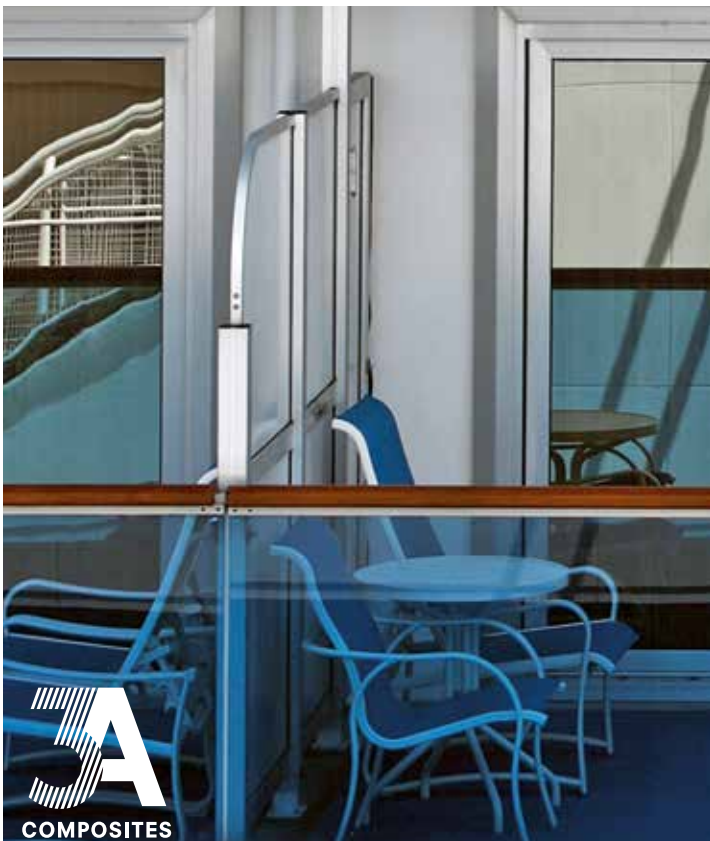


# ALUCORE®

## AT A GLANCE

All you need to know about the aluminium composite panel with a honeycomb core

English

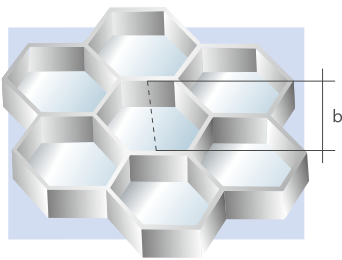


# THE PRODUCT

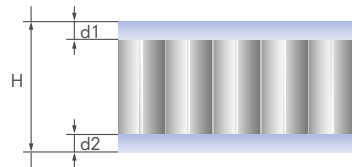
## AT A GLANCE

- high rigidity with low weight
- visually appealing, even surfaces
- good air-borne sound insulation
- different thicknesses and formats
- particularly well-suited as carrier material for the most differing surfaces and coatings
- easy to process
- approvals for specific applications
- short delivery times
- cut to size on request

ALUCORE® is an aluminium sandwich-type panel with high rigidity and extremely low weight. In contrast to conventional honeycomb composite panels, the system components, i.e. the “aluminium core” and the coil-coated “aluminium cover sheets” are bonded in a continuous process. The advantages are product quality and surface evenness; the material does not become brittle-hard but shows tough and resilient properties and an excellent peel strength. Following in the footsteps of the ALUCOBOND® trademark, ALUCORE® is the ideal material for a host of applications in transport, architecture or industrial production.



The **honeycomb core** consists of aluminium foils made of the alloy AlMn (EN AW 3003) Cell size b: approx. 6.3 – 12.7 mm. The **cover sheets** of the ALUCORE® panels consist of corrosion-resistant Peraluman alloys (AlMg) and may be used in a decorative or functional manner, depending on the purpose of application.



### Structure

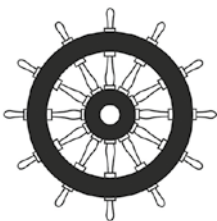
- H: total thickness (5.5 – 50 mm)
- L: length (2000 – 9600 mm)
- d1: thickness of Al cover sheet (front side 0.5 / 1.0 mm)
- d2: thickness of Al cover sheet (rear side 0.5 / 1.0 mm)



honeycomb core

cover sheets with lacquering

## DELIVERY PROGRAMME (STANDARD)



### COLOURS AND SURFACES

Further colours and surfaces on request.

### DIMENSIONAL TOLERANCES

Thickness: ± 0.2 mm (mill-finished | stove-lacquered)  
 Width: -0 / +4 mm  
 Lengths 2000 – 4000 mm: -0 / +4 mm  
 Lengths 4001 – 9000 mm: -0 / +6 mm

ALUCORE® (both sides lacquered platinum white (RAL 9003) protective film on both sides)		
Standard thickness [mm]	Standard width [mm]	Standard length [mm]
6	1250	2500 / 6250
6	1500	6250
10	1250	2500 / 6250
10	1500	6250
15	1250	2500 / 6250
15	1500	6250
20	1500	6250
25	1500	6250

All standard formats available from stock

ALUCORE®base (both sides mill finish, without protective foil)		
Standard thickness [mm]	Standard width [mm]	Standard length [mm]
9.5	1500	5150
14	1500	5150

ALUCORE® (one side PVDF lacquered, one side protective foil)		
Standard thickness [mm]	Standard width [mm]	Standard length [mm]
6	1250 / 1500	on request
10	1250 / 1500	on request
15	1250 / 1500	on request
20	1250 / 1500	on request
25	1250 / 1500	on request

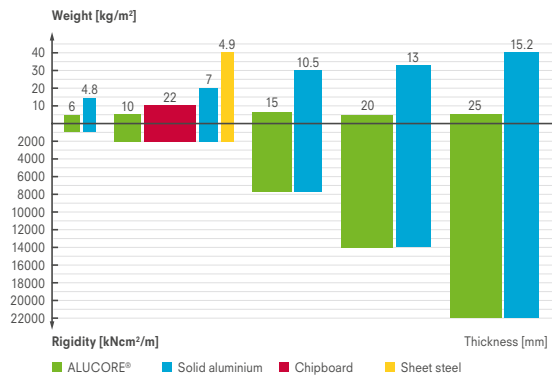
Other thicknesses and formats on request

# APPROVALS AND FIRE CLASSIFICATION

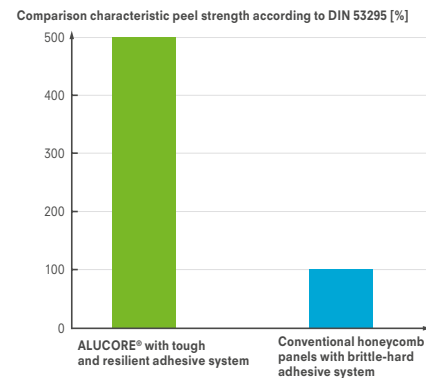
Shipbuilding		
Country	Test according to ...	Classification
EU* US*	MED approval (EC type approval certificate, steering wheel) US Coast Guard Approval	Modules B and D Flame-retardant surface materials and flooring with low flame-spread characteristics (veneers and flooring)
Rail vehicles		
Germany	DIN 5510	S5 / SR2 / ST2
EU	EN 45545	HL3 (for R1)
France	NF F 16-101 NF P 92-501	Class F0 Class M1
Building construction		
EU	EN 13501-1	Class B, s1, d0
Germany*	DIN 4102	Class B1 flame-retardant
Switzerland	VKF fire protection regulations	Class 5.3 [VKF]
France	NF F 16-101 NF P 92-501	Class F0 Class M1
Great Britain	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	Approved for external wall cladding for any types of buildings without limitation as to the height.	
Denmark, Norway, Sweden	DS 1065.1	Class A

\* Also applies to ALUCORE® base

## RIGIDITY COMPARED WITH THICKNESS AND WEIGHT



## CHARACTERISTIC PEEL STRENGTH ACCORDING TO DIN 53295





# SHIPBUILDING



Economic – balcony partitioning using ALUCORE®

**In the shipbuilding industry, ALUCORE® plays an important role due to fire-protection standards and the necessary weight reduction.**

Thanks to its very light weight combined with its economic workability, the composite panel is used – particularly in the interior of the ship – for the ceilings, walls or furniture and in the outer area for balcony partitioning. In all the applications, the material offers optimum strength values at the same time.

# INTERIOR CONSTRUCTION



Individual – interior construction using ALUCORE®

**Whether for cleanrooms, partitions, light-weight containers, cabins for machine tools, wind tunnels, lifting platforms, lifts, etc., ALUCORE® is the ideal material for industrial applications.**

For example, using large-format, curtain wall ALUCORE® panels, it is possible to create an individual interior design in stairways and public areas, fast building systems in hat-profile construction can be implemented, or ground areas can be fitted with assembly systems for control rooms, navigating bridges and platforms. The honeycomb panels are also excellently suited as a carrier material for HPL, veneers, foils or paint.

Simple processing using commercially available tools on site and the possibility of a flexible adaptation of the modular dimension and fixation method offer the construction workers the greatest possible comfort.

## ARCHITECTURE



Stable – large, self-supporting roof with ALUCORE® cladding

**Unique, mechanical properties, paired with excellent processing and aesthetic features make ALUCORE® the preferred material in facade cladding and roofing for planners, architects and designers.**

With this decorative construction material with its even surface and high rigidity, innovative mounting systems for wall cladding and roofing can be implemented in a technically flawless manner.

Even applications with very demanding technical requirements, e.g. large self-supporting roofs or elements that are exposed to extremely high wind loads, can be constructed using ALUCORE®. In comparison with other materials, ALUCORE® therefore has a high rigidity and an extremely low weight and offers decisive advantages due to the high tensile strength of the cover sheets.

## RAIL AND TRANSPORT VEHICLE CONSTRUCTION



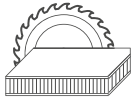
Light weight – rail vehicle interior construction in ALUCORE®

**Today's strict economic and ecological conditions demand the implementation of sustainable structural materials in the field of transport that are lightweight, stable and fully recyclable.**

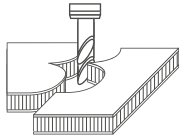
In rail and transport vehicle construction, particularly the light weight and the high rigidity speak in favour of using ALUCORE®. Due to the lightweight construction, the CO<sub>2</sub> emission can be significantly reduced and at the same time, there is less burden on the congested and restricted rail and road networks. ALUCORE® is recyclable, i.e. the panels are fed back into the material cycle and used for producing new material.

ALUCORE® composite panels are excellently suited for special interior cladding, as well as for wall cladding and roofing in rail vehicle construction, for superstructures for lorries, for cabins, doors and flap systems.

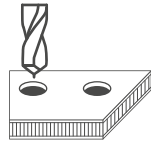
# PROCESSING



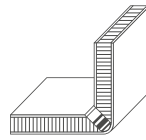
CUTTING



MILLING



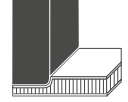
DRILLING



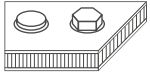
FOLDING



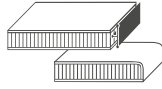
BENDING



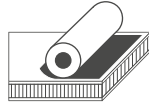
PRESS FORMING



JOINTING, FIXING



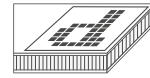
EDGE COVERING



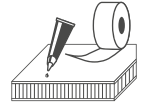
LAMINATING



LACQUERING,  
SPRAYING



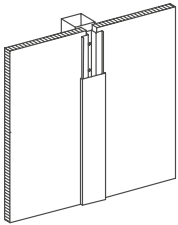
PRINTING



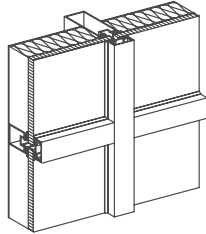
GLUEING

# APPLICATION EXAMPLES

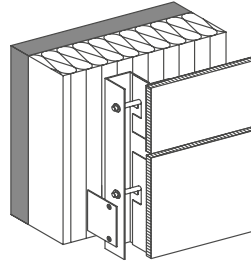
INTERIOR CLADDING



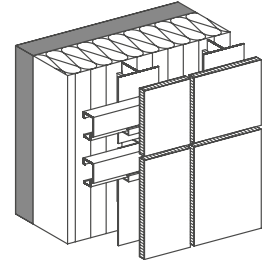
CLAMPED



SUSPENDED  
for vertical panel layout



SUSPENDED  
for horizontal panel layout



# INTERESTING DETAILS

## ENVIRONMENT / RECYCLING / QUALITY

During the life cycle of ALUCORE® panels, no substances containing CFC are set free at any time. ALUCORE® can be fully recycled, i.e. the panels are fed back into the material cycle and used in the production of new material. For 3A Composites GmbH, effective, continuous environmental protection is a main priority. It is of utmost importance to preserve natural resources in order to ensure a livable tomorrow for future generations. It commits itself to continuous self-improvement programmes for environmental protection, many of which go above and beyond government regulations. It is also in this area that 3A Composites GmbH strives to be a leader in its field. We were one of the first companies to develop our own environmental management system which is regularly audited by independent auditors. The certification according to EN ISO 14001 speaks for itself.

## STORAGE / HANDLING

Make sure to protect ALUCORE® panels against rain, any wetness penetrating the pallets and the formation of condensation. It is recommended to store a maximum of 6 pallets of identical size stacked on top of each other. Storage exceeding 6 months should be avoided, otherwise it could be difficult to remove the protective foils. When stacking the panels, nothing should be placed in between them, as this could produce marks on the panels.

## INSTALLATION

To avoid possible reflection differences (does not apply to solid colours), we recommend installing 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.

## PROTECTIVE FOIL / CLEANING / MAINTENANCE

We recommend removing the protective foil as soon as possible after the installation. Due to UV radiation, it may occur that residual glue sticks to the surface of the panels. Do not mark the protective foils and panel surfaces with ink (markers), adhesive tape or labels. The solvents or softeners could damage the lacquered surface. Make sure to remove the protective foil as soon as possible after installation, as prolonged exposure to the elements could make the foil difficult to remove. The frequency of cleaning depends on the design and on the degree of soiling resulting therefrom.

## WARRANTY

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

# ALUCORE® FOR TRANSPORT, INDUSTRY AND ARCHITECTURE

Light-weight containers, cabins for machine tools, wind tunnels, cleanroom claddings, partitions, ship furniture, lifts... ALUCORE® provides an enormous variety of industrial applications. We offer back-up service for builders and construction companies even in the planning phase by providing samples, detailed technical information and individual testing procedures. Our ultimate aim is total customer satisfaction through efficiency and economy.

In view of the strict financial and ecological restrictions, the transport industry is increasingly calling for materials which are light, stable and fully recyclable. ALUCORE® completely fulfills these requirements. The honeycomb composite panels, for example, are preferred in the exterior and interior of ships because composite panels for walls, doors and ceilings are easily processed and offer optimum strength. ALUCORE® composite panels are highly suitable for use in rail and transport vehicles such as special interior cladding, walls and ceilings, superstructures for lorries as well as doors and flap systems.

Planners, architects and designers appreciate and favour ALUCORE® because it combines mechanical properties such as the tensile strength of the cover sheets with outstanding processing and aesthetic features. Since it is clean and easily fabricated with perfect details, a great variety of applications, e.g. for façade cladding and roofing, is possible with the use of ordinary tools. ALUCORE® is also increasingly used in interior design. The flat, decorative and rigid material is ideal for innovative fastening systems for ceiling and wall claddings in the interior and in the outer area.

Owing to the variety of possible alternative surfaces and colours, designers have a vast range of options. Another plus point is that the panels are highly suitable for lacquering. All standard and special colours comply with the standards of the European Coil Coating Association (ECCA).

## TECHNICAL DATA

		Unit	ALUCORE®					ALUCORE® base	
			6	10	15	20	25	9.5	14
<b>Standard thickness [mm]</b>									
Cover sheet thickness, front side		[mm]			1.0			0.5	
Cover sheet thickness, rear side		[mm]	0.5	0.5	1.0	1.0	1.0	0.5	
Weight		[kg/m <sup>2</sup> ]	4.7	5.0	6.7	7.0	7.3	3.5	3.7
<b>Technical properties</b>									
Section modulus	W	[cm <sup>3</sup> /m]	2.5	4.5	13.1	18.1	23.1	4.3	6.5
Rigidity	EJ	[kNcm <sup>2</sup> /m]	7 100	21 900	75 500	138 900	221 600	15 600	35 000
Alloy of cover sheet (accord. to EN 485-2 / EN 1396:2007)			EN AW-5005A (AlMg1) H22 / H42		EN AW-5005A (AlMg1) H28 / H48 (H22 / H42)			EN AW 5005A (AlMg1) H22 / H42	
Modulus of elasticity	E	[N/mm <sup>2</sup> ]	70 000						
Tensile strength of cover sheets	R <sub>m</sub>	[N/mm <sup>2</sup> ]	≥ 125		≥ 185 (125)			≥ 125	
0.2% Proof stress	R <sub>p0.2</sub>	[N/mm <sup>2</sup> ]	≥ 80		≥ 160 (80)			≥ 80	
Elongation	A <sub>50</sub>	[%]	≥ 5		≥ 2 (5)			≥ 5	
Linear thermal expansion	α		2.4 mm/m at 100° C temperature difference					2.4 mm/m at 100° C temperature difference	
<b>Core</b>									
Bare compressive strength		[N/mm <sup>2</sup> ]	approx. 2.5					approx. 1.5	
Cell size		[inch] [mm]	3/8 (9.5)					1/2 (12.7)	
<b>Surface</b>									
Lacquering			both sides polyester platinum white or fluoropolymer lacquer (e.g. PVDF), one or both sides					both sides mill finish	
Brilliance (standard)		[%]	25–40						
Hardness (pencil hardness)			HB-F						
<b>Acoustical properties</b>									
Sound absorption factor	α <sub>s</sub>		0.05					0.05	
Air-borne sound insulation index (accord. to ISO 717-1, ISO 140-3)	R <sub>w</sub>	[dB]	21	21	22	23	25	approx. 20	
<b>Thermal properties</b>									
Thermal conductivity (depends on total panel thickness incl. cover sheets)	λ	[W/mK]	0.95	1.35	1.78	2.25	2.70	1.01	1.30
Thermal resistance	R	[m <sup>2</sup> K/W]	0.0063	0.0074	0.0084	0.0089	0.0093	0.0094	0.0107
Heat transition coefficient	U	[W/m <sup>2</sup> K]	5.67	5.64	5.61	5.59	5.58		
Temperature resistance		[°C]	-40 to +80					-40 to +80	

Boundless possibilities.  
**ALUCORE®**



**3A Composites GmbH**  
Alusingenplatz 1  
78224 Singen, Germany  
Phone +49 7731 - 941 2254  
[transport-industry@3AComposites.com](mailto:transport-industry@3AComposites.com)  
[www.transport-industry.com](http://www.transport-industry.com)