

# larcore<sup>®</sup>

**Aluminium honeycomb panel**

Lightweight solutions for transport and industry



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MANUFACTURER OF ADVANCED MATERIALS FOR TRANSPORT AND INDUSTRY

# larcore®



## Aluminium honeycom panels

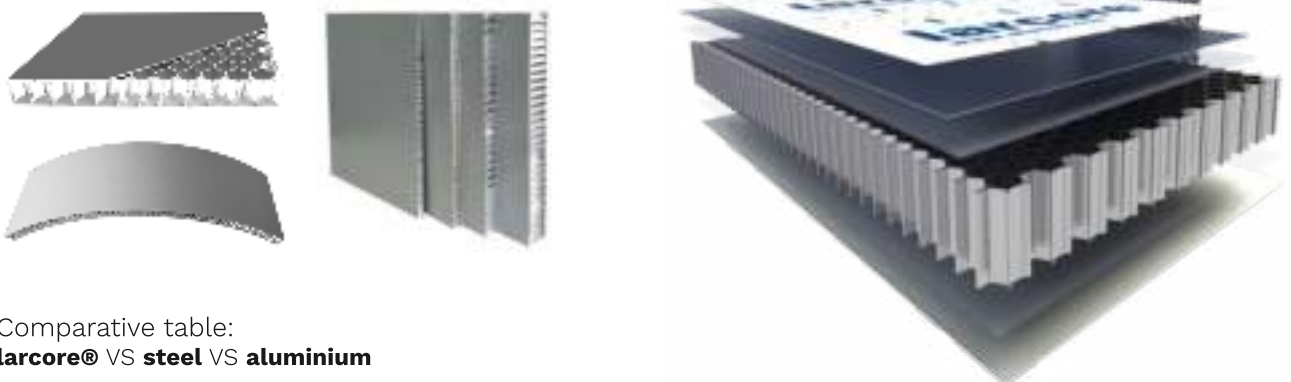
**larcore®** is a panel formed by two aluminium skins bonded to an aluminium honeycomb core, forming a final structure with ideal properties for transport and industry applications. It is made of aluminum, an fully recyclable metal.

The continuous production process allows the achievement of big panel dimensions with stable and uniform values of adherence, flatness and resistance which are essential properties to use the **larcore®** panel in many different applications.

### HONEYCOMB technology

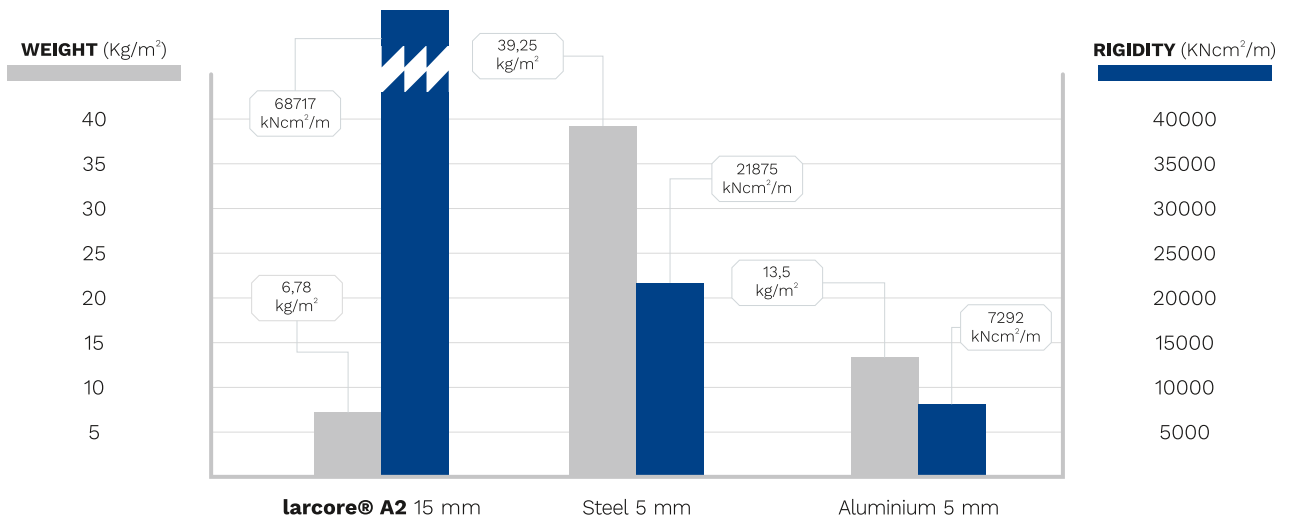
The main properties of the **larcore®** panels are:

- High rigidity
- Lightness
- Flatness
- Compressive strength
- Easy machining
- Good behavior to fire and smoke



Comparative table:

### larcore® VS steel VS aluminium



For industrial outdoor applications or in indoor areas with a high concentration of humidity, the installation must ensure the watertightness of the panels over their entire surface.

**larcore®** panels with different machining and finishes are part of the interior and exterior of transports means dedicated to mass transport.

Different types of vessels, trains and electric buses have our panels installed achieving more efficient, light and sustainable constructions.

Ceilings, floors, vertical partitions, furniture and exterior walls are manufactured with **Alucoil®** honeycomb technology in different dimensions, thicknesses and finishes.

### Applications



Marine - Navy



Spanish shipping company leader in the transport of passengers and goods on routes between the Balearic Islands.



Railway



Truck bodies



Buses

Ceilings, walls and floors of modular cabins, clean rooms, operating rooms, elevators, etc... are made with **larcore®** panels with different options of laminates or decorative paints.

The easy handling as well as the installation and connection reduce assembly times and helps the renovation and upgrading of these constructions, increasing their flexibility and adaptation to the project needs in each moment.

### Applications



Lift - Elevators



Modular operating room built on a full scale in Miranda de Ebro in collaboration with **Alintra® Systems** and **PREMO**



Clean cabins



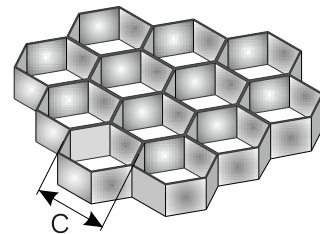
Modular constructions

# Aluminium honeycomb panel

## Panel features

<b>Total thickness "b" (mm)</b>	5,5±0,2	6±0,2	10±0,2	15±0,2	20±0,2	25±0,2	30±0,2	40±0,2
<b>External sheet thickness "e," (mm)</b>	0,5	1,0	1,0	1,0	1,0	1,0	1,0	1,0
<b>Internal sheet thickness "e<sub>2</sub>" (mm)</b>	0,5	0,5	0,5	1,0	1,0	1,0	1,0	1,0
<b>Weight (kg/m<sup>2</sup>)</b>	3,62	4,97	5,19	6,78	7,05	7,32	7,59	8,13
<b>Length (mm)</b>	2000 / 14000 (Tolerances -1 / +6 mm)							
<b>Width (mm)</b>	1000 - 1250 - 1500 - 2000 (Tolerances -0 / +2 mm)							
<b>Rigidity (EI) (KNcm<sup>2</sup>/m)</b>	3727	5519	22169	69964	143868	249289	347169	584560
<b>Moment of inertia (I) (cm<sup>4</sup>/m)</b>	0,53	0,79	3,16	9,99	20,55	35,61	49,60	83,51
<b>Section modulus (w) (cm<sup>3</sup>/m)</b>	2,39	2,63	4,92	13,32	20,55	28,49	33,06	41,75
<b>Acoustic isolation (R<sub>a</sub>) (dBa)</b>	19,5	19,6	20,3	21,18	22,16	23,21	24,3	26,15
<b>Thermal resistance (R) (m<sup>2</sup>K/W)</b>	0,0065	0,0063	0,0074	0,0084	0,0089	0,0093	0,0099	0,011

The values of rigidity, moment of inertia and section modulus are measures of the transversal axis. Some data of this brochure could be estimated or extrapolated. Consult with the Alucoil® technical department to confirm exact values to be used in specific calculations or projects. Request complete data sheet to see all the data.



## Core features

<b>Core</b>	Aluminium honeycomb core - 3005 series alloy EN 573-3
<b>Cell size "c"</b>	3/8" - 9,52 mm
<b>Foil thickness</b>	70µ
<b>Compressive strength</b>	2 MPa
<b>Core density</b>	54 kg/m <sup>3</sup>

larcore® 40 mm panel has a foil thickness of the 50µ which compressive strength is of 1,20 Mpa and its density of 40 kg/m<sup>3</sup>

# larcore®

Protective film

**Aluminium** 5754 EN 573-3

Bonding layer

**Aluminio honeycomb core** 3000 EN 573-3

Bonding layer

**Aluminium** 5754 EN 573-3



### Coated possibilities

Primer HM  
PVDF  
FEVE  
HQPE  
**termolac®**

### Laminated possibilities

Stainless Steel  
CPL  
HPL  
Stone  
VC film  
Rubber flooring



# CERTIFICATES

## MARINE

### International →

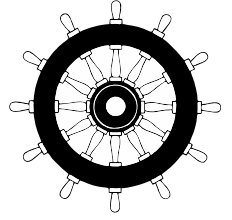
**MEDD0000VD** by DNV GL

MED B+D.

MED/3.64 C-class divisions, non-combustible materials

MED/3.18a-c Surface materials and floor coverings with low flame spread characteristics.

- **larcore®** → IMO FTP Code Part 1. Material non-combustible.
- **larcore®** → IMO FTP Code Part 2. Smoke density and toxicity.
- **larcore®** → IMO FTP Code Part 5. Surface flammability.



### USA →

**US Coast guard approval**



### Rusia →

**1800073272** certificated by Russian Maritime Register of Shipping Type Approval.

## RAILWAYS

### Europe →

Standard according to UNE EN 45545-2:2013+A1:2015

- **larcore®** → Risk Levels HL1, HL2 y HL3
- **larcore®** → Standard Vehicles, double deck beds
- **larcore®** → R1, R7, R10 y R17

### Spain →

M1 according to UNE 23721-27

### France →

M0 according to NF P 92501

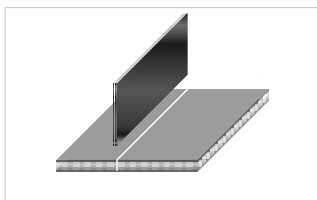
- **larcore®** → Fire reaction
  - **larcore®** → Highest fire clasification
- F1 according to NF F 16-101
- **larcore®** → Fumes density and toxicity

## RAILWAYS

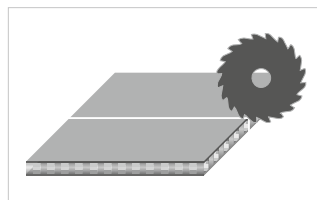
### UNE-EN 45545-2:2013+A1:2015

RAILWAYS APPLICATIONS.  
Rail vehicle fire protection.  
Part 2: Requirements for behavior against the fire of  
materials and components

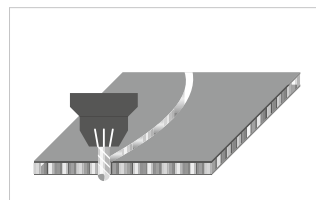
## MACHINING



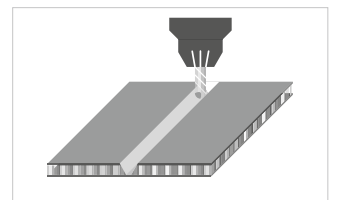
Section cutters



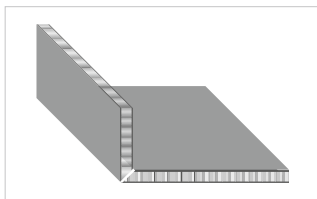
Saw cut



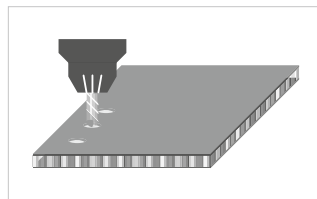
Shaping cut



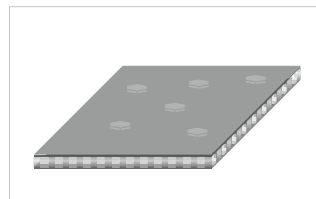
Routing



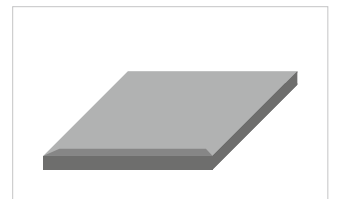
Folding/forming



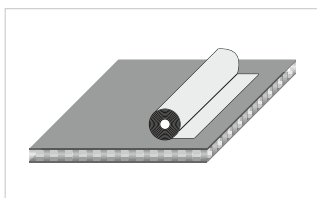
Drilled/perforated



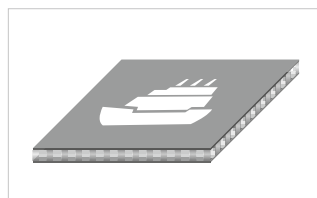
Screwed/riveted



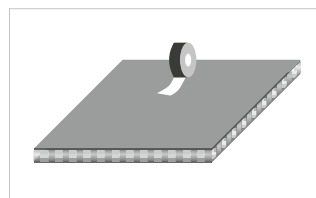
Simple/double edging



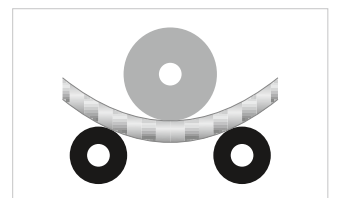
Laminated



Printed



Glued

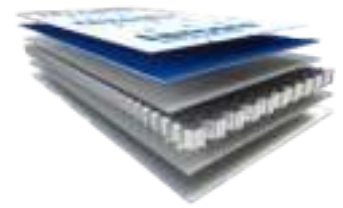


Bending

Within the industrial sector the **Alucoil®** R+D+i department has the following variants of **larcore®** panel specifically developed for several applications:

#### **larcore®** ANTIBACTERIAL

Panel with a fully pre-treated **aluminium honeycomb core** specially designed for clean rooms, laboratories and hospitals are available. Possibility of various thicknesses and finishes.



#### **larcore®** CPL

Laminated aluminium honeycomb panel with CPL (Coil Pressure Laminate) specifically designed for the post lamination with wood veneers. IMO MED certified for ship interior outfitting<sup>(\*)</sup>.  
(\*)Certification in progress



#### **larcore®** LOW THICKNESS

Lightweight panel of 4 mm total thickness designed for furniture or wall linings without important load requirements.



#### **larcore®** ONE SKIN

Panel with one aluminium skin bonded to a pre-treated aluminium honeycomb core. Perfect to be bent and laminated with products such as HPL, PVC and Wood.



#### **larcore®** POWDER COATABLE

Designed for post-powder coating. IMO MED certified for ship interior outfitting.



#### **larcore®** ANTI-SLIP

Panel for floors in areas with high risk of falls and slips such as elevated platforms, stairs, means of transport or outdoors accesses frequented by people.

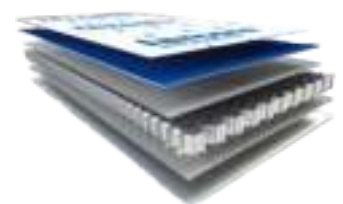


#### **larcore®** ULTRAFLAT

Characterized by its extreme flatness.

#### **larcore®** ULTRACORE

Panel with high performance in corrosive or high humidity environments. Ideal for use in interior areas with high humidity exposure.

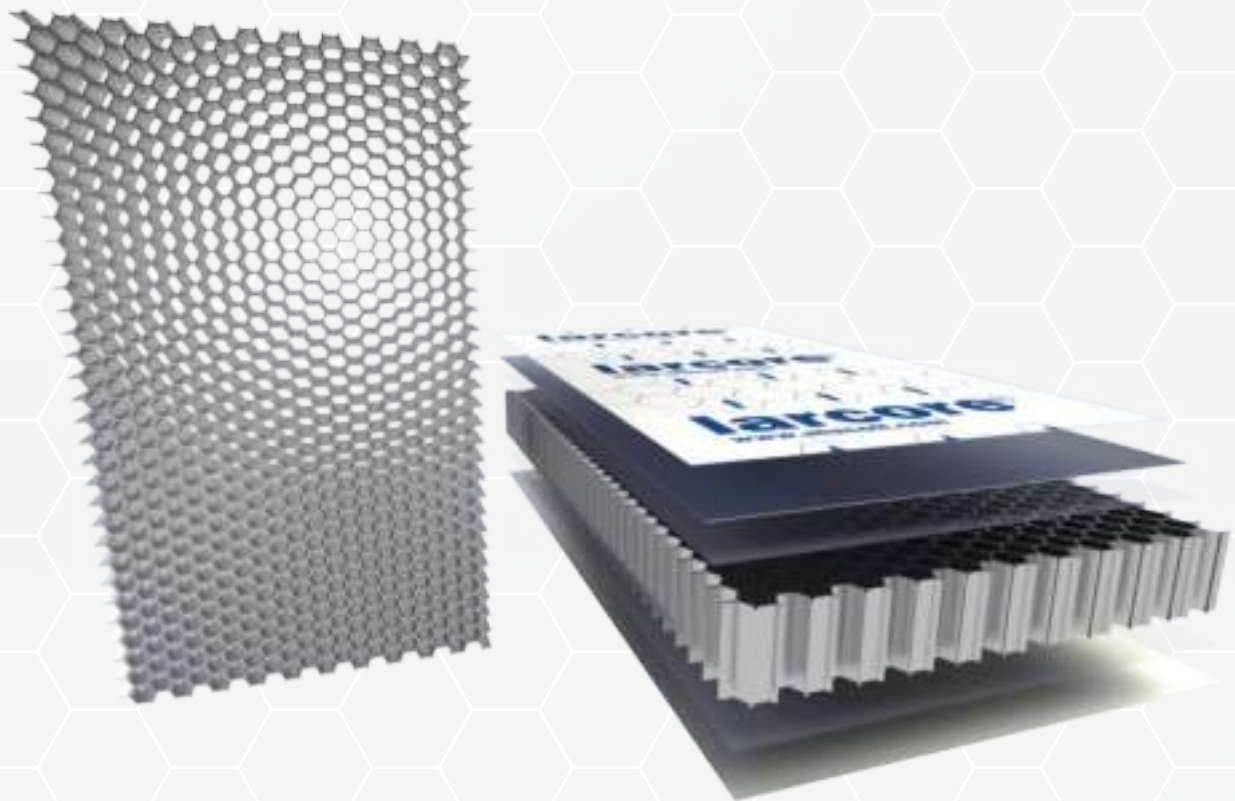


Possibility of panels of various thicknesses and finishes.  
For more information, request the technical department.

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## Aluminium honeycomb panel

Aluminum honeycomb technology



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