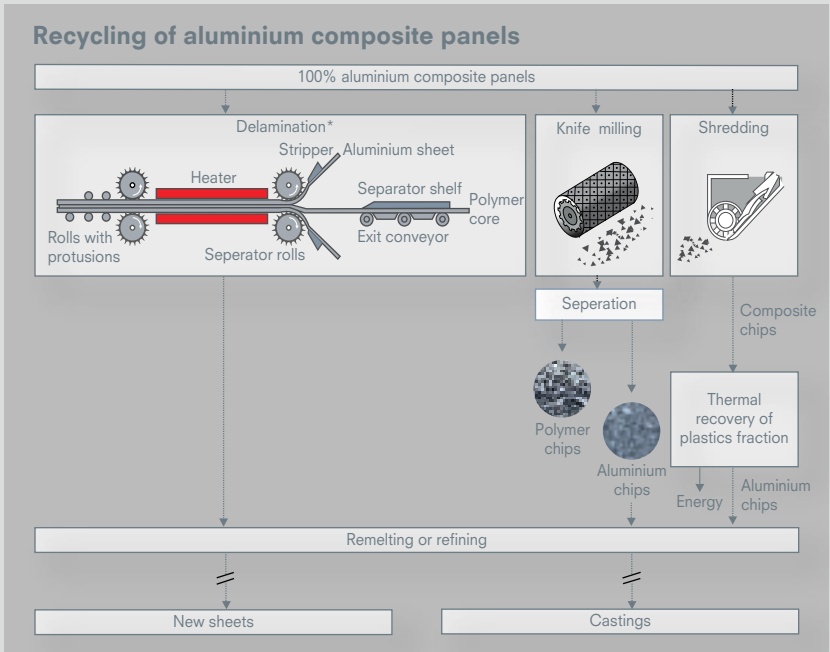
Good, fair and ethical corporate governance is practised globally for sustainable and profitable growth. 3A Composites has a company-wide code of conduct which applies to all, from the board of directors to group management and all employees.

Recycling & VOC Rating

ALUCOBOND® is a 100% recyclable material, that is the core material and the aluminium skins can be returned to the material cycle and reused.

- The high intrinsic value of aluminium is a major economic incentive for its recycling.
- Aluminium scrap can be repeatedly recycled without lessening its value or diminishing its properties.
- The energy used in recycling is a mere fraction of primary production requirements, often as little as 5%, yielding obvious ecological benefits.

Minimal amounts of VOC's or HAP's are released during the manufacturing process due to strict programs and processes designed to eliminate pollutants.



*Drawing based on US patent application 2007/0028432 A1://ip.com/patapp/US20070028432



LEED Certification

The LEED program has gained much recognition over the past several years and is now the premier sustainability design tool in the building industry.

LEED focuses on constructing buildings that have minimal impact on the environment during construction and occupation and acknowledges that using

recycled materials is an essential part of reducing environmental deterioration.

The relatively high percentage of recycled aluminium ensures that ALUCOBOND® can provide a significant contribution to earning LEED points. This recognition is the driving force for using ALUCOBOND® material.

Material	Thickness (mm)	Weight (kg/m²)	Recycled % Post Consumer	Recycled % Pre-Consumer	LEED Contribution (1.0 x Post + 0.5 x Pre)
ALUCOBOND®	4	7.6	21%	9%	26%

Recycled content is defined in accordance with the International Organization of Standards document ISO 14021—Environmental labels and declarations—Self-declared environmental claims (Type II environmental labelling).

Why Choose ALUCOBOND®



As the inventor of Aluminium Composite Material, ALUCOBOND® has been widely used in the construction industry since its entrance in 1969.

ALUCOBOND® is designed and manufactured for the application on facades, roofs, soffits, column claddings and ceilings. It is light, stiff, easy to process and has a high quality coil coated finish. It is the major component of most facades across Asia next to glass.



Durability

ALUCOBOND® uses fluoropolymers for surface coating which makes it the preferred choice for longterm architectural use. Inherently, its Marine Grade Alloy is corrosion-resistant and ensures durability in harsh corrosive environment.



Bouquet of Colours & Finishes

ALUCOBOND® offers a wide range of colours, surface finishes and textures to suit every need and meet every requirement.



Fire Safety

ALUCOBOND® PLUS is a fire retardant grade that is suitable for all applications and has a proven safety record, both in testing and real life. Wherever regulations or specifications require it, ALUCOBOND® A2 sets the non-combustible ACM standard since 1992.



Manufacturing Expertise

More than 50 years of experience-driven manufacturing process built over years of research and development.



Warranty

Warranty backed by the leading brand in the industry.



Highly Adaptable

ALUCOBOND® is rigid yet highly formable. This opens up wide possibilities for architects and consultants to design their dream projects.



Light Weight

The composite structure of ALUCOBOND® creates an impressive strength-to-weight ratio irrespective of the panel size.



Optimal Flatness

High-speed automated & intelligent ACM production line accurately formulates mineral core content and ensures uniform thickness.



Highly Valued Certification

Class 1A Certification - done through independent 3rd party with inspections and audits on a regular basis.



Savings on Heating / Cooling Costs

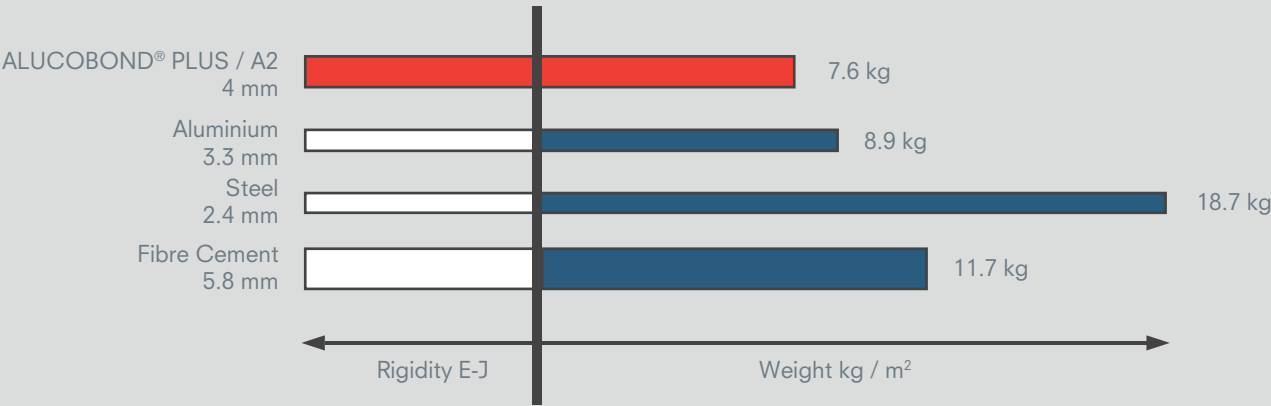
The optimally insulated building envelope provides considerable savings in energy costs.

LIGHTNESS MEETS RIGIDITY

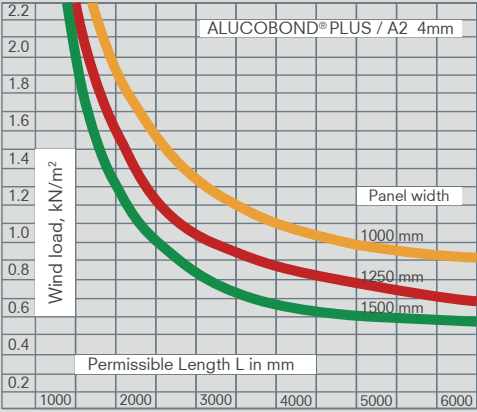
ALUCOBOND® has high rigidity when it comes to panels with large sizes. It is a composite sheet made with a core of different degrees of minerals bound between two aluminium sheets.

Despite its low weight, ALUCOBOND® is easy to transport and handle during

fabrication and at the site. Its high rigidity and strength makes it the most suitable material for exterior wall cladding. When properly designed and installed, ALUCOBOND® panels will keep their shape and remain flat for years, even when exposed to extreme weather conditions.



ALUCOBOND® PLUS / A2			Aluminium		
Rigidity (E-J)	Section modulus	Thickness	Weight	Thickness	Weight
1250 kN cm²/m	1.25 cm³/m	3 mm	5.9 kg/m²	2.7 mm	7.3 kg/m²
2400 kN cm²/m	1.75 cm³/m	4 mm	7.6 kg/m²	3.3 mm	8.9 kg/m²



Wind load and permissible panel sizes

The graphs for 4 mm thick ALUCOBOND® PLUS / A2 indicate the maximum permissible panel length ($\sigma = 51 \text{ N/mm}^2$) / ($\sigma = 53 \text{ N/mm}^2$) (without having to add a stiffener) based in applicable design wind load and panel width. Values apply to 4-side supported panels. Values for other systems on request.

SURFACE QUALITY FOR DURABILITY AND COST-EFFECTIVENESS.

UV-RESISTANT COATING

ALUCOBOND® uses 'coil coating' procedure to coat aluminium. This procedure allows the highest quality paint to be applied uniformly.

All colours are applied in multiple coats and stove lacquered. This ensures a durable, brilliant colour effect.

ALUCOBOND® uses high-quality polymer paint systems such as PVDF (polyvinyl fluoride) coating systems and FEVE (Fluoroethylene-Alkyl Vinyl Ether) which have proven themselves over time.

The assessment of the various paint qualities is undertaken in external weathering tests according to the following

- parameters:
1. Durability of the paint particles
 2. Durability of the level of gloss
 3. Chalking behaviour

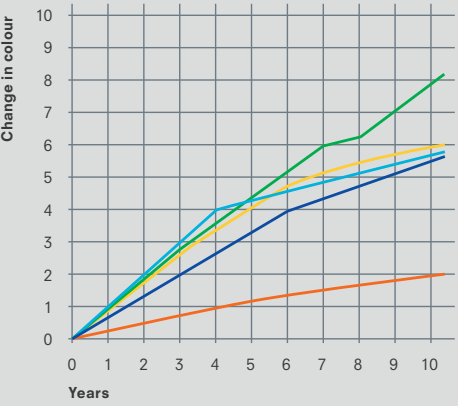
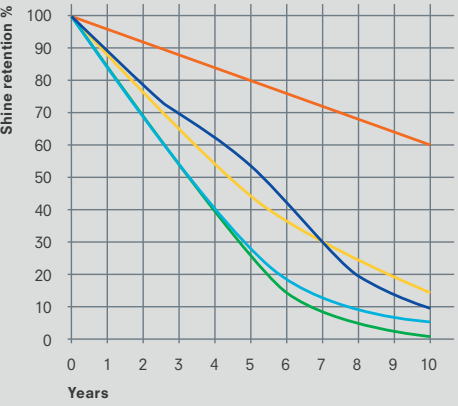
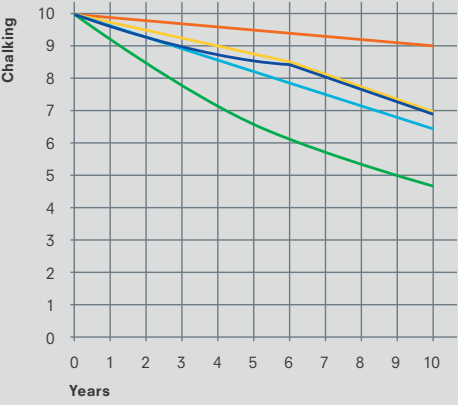
ALUCOBOND® quality benchmarks are far above the usual E.C.C.A test requirement.

CLEANING

PVDF coating doesn't allow much dirt to accumulate on the surface. Slight soiling can be washed-off using warm water and a neutral cleaning agent. Graffiti can usually be removed by using special cleaning agents.

45° S. Florida

- PVDF
- Polyester
- Vinyl
- Aqueous acrylic
- Solvent acrylic



ALUCOBOND® PLUS

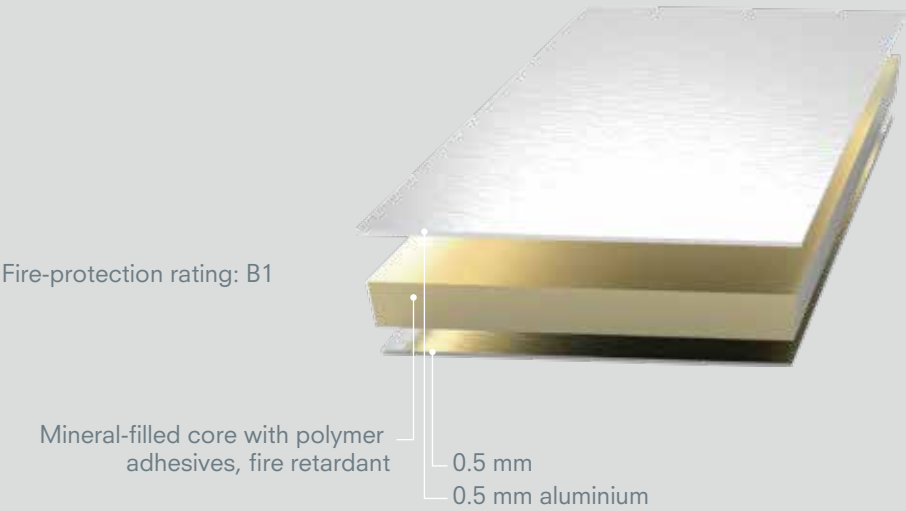
ALUCOBOND® PLUS is a composite panel consisting of two aluminium cover sheets with a hardly flammable mineral-filled core and has been developed for safety in architecture.

ALUCOBOND® PLUS has properties such as surface flatness, formability, resistance

to weather and simple processing. With myriad applications, ALUCOBOND® PLUS is used extensively for airports, metro stations, railway stations, stadiums, corporate parks, IT parks, high rise towers, malls, etc.



ALUCOBOND® PLUS | Jewel @Changi Airport - Dome, Singapore | Architect: Safdie Architects; RSP Architects
Fabricator/Installer: Mero Asia Pacific Pte Ltd | Photography: Shutterstock



ALUCOBOND® PLUS Characteristics:

- Fire retardant
- Low weight, high rigidity
- Perfect flatness
- Large variety of colours
- Weatherproof
- Vibration-dampening
- Can easily be folded and bent

Product Range:

- Thickness: 3 mm, 4 mm
- Width: 1000 mm, 1250 mm, 1500 mm, 1575 mm
- Length: 2500 mm - 6999 mm
- Custom dimensions are available on request

Made to Measure Panels (M2M) and Ready to Install Panels (R2I) service available as a part of value added services (VAS)

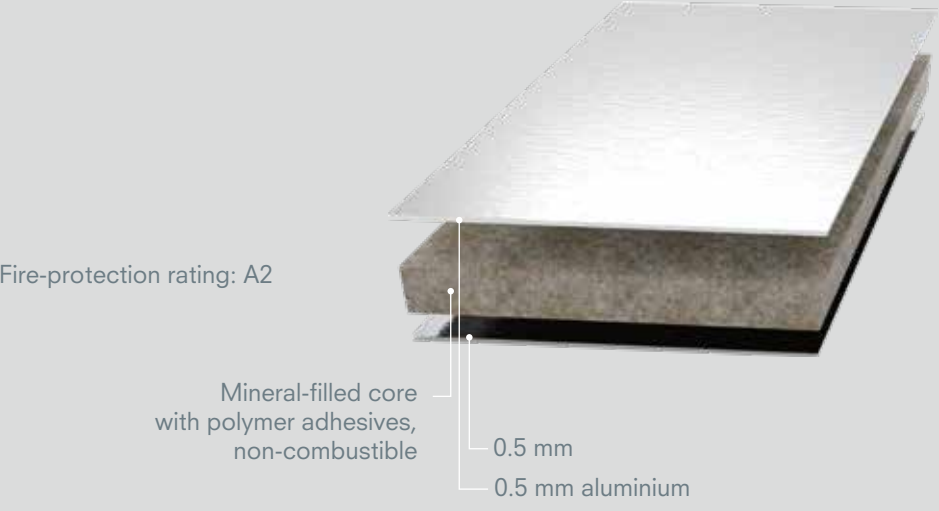
ALUCOBOND® A2

ALUCOBOND® A2 is an aluminium composite panel with a mineral-filled core between two aluminium cover sheets. Due to this property ALUCOBOND® A2 meets the strictest fire regulations and standards while fully maintaining all the possibilities of design.

ALUCOBOND® A2 allows simple processing, is impact resistant, break-proof, weather-proof, and above all non-combustible. ALUCOBOND® A2 can be used for airports, metro stations, railway stations, stadiums, corporate parks, IT parks, high rise towers, malls, etc.



ALUCOBOND® A2 | BCF Arena - Fribourg, Switzerland | Architect: Bfik Architectes | Fabricator: Werkstätte Liechtblick
Photography: © Allega GmbH



ALUCOBOND® A2 Characteristics:

- Non-combustible
- Low weight, high rigidity
- Perfect flatness
- Large variety of colours
- Weatherproof
- Vibration-dampening
- Can easily be folded and bent

Product Range:

- Thickness: 3 mm, 4 mm
- Width: 1250 mm, 1500 mm, 1575 mm
- Length: 2500 mm - 6999 mm
- Custom dimensions are available on request

Made to Measure Panels (M2M) and Ready to Install Panels (R2I) service available as a part of value added services (VAS)

Product Range

ALUCOBOND® PLUS				
THICKNESS: 3/4 MM (6 MM ON REQUEST)				
Width [mm]	1000	1250	1500	1575
Length [mm]	2500 - 6999	2500 - 6999	2500 - 6999	2500 - 6999
Solid Colours	●	●	●	●
Metallic Colours	●	●	●	●
Spectra & Sparkling	○	●	●	●
ALUCOBOND® anodized look	○	●	●	○
ALUCOBOND® naturAL	--	●	●	--
ALUCOBOND® legno	○	●	●	--
ALUCOBOND® vintage	○	●	●	--
ALUCOBOND® urban	○	●	●	--
ALUCOBOND® terra	--	●	●	--
ALUCOBOND® rocca	--	●	●	--
ALUCOBOND® wood	--	●	●	--
ALUCOBOND® stone	--	●	●	--
ALUCOBOND® design	○	●	●	--
Custom Colours	●	●	●	●

○ On request

ALUCOBOND® A2				
THICKNESS: 3/4 MM				
Width [mm]	1000	1250	1500	1575
Length [mm]	2500 - 6999	2500 - 6999	2500 - 6999	2500 - 6999
Solid Colours	--	●	●	--
Metallic Colours	--	●	●	--
Spectra & Sparkling	--	●	--	--
ALUCOBOND® anodized look	--	●	●	--
ALUCOBOND® naturAL	--	●	●	--
ALUCOBOND® legno	--	●	●	--
ALUCOBOND® vintage	--	●	●	--
ALUCOBOND® urban	--	●	●	--
ALUCOBOND® terra	--	●	●	--
ALUCOBOND® rocca	--	●	●	--
ALUCOBOND® wood	--	●	●	--
ALUCOBOND® stone	--	●	●	--
ALUCOBOND® design	--	●	●	--

○ On request

The delivery time and minimum quantity vary according to size and thicknesses. Other dimensions are available on request.

Fire Classification

ALUCOBOND® PLUS		
COUNTRY	TEST ACCORD. TO ...	CLASSIFICATION
Australia	AS ISO 9705	Group 1 material
	AS 1530.3 Indices	SMOGR A 1.385 m2 / s2
		0 (ignitibility) 0 (flame spread) 0 (heat evolved) 0-1 (smoke development) B-s1, d0
China	EN 13501-1	
EU	GB 8624-2012	Class B1 (B- s1,d0, t0)
Germany	EN 13501-1	Class B-s1, d0
Great Britain England / Wales / Scotland	EN 1187 (method 1) / DIN 4102-7	Passed
	BS 476, Part 6 & 7 BR 135	Class 0
	BS 8414 part 1 & 2	met the performance criteria Passed
Malaysia	BS 8414-1	Passed
	BS 476, Part 6	Class 0
	BS 476, Part 7	Class 1
	Approved for outdoor wall cladding of any type of building without height limit	
Poland	PN-90/B-02867	NRO
Russia	GOST 30244-94	G1 (combustibility)
	GOST 30402-95	W1 (flammability)
	GOST 12.1.044-89	D1 (smoke development)
	GOST 12.1.044-89	T1 (toxicity)
Singapore	EN 13501-1	Class B, s1, d0
	BS 476, Part 6&7	Passed
	NFPA 285	Passed
	Approved for outdoor wall cladding of any type of building without height limit	
Switzerland	VKF	RF2
UAE	NFPA 285	Passed
	EN 13501-1	Class B-s1, d0
	ASTM E84 (Core Exposed)	Class A
USA	ASTM E84 (Core Exposed)	Class A
	NFPA 285	Passed

ALUCOBOND® A2		
COUNTRY	TEST ACCORD. TO ...	CLASSIFICATION
Australia	AS ISO 9705	Group 1 material
	AS 1530.3 Indices	SMOGR A 0.630 m2 / s2
		0 (ignitibility) 0 (flame spread) 0 (heat evolved) 0-1 (smoke development) A2-s1, d0
China	EN 13501-1	
EU	GB 8624-2012	Class A (A2- s1,d0, t0)
Great Britain England / Wales / Scotland	EN 13501-1	Class A2-s1, d0
Malaysia	BR 135	met the performance criteria
	BS 8414 part 1 & 2	Passed
Poland	BS 8414-1	Passed
	BS 476, Part 6	Class 0
	BS 476, Part 7	Class 1
	Approved for outdoor wall cladding of any type of building without height limit	
Russia	EN 13501-1	Class A2-s1, d0
	BS 476, Part 6&7 (Core Exposed)	
	NFPA 285	
	Approved for outdoor wall cladding of any type of building without height limit	
Singapore	GOST 30244-94	G1 (combustibility)
	GOST 30402-95	W1 (flammability)
	GOST 12.1.044-89	D1 (smoke development)
	GOST 12.1.044-89	T1 (toxicity)
Switzerland	EN 13501-1	Class A2, s1, d0
	BS 476, Part 6&7 (Core Exposed)	Passed
	NFPA 285	Passed
	Approved for outdoor wall cladding of any type of building without height limit	
UAE	VKF	RF1
USA	BS 8414-2	Passed
	NFPA 285	Class A2-s1, d0
	EN 13501-1	Class A
	ASTM E84 (Core Exposed)	



Product Data Comparison

Product Information

ALUCOBOND® PLUS is a composite panel consisting of two aluminium cover sheets with a hardly flammable mineral-filled core.

ALUCOBOND® A2 is an aluminium composite panel with a mineral-filled core (non-combustible) between two aluminium cover sheets.

ALUCOBOND® PLUS / ALUCOBOND® A2

Thickness : Standard: 4 mm
For special application 3 mm, 6 mm

Width : Standard: 1000 mm, 1250 mm, 1500 mm, 1575 mm

Length : To customer’s specification

Range : 2500 mm - 6999 mm

Technical Data

PANEL-THICKNESS		STANDARDS		UNIT	3mm	4mm	6mm
Thickness of Aluminium Cover Sheets				[mm]		0.50	
WEIGHT							
ALUCOBOND® PLUS				[kg/m²]	5.9	7.6	10.8
ALUCOBOND® A2				[kg/m²]	5.9	7.6	10.8
TECHNICAL PROPERTIES							
Section Modulus		Z	DIN 53293	[cm³/m]	1.25	1.75	2.75
Rigidity		EI	DIN 53293	[kNcm²/m]	1250	2400	5900
Alloy			EN 573-3	EN-AW5005 High quality corrosion resistant			
Linear Thermal Expansion			EN 1999 1-1	2,4 mm/m at 100°C temperature difference			
ACOUSTICAL PROPERTIES ALUCOBOND® PLUS							
Sound Absorption Factor		a _s	ISO 354	[dB]	0.05		
Sound Transmission Loss		R _w	ASTM E90	[dB]	STC: 30 OITC: 24		
ACOUSTICAL PROPERTIES ALUCOBOND® A2							
Sound Absorption Factor		a _s	ISO 354	[dB]	0.05		
Sound Transmission Loss		R _w	ISO 717-1	[dB]	27		
THERMAL PROPERTIES ALUCOBOND® PLUS							
Thermal Resistance		R	DIN 4108	[m²K/W]	0.0021	0.0032	0.0053
Thermal Conductivity		λ	EN 12667	[W/mK]	0.946		
Temperature Resistance				[°C]	-50 to +80		
THERMAL PROPERTIES ALUCOBOND® A2							
Thermal Resistance		R	DIN 4108	[m²K/W]	0.0026	0.0039	0.0064
Thermal Conductivity		λ	EN 12667	[W/mK]	0.778		
Temperature Resistance				[°C]	-50 to +80		
Fire Classification							
ALUCOBOND® PLUS		EN 13501-1: Class B-s1, d0					
ALUCOBOND® A2		EN 13501-1: Class A2-s1,d0					

ALUCOBOND® PLUS | Starry Sky Art Museum - Kunming, China
Architect: Maps design | Fabricator: Yunnan Wanhe Construction Engineering Co. Ltd
Photography: Mark Shen



ALUCORE®

ALUCORE® is a unique panel with an aluminium honeycomb core embedded between two aluminium skins. The Product is a true representation of an advanced sandwich composite. The ultra-low weight of a core and the increased distance between the cover sheets increases rigidity while keeping the panel weight extremely low. The result is unmatched strength-to-weight ratio.

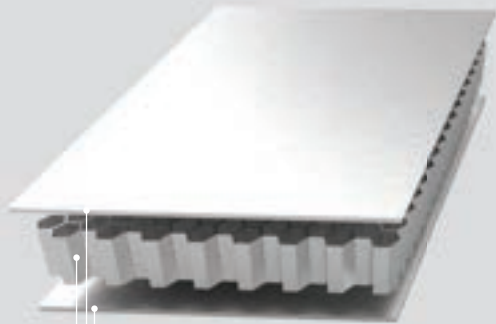
ALUCORE® therefore, has a definite advantage when it comes to projects with

high demands on material stiffness – such as façade cladding or roofing where it is exposed to extremely high wind loads, or for large self-supporting and even walkable roofs.

ALUCORE® can be used for a wide variety of applications from the transport industry to architecture and has fantastic properties such as extraordinary flatness, large variety of colours, and high formability.



ALUCORE® | Carrefour Shopping Centre - Krakow, Poland | Architect: Lipski, Gilewicz, Lisowski; L.G. Asymetria Sp. Z.o.o.
Fabricator: Alustar Sp. Z.o.o.

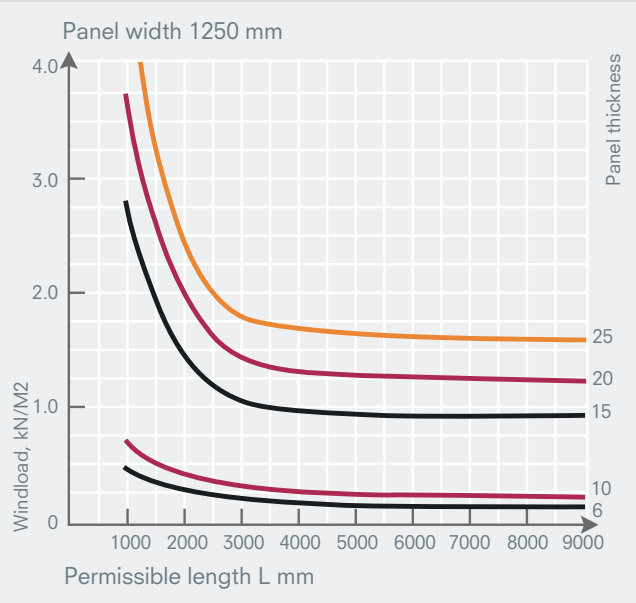
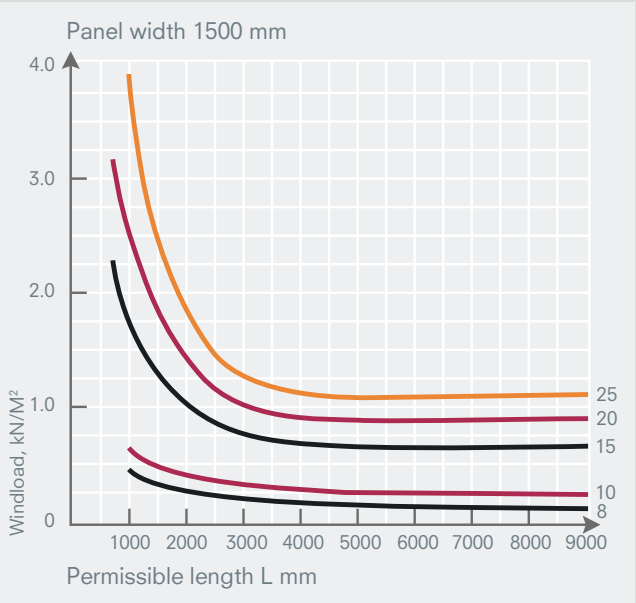


ALUCORE® Characteristics:

- Extreme strength to weight ratio
- Perfect flatness, low weight and extremely high rigidity
- High formability allows design freedom
- Vibration damping (no additional sound damping needed)
- Simple processing using conventional tools (e.g. for folding and bending)
- Excellent weather resistance
- Low cost for substructures and fasteners
- Low cost - short construction time resulting in adherence to schedules

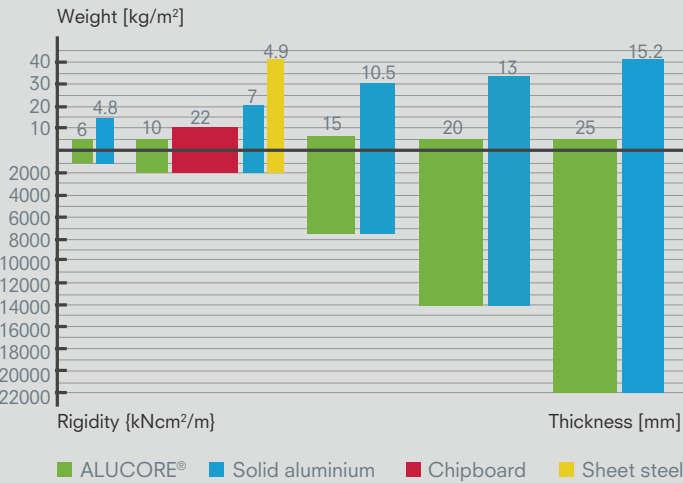
Product Range:

- Thickness: 6 mm, 10 mm, 15 mm, 20 mm, 25 mm
- Width: 1250 mm, 1500 mm
- Length: Length: 2500 mm-6999 mm



Wind load and permissible panel sizes

The diagrams indicate the available range 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.



Rigidity compared with thickness and weight

The graph indicates that 25 mm ALUCORE® has the same rigidity (22000 kN) as of 15.2 mm solid aluminium sheet, but only weighs 5kg Vs 40kg of solid aluminium.

Technical Data

THICKNESS	UNIT	6 mm	10 mm	15 mm	20 mm	25 mm
Front Sheet	[mm]	1.0				
Back Sheet	[mm]	0.5	0.5	1.0	1.0	1.0
Weight	[kg/m²]	4.7	5.0	6.7	7.0	7.3

TECHNICAL PROPERTIES	STANDARDS	UNIT	6 mm	10 mm	15 mm	20 mm	25 mm
Section modulus	W	[cm³/m]	2.6	4.6	14	19	24
Rigidity E-J		[kNm²/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/mm²]	70.000				
Tensile Strength of Aluminium		[N/mm²]	R _m ≥ 120 - 185				
0.2 % Proof Stress		[N/mm²]	R _{p0.2} ≥ 80				
Elongation		[%]	A50 ≥ 5				
Linear Thermal Expansion			2.4 mm/m (at 100°C temperature difference)				

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

ACOUSTICAL PROPERTIES	STANDARDS	UNIT	6 mm	10 mm	15 mm	20 mm	25 mm
Sound Absorption Factor	as		0.05 - 0.07				
Airborne sound insulation index (acc. to ISO 717-1, ISO 140-3)			21 - 25				

THERMAL PROPERTIES	STANDARDS	UNIT	6 mm	10 mm	15 mm	20 mm	25 mm
Thermal conductivity (regarding total thickness, incl. cover sheets)		[W/mK]	0.95	1.35	1.80	2.25	2.70
Thermal Resistance		[m²K/W]	0.0063	0.0074	0.0084	0.0089	0.0093
Temperature Resistance		[°C]	-40 to +80				

Fire Classification

COUNTRY	TEST ACCORD. TO..	CLASSIFICATION
Germany	DIN 4102	Class B1
Switzerland	VKF Fire regulations	Class 5.3 [VKF]
France	NF P 92-501	M 1
UK	BS 476, Part 6 BS 476, Part 7	Index 0 Class 1 Meets the requirement according to Class 0 of the national building regulations
Singapore	BS 476 Part 4	Approved for outdoor and indoor wall cladding for any type of building without limit as to their height
Denmark Sweden Norway	EN 13501-1 EN 13501-1 DS 1065.1	Class B, s1, d0 (standard) Class A2, s1, d0 (on request) Class A
Russia	GOST 30244-94 GOST 30402-95 GOST 12.1.044-89 GOST 12.1.044-89	G1 (combustibility) W1 (flammability) D2 (smoke emission) T1 (toxicity)



ALUCORE® | Espace culturel Jacobin - Le Mans, France | Architect : BABIN & RENAUD | Fabricator: TIM PLEXIAL
Photography: © Thibault Savary

ALUCORE® CLAD

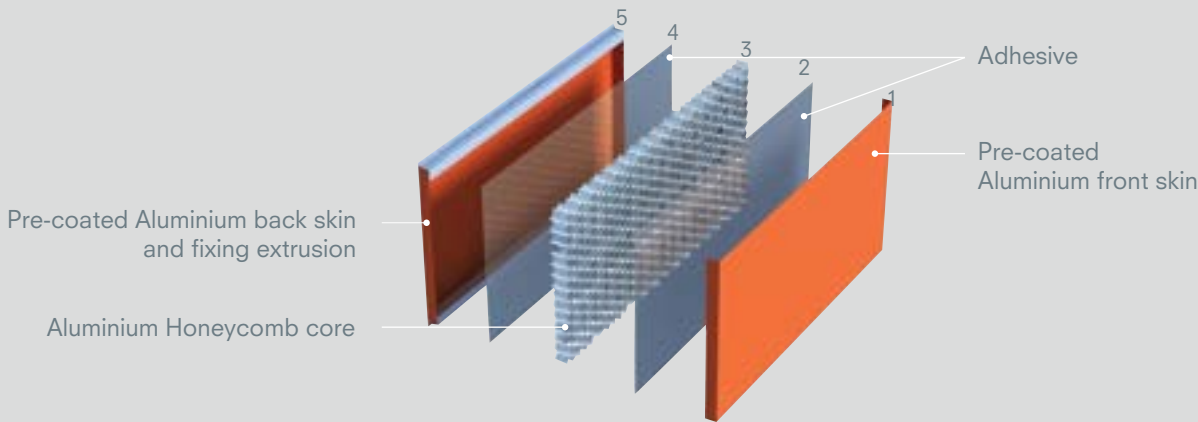
ALUCORE® CLAD is a value-added cladding system solution from ALUCOBOND®. It is made of honeycomb panel prefabricated with aluminium extrusions – Ready to Install.

ALUCORE® CLAD can be used for applications such as facade cladding,

roofing, ceiling, soffit and shelters. This makes ALUCORE® CLAD an ideal choice for projects ranging from airports to metros, commercial complexes to residential buildings, stadiums to community buildings and hotels to hospitals.



ALUCORE® CLAD | Daxing (Beijing) Airport - Beijing, China | Architect: Zaha Hadid Architects & ADP Ingenierie | Fabricator: Beijing Construction Engineering Group
Photography: Zhaoqi Li



ALUCORE® CLAD Characteristics:

- Customised solution. Ready to install panels (R2I)
- Best available industrial coating and lamination technology
- Stronger installation - Panel perimeter fixing anchors fastens both skin panels
- Pre-fixed extrusions (horizontal/vertical orientation). Hence easy and quick installation
- ALUCORE® CLAD fixing system allows quick replacement eliminating the need to take-out all the panels

Technical Data

TECHNICAL ITEM	STANDARDS	UNIT	Standard T12mm*	Standard T25mm*
SURFACE				
Front Cover Sheet**		mm	0.7 ~ 1.0	
Weight		kg/m²	5.5	6
Alloy	EN 573-3		AA5005A (ALMg1), H42	
			AA3003, H44	
Coil Coating System	Coil Coating		PVDF/HDP/POLY	
Gloss (Initial Value)	ECCA T2	%	30 ~ 45	
Pencil Hardness	ECCA T4		HB ~ F	
CORE				
Cell Size		mm	6.3 ~ 19	
Density		kg/mm³	> 50	
Thickness of Al Foil		mm	0.076	
Bare Compressive Strength		N/mm²	≥ 0.8	
MECHANICAL PROPERTIES				
Modulus of Elasticity	EN 1999 1-1	N/mm²	70,000	
Tensile Strength Cover Sheets	EN 485-2	N/mm²	R _m ≥ 125	
0.2% Proof Stress	EN 485-2	N/mm²	R _{p0.2} ≥ 80	
Elongation		%	A50 ≥ 3	
Linear Thermal Expansion	EN 1999 1-1		2.4mm/m (at 100°C temperature difference)	
ACOUSTICAL PROPERTIES				
Sound Absorption Factor α _s	ISO 345		0.05	
Sound Insulation R _w	ISO 717-1 EN ISO 6721	dB	15	25
THERMAL PROPERTIES				
Thermal Conductivity λ ***	DIN 52612	W/mK	1.35	2.7
Thermal Resistance R	DIN 52612	m²K/W	0.0047	0.0093
Heat Transition Coefficient U	DIN 4108	W/m²K	5.65	5.58
Surface Fire Performance	BS1991ADB		Class 0	

Remark:
*Based on the specfic application, there are kinds of thickness, such as 10 mm,15 mm ,20 mm etc.
**There are also 0.5 mm or 0.7 mm for front cover sheet according to the specific application
***Refer to total thickness, incl.al-layers

ALUCOLUX®

ALUCOLUX® is a coil coated solid aluminium panel with A1-s0, d0 classification as per EN 13501-1 test standard.

To maintain high product quality, ALUCOLUX® gets continuous industrial-grade PVDF coating. This

process helps maintain colour consistency of the product and renders it non-combustible in compliance with the A1 classification.

Unique patterns such as embossed wood finish or stone look are possible with ALUCOLUX®.



ALUCOLUX® | ESR BizPark - Changi, Singapore | Architect: TA.LE Architects
Fabricator: Evergreen Engineering and Construction Pte. Ltd.



Non Combustible A1 classification according to EN 13501-1

ALUCOLUX® Characteristics:

- All ALUCOBOND® surface finishes and colours are possible with ALUCOLUX®.
- Coating process confirms to AAMA 2605 and ECCA guidelines.
- Embossed stone and wood look available
- Alloy and temper for best flatness
- High quality colour on continuous industrial grade coil coating line
- ALUCOLUX® comes in 5xxx or 3xxx series alloy.
- 15 years warranty

Product Range:

- Thickness: 2 or 3 mm
- Width: 1000 mm, 1250 mm, 1500 mm
- Length: </=6000 mm

Made to Measure Panels (M2M) and Ready to install Panels (R2I) service available as a part of value added services (VAS)

Technical Data

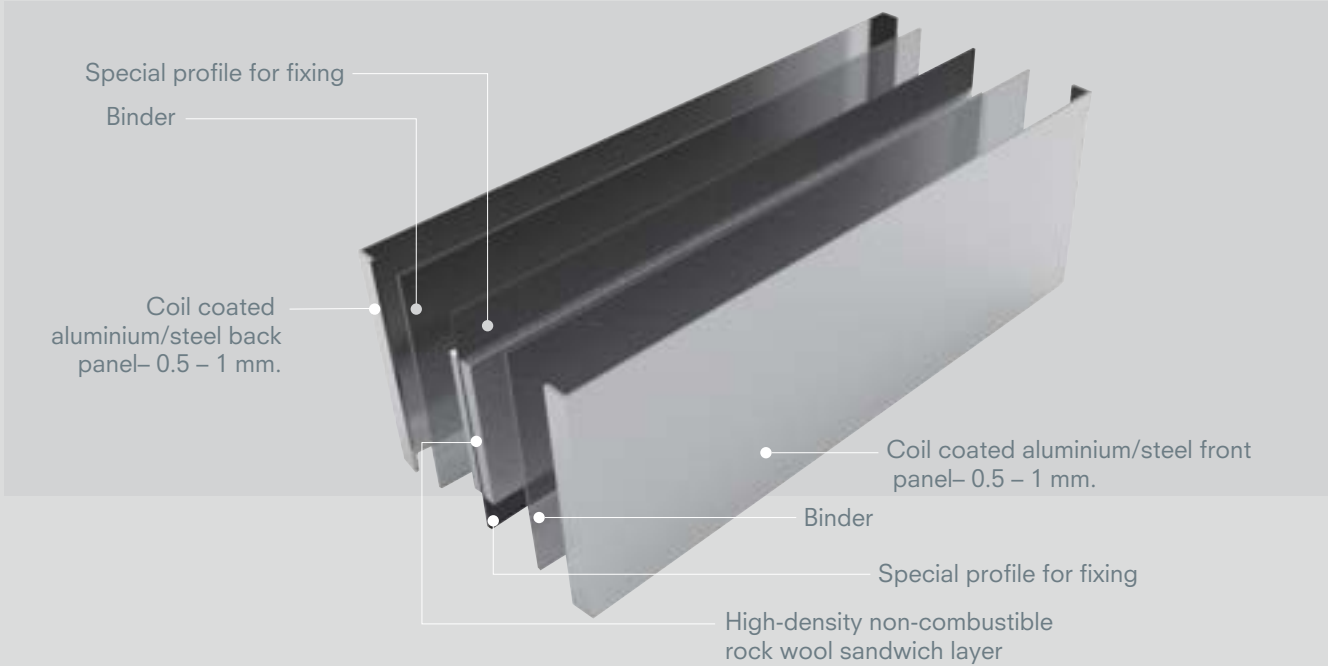
TECHNICAL PROPERTIES	STANDARDS	COIL-COATED
Alloy	EN 573-3	3003
Temper	EN 515	H44
Standard Thickness	EN 485-4	3mm
Standard Widths	EN 485-4	1000mm,1250mm,1500mm
Standard Length	EN 485-4	<= 6000mm
Panel Weight		8.1 Kg/m ²
Tensile strength	EN 485-2	145-185Mpa
Modulus of Elasticity	EN 485-5	70,000 N/mm ²
Yield strength Rp0.2	EN 485-2	>=115Mpa
Elongation	EN 485-2	A ₅₀ >=6%
Linear Expansion	EN 1999 1-1	2.4mm/m at 100°C temperature difference
Surface		PVDF/FEVE
Gloss	EN 13523-2	25~40%
Coating thickness ***		28~45 microns
Fire classification	EN 13501-1	A1-s0, d0

* Other thicknesses available on request.
** Custom widths available on request.
*** Coating thicknesses varies for different surface finishes.

Sandwich Wall System

This system is developed based on ALUCORE®'s technology ideas. The system is composed of two layers of aluminium or steel sheets and a high-density non-combustible rockwool sandwich layer.

Sandwich Wall System is provided with concealed installation accessories to meet building's wind load, water tightness, airtightness, insulation and fire safety requirements. It is a functional wall system for buildings which integrates decoration, heat insulation and fire safety. Sandwich Wall System is widely applied in various large public facilities, industrial factories as well as regular buildings.



Sandwich Wall System Characteristics:

- Large panel size and even flatness
- Good thermal insulation performance - 30 times that of a traditional concrete construction, in both high and low temperatures
- Wide selection of product systems
- Simple and flexible installation
- Beautiful joint design
- Fire safety - The product and the system has been tested to various country-specific standards, complying with all relevant building regulations.

Product Range:

- Sheets: Aluminium/steel – 0.5 – 1 mm
- Thickness: 35 mm, 50 mm, 60 mm, 75 mm, 100 mm

3A Composites Sandwich Wall System

PRODUCT AND SPECIFICATIONS- IW		
Front / back Aluminium or Steel sheet	Materials	High-grade aluminium magnesium alloy AA5005, AA3003 or TDC51D+AZ (Steel)
Front Aluminium or Steel sheet	Thickness	0.6 mm - 1.0 mm (can be customised)
Back aluminium or Steel sheet		1.0 mm / 0.7 mm / 0.5 mm/ 0.4 mm (can be customised)
Core material	Materials	High-density fireproof rock wool / AIREX® / BALTEK® (can be customised)
Baking finish system	Fluorocarbon	PVDF or FEVE
Dimensions	Length and breadth	Maximum panel size: 1500×6000 mm
	Thickness	50 mm / 100 mm/ 200 mm * *custom thickness available. MOQ applies
Surface colour	ALUCOBOND® series standard colours available (*custom colors available. MOQ applies)	

Technical Data

SPECIFICATIONS	STANDARDS	UNIT	50 mm	100 mm
Panel-Thickness:				
Thickness of Steel plate		[mm]	Fs: 0.6mm; Rs 0.5mm	Fs: 0.7mm; Rs 0.5mm
Weight		[kg/m²]	15	27
Grade of Steel plate			TDC51D+AZ	TDC51D+AZ
Tensile Strength	EN 485-2	[N/mm²]	350-370	350-370
Elongation	EN 485-2	[%]	30	30
Yield Strength			280-300	280-300
Core:		[Kg/m³]	120	120
Hydrophobic rate		[%]	≥98	≥98
Thermal resistance		mK/W	2.7	2.7
Acidity coefficient			1.8	1.8
Surface:			Coil Coating	Coil Coating
Coating			PVDF	PVDF
Gloss (initial value)	EN 13523-2	[%]	25-60	25-60
Pencil Hardness	EN 13523-4		HB	HB
Bending			3T	3T
Impact			9J	9J
Acoustical Properties:				
Sound Transmission Loss	GB/T 19889.3-2005	[dB]	30	25
Rw				
Thermal Properties:				
U Value		W/m K	0.74	0.37
R Value		W/m²*K	1.35	2.7
		m²*K/W		
Weather Tightness	GB/T21086-2007		Level 3	Level 3
Fire Classification	BS 476 Part 22 BS 476 Part 6&7 (core exposed)		Class 0	2 hour fire rating

Energy Saving

Light Weight

Sound Insulation And Absorption

Fire Resistance/ Retardancy

Accurate Size

Quick Installation

Durable Service

Eco-Friendly

Recycling

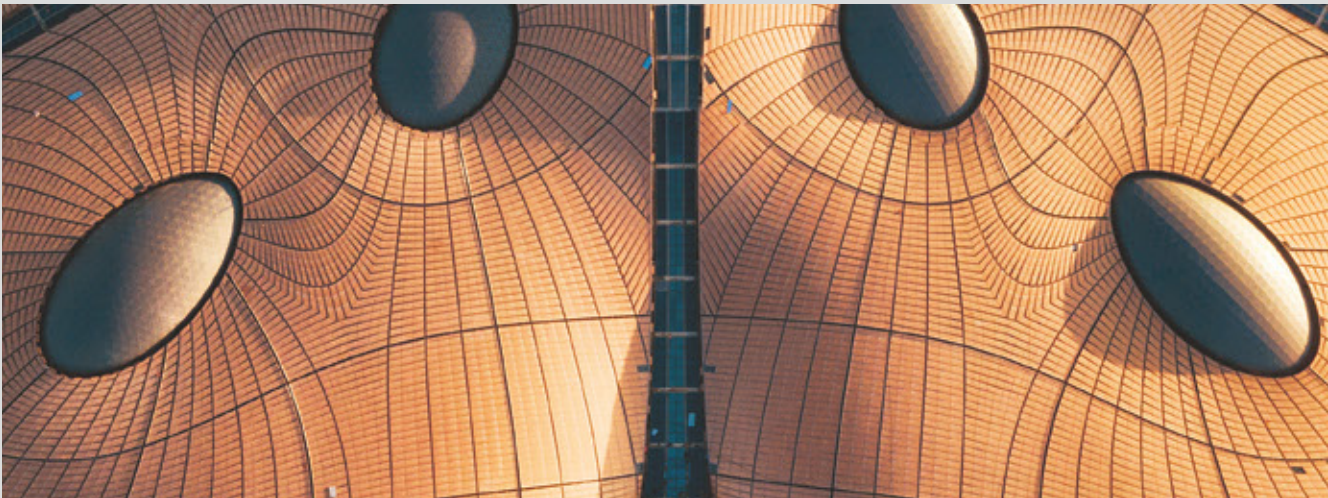
Value Added Services

ALUCOBOND® has always tried to offer complete solutions to its customers apart from just world-class products.

Through Value Added Services (VAS) ALUCOBOND® goes a step further to ensure its customers get high-quality fabrication and finesse in the final output. Whether the customer needs made to

measure or ready to install or perforated panels, all could come directly from the factories of ALUCOBOND®.

With over 50 years of expertise, ALUCOBOND® has always been eager to help customers realise their designs.



ALUCORE® CLAD | Daxing (Beijing) Airport - Beijing, China | Architect: Zaha Hadid Architects & ADP Ingenierie | Fabricator: Beijing Construction Engineering Group
Photography: Zhaoqi Li

ALUCOBOND® Panel Optimization:

Panel Optimization is a process of computing the maximum panel utilization for a given facade elevation/design/layout by specially designed software. This service calculates the most efficient layout with accuracy in a short time. In doing so, wastages have been brought down to around 3-5% in most cases thereby allowing for saving costs to customers.

ALUCOBOND® Made to Measure (M2M) Panels:

ALUCOBOND® can manufacture tailor-made panels which are cut to size, routed, drilled and notched at the factory's production level to meet customers' specific requirements. This helps in high-quality fabrication and warrants a smooth transition from flat sheet to final product.

ALUCOBOND® Ready to Install (R2I) Panels:

As the name suggests, R2I is a step further over the M2M service with folding and system assembly coming from the house of ALUCOBOND® itself. R2I allows for direct delivery at the job site. This ensures hassle-free installation and finesses in the end product.

ALUCOBOND® Perforation:

ALUCOBOND® also offers perforation service, where custom designs are realised according to each project's requirement. Skillful workmanship of ALUCOBOND® coupled with years of expertise ensures warrantable high-quality output.



ALUCOBOND® PLUS | Banyan Tree Residences Riverside - Bangkok, Thailand | Architect: SCDA Architects codesign with CAPA
Fabricator: Oregon Aluminium Co., Ltd. | Photography: Panoramic Studio

ALUCOBOND® Solar Shading Solutions:

In this service, ALUCOBOND® designs and optimises Solar Shading Solutions for you. This begins with calculation of Sun's path for each elevation and results in custom shading solutions that gives protection and balances unobstructed views. Based on these calculations ALUCOBOND® suggests the following:

- Vertical/horizontal fins.
- Fixed/adjustable fins.
- Size of the fins to optimize sun light and to withstand the wind load.
- Right product for the right application along with the correct fixing mechanism.

ALUCOBOND® PLUS | Porsche Zentrum - Dortmund, Germany
Architect: MUTABOR | Fabricator/Installer: Athens GmbH & Co. KG
Photography: © BRANDSPACEPHOTOGRAPHY - André Müller



ALUCOBOND® A2 | KNPC Petrol Filling Station - Sabah Al Ahmed City, Kuwait
Architect: Pan Arab Consulting Engineers (PACE) | Fabricator: United Aluminium & Metal Coating Co.



ALUCORE® | Max Towers – Noida, India
Architect: Gensler | Fabricator: Ashbee Industries India Pvt. Ltd.
Photography: © Rohit Kumar



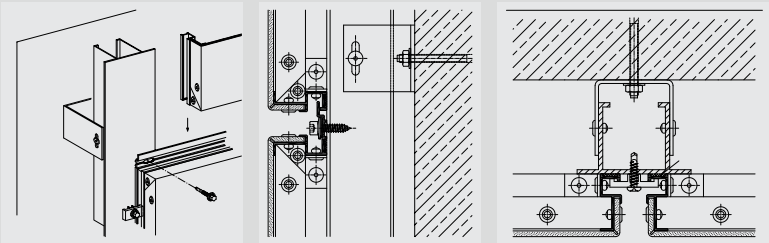
ALUCOLUX® | Timberly Road Māngere – Auckland, New Zealand
Architect: Eclipse Architecture | Fabricator: Symonite
Photography: © Mark Scowen



Fixing Systems

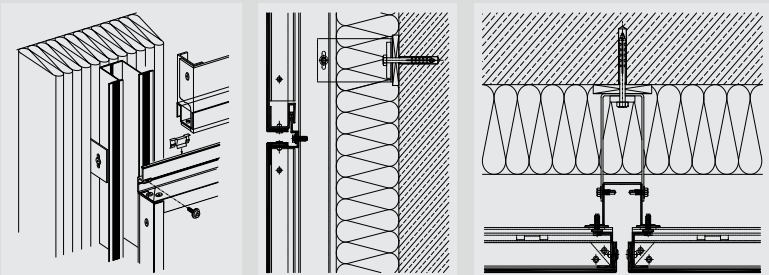
Tray Panel

This system is one of the most adaptable systems for facade cladding with either vertical or horizontal panel layouts. Individual panels are of a tray/cassette type, with four sides folded and framed with extruded aluminium profile sections. Individual elements are fastened to an extruded aluminium sub-structure by means of aluminium profiled cleats, which in turn are anchored to the wall. The horizontal and vertical joints between the panels are of minimum 15 mm width and all rivets, fastening cleats and screws are concealed within it and kept closed by a profiled strip of matching or contrasting colour.



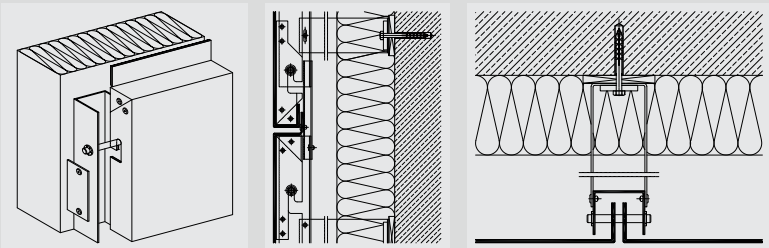
SZ-20

This system assembly is based on the 'tongue and groove principle and is particularly suited for facade cladding with a horizontal panel layout. Individual panels are folded into a tray and the top and bottom sides are grasped by an extruded aluminium section. The 'Z' and 'S' profiles are riveted to the top and bottom folded edge of the panels respectively, facilitating the 'tongue and groove assembly. The vertical folded edges are riveted with the 'S' profiles that facilitate fixing with aluminium profiled cleats to the 'Hat' profiled sub-structure. All the rivets, fastening cleats and screws are concealed within the panels.



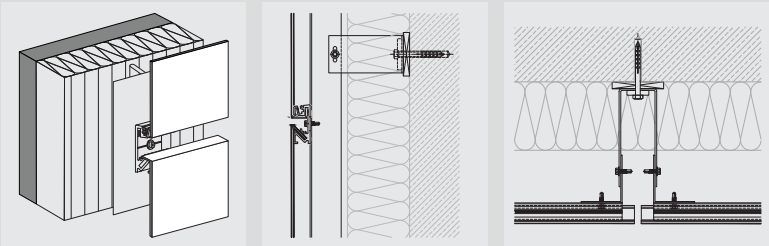
Hook-on

The ALUCOBOND® Hook-on system is an open-joint rear ventilated system with a vertical panel layout. This system facilitates un-impeded movements of the elements in all aspects, as well as allowing the joint widths between the panels to be as narrow as 6 mm.



Easy fiX

Easy fiX system is a hybrid solution between face fixed panels and cassette solutions. Panels can be installed in horizontal or vertical layout. Easy fiX offers simple clamping without adding rivets reducing the cassette thickness to 31 mm, hence allows compact design.



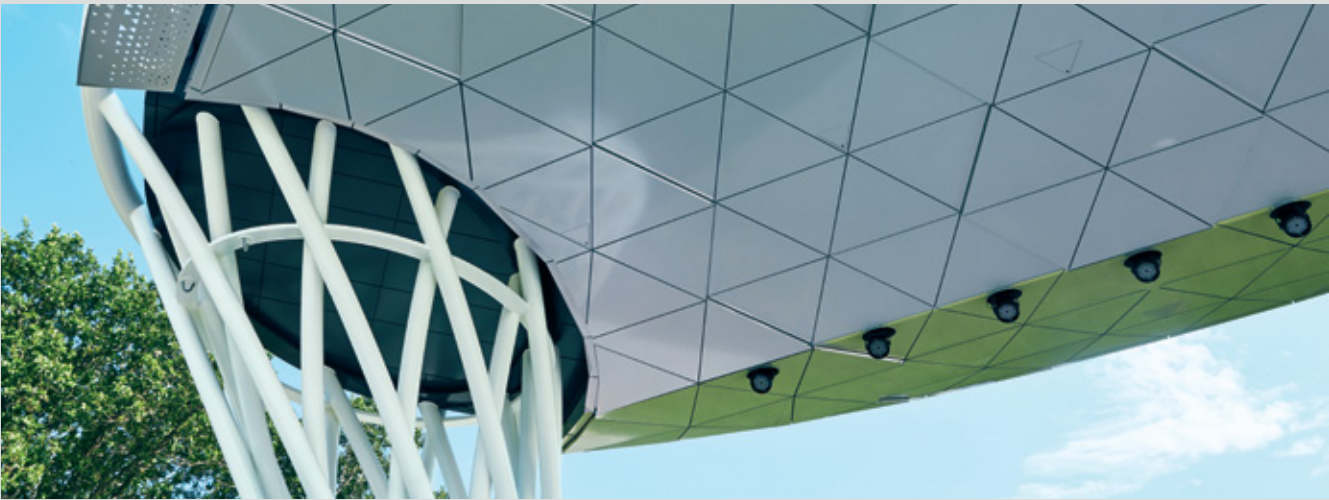
Easy fiX tray panels are simply made with 2 types of milling lines that give 3 types of panels viz easy fiX 90°/135°, easy fiX 135°/135°, easy fiX 90°/90°.

Useful Information

Installation

To avoid possible reflection differences (for metallic, special effect, naturAL and spectra colours), it is recommended to install the panels in the same direction as marked on the protective peel-off-foil.

Colour variations may occur between panels originating from different production batches. To ensure colour consistency, the total requirement for a project should be placed in one order.



ALUCOBOND® PLUS | Lauridsen Amphitheater, Des Moines, USA
Architect : RDG Planning & Design | Fabricator : Metal Design System Inc.; The Waldinger Corp.
Photography: © Joe Crimmings

Protective Film

In order to avoid adhesive residues on the surface, caused by UV radiation, the protective foil should be removed as soon as possible after the panels have been installed. Protective foils and panel surfaces are not to be marked with inks (felt tips), adhesive tapes or stickers, as solvents or softeners can damage the painted surfaces. After installation, the protective foil must be removed as quickly as possible, as foils which has been weathered on a long-term basis can only be removed with great difficulty.

Storage / Handling

ALUCOBOND® should be protected against rain, dampness penetrating the panels and the build-up of condensation. It is recommended that panels of the same dimension and size must be stacked with a maximum stacking height of 6 pallets. Storage for more than 6 months should be avoided as removing the foil may not be easy. When stacking, do not lay anything between the panels to avoid imprints.

Warranty

ALUCOBOND® stands for high quality and durability. Warranties according to the product specification and approved field of application can be obtained upon request.

Cleaning and Maintenance

The frequency of cleaning and the choice of a suitable cleaning agent depends largely on the location of the building and the condition of the panel surface. The cleaning can be carried out with water and a sponge or a soft brush. In case of severe soiling add a neutral detergent.

ALUCOBOND® | Orona Zero – Hernani, Spain
Architect: Barrutieta, Goikoetxea, de la Fuente & Perez | Fabricator: Uxama Fachadas Singulares, Biscay
Photography: © Agustín Sagasti



Infinite Possibilites

3A Composites is listening to the needs of architects, consultants, developers, fabricators and installers. Thousands of projects worldwide serve as an inspirational starting point in the planning process of any construction. Furthermore, 3A Composites excels at sharing its know-how with customers and offer comprehensive advice for every step of the building process.