

A photograph of a modern building facade featuring aluminium composite panels and large windows. The panels have a vertical ribbed texture and are interspersed with rectangular windows. The building is set against a background of trees with yellowing leaves, suggesting an autumn setting. The lighting is warm, highlighting the metallic surfaces.

larson[®]

Aluminium Composite Panels for Architectural Envelopes



Centre MCIÀ, Terrassa, Spain.
Mestura Architects

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larson® FR y larson® A2

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Alucoil is a Spanish multinational headquartered in Miranda de Ebro (Burgos), specialist in the production of technologically advanced materials for the **building, transportation and Industrial** sectors.

ABOUT US

Since 1996, **Alucoil** has been manufacturing and transforming the most innovative solutions in aluminium under their prestigious brands, becoming a world leader in technology, innovation and professionalism.

Alucoil products bring high added value to their customers, and are organised in 3 large production areas:

- **Composite**
- **Honeycomb**
- **Solar thermal energy**



larson®

larson® composite panels for façade cladding provide a combination of aesthetics, resistance and versatility, making them the perfect choice in contemporary construction. Their use gives buildings a modern, elegant appearance, alongside practical benefits in terms of weight, durability and maintenance.

In the dynamic world of architecture, where innovation lies in safety, we present our composite panels with a **Mineral Core, a bold evolution in design and fire resistance.**

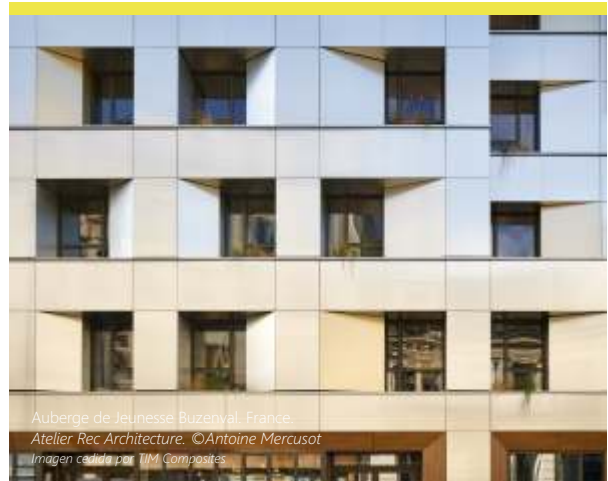
01 **larson® FR**

larson® FR is the ideal product for architectural façades, as well as other architectural solutions applied to ventilated façades.

It is made up of 2 aluminium sheets, joined by an **FR mineral core** that delays combustion, for a **classification B-s1, d0 in accordance with the regulation EN 13501-1.**



- Protective film
- Coated aluminium
- Mineral FR core
- Aluminium with protection primer



Auberger de Jeunesse Buzenval, France.
Atelier Rec Architecture. ©Antoine Mercusot
Imagen cedida por TIM Composites



Malilla Parque, Valencia, Spain.
© Quino Bono Architects

02 **larson® A2**

larson® A2 is the new composite panel developed by **Alucoil** for installation in projects with high fire classification requirements, such as high-occupation public buildings or very tall constructions.

larson® A2 has obtained the classification **A2-s1, d0 in accordance with the regulation EN 13501-1.**



- Protective film
- Coated aluminium
- Mineral A2 core
- Aluminium with protection primer

The regulations, technical guidelines and building codes regarding the classification and fire protection of each country must always be followed when installing **larson®** panels on buildings. **Alucoil** has a wide range of products that comply with the requirements of each country.

PROPERTIES OF THE PANELS

COATED ALUMINIUM PROPERTIES

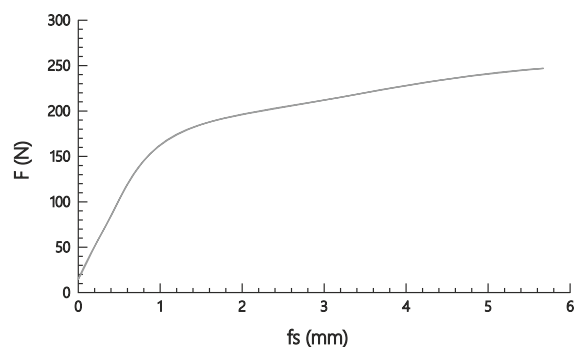
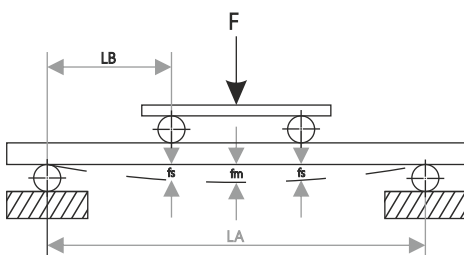
larson® FR / larson® A2

Modulus of elasticity (E)	7000 (N/mm ²)
Ultimate tensile strength (R _m)	125 < R _m < 185 (N/mm ²)
Elasticity limit (R _{p0,2})	> 80 (N/mm ²)
Elongation (A)	> 3 (%)
Standard aluminium alloy	5005 EN 573-3
Aluminium thermal expansion	2,3 mm/m Δ 100°C

MECHANICAL PROPERTIES

	larson® FR	larson® A2
Moment of inertia (I)	1583 / 3070 / 8630 (mm ⁴ /m)	3070 (mm ⁴ /m)
Rigidity (EI)	1108 / 2150 / 6041 (kNcm ² /m)	2150 (kNcm ² /m)

BENDING TEST ACCORDING TO DIN 53 293





Hotel D'Agglomeration. Bayonne, France.
© Gardera-D Architecture

DIMENSIONAL CHARACTERISTICS

	larson® FR	larson® A2
Panel thickness	3 / 4 / 6 (mm)	4 (mm)
Panel weight	6,14 / 7,78 / 11,06 (kg/m ²)	8,25 (kg/m ²)
Aluminium thickness	0,5 (mm)	0,5 (mm)
Min. / max. length	2000 - 8000 (mm)	2000 - 8000 (mm)
Standard width	1000 / 1250 / 1500 (mm)	1250 / 1500 (mm)

MACHINING

The advanced manufacturing process of **larson**® composite panels brings out an extremely tight adhesion between the different layers and coats. Every test carried out on our products have at least double the recommended parameters according to several standards. Thanks to the perfect bond between the different layers of **larson**® composite panels, they have an immense capacity to allow multiple types of machining and manipulation . All works detailed below shall be carried out at temperatures over 10°C.

CUTTING - ROUTING - BENDING AND FOLDING - PERFORATION - CURVING

STEPS

01



Cutting and routing of the panel.

02



Folding the upper and bottom edges of the cassettes to 90°.

03



Folding the side edges and the triangular parts of the cassettes to 90°.

04

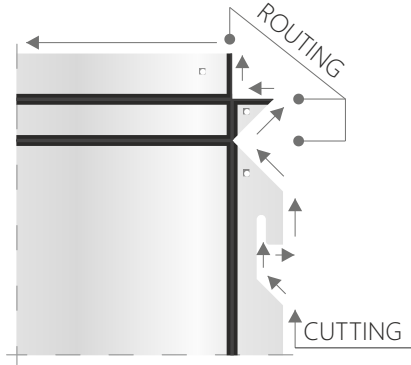


Folding the upper edge against the edges folded previously.

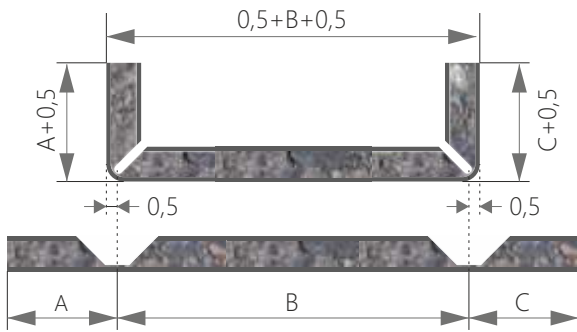


REAL DIMENSIONS AND DISTANCE BETWEEN ROUTINGS

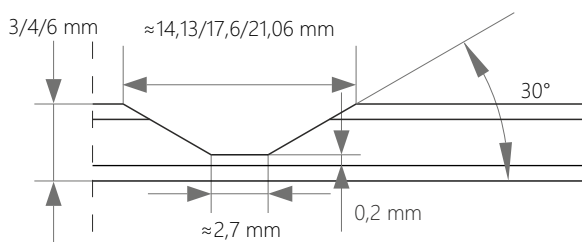
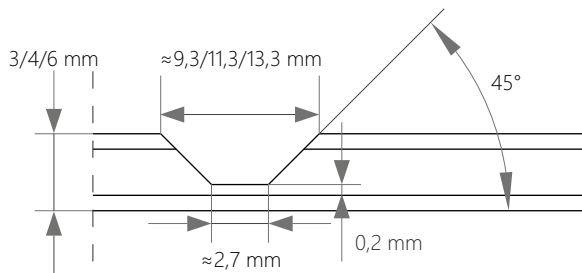
CUTTING AND ROUTING OF THE CASSETTE



REAL DIMENSIONS AND DISTANCE BETWEEN ROUTINGS



T-bend > 2



FINISHES

COATING POSSIBILITIES

PVDF

(Polyvinylidene Fluoride)

Based on PVDF resins with extraordinary performance. Nominal paint thicknesses:

a) PVDF 2L Coastal: approx. 31µ

- Gloss from 20G to 40G.
- Excellent colour stability, minimal chalking and very good chemical resistance.
- Extraordinary protection against weathering, radiation and atmospheric contaminants.
- Outstanding flexibility when profiled, folded and coiled.

DG5

(High Durable Polyester)

Based on HDP resins with nominal paint thicknesses (depending on the colour):

a) DG5 2L Coastal: approx. 35µ.
a) DG5 3L Coastal: approx. 55µ.
a) DG5 2L: approx. 25µ.

- Gloss from 10G to 90G.
- Excellent protection against weathering, UV radiation, and atmospheric contaminants.
- Outstanding hardness and flexibility when profiled, folded, and coiled.

fluorlac®

(Feve LUMIFLON™ 2 Layers)

Based on fluoropolymer resins with a nominal thickness of 30µ (depending on the colour).

- RAL & NCS colour chart available in matte, satin, and gloss finishes.
- Possibility of matching specific colours.
- Very small quantities available, orders starting from 75m² with immediate delivery within 2-3 weeks.
- Excellent weather resistance and chemical durability.
- Outstanding resistance to abrasion.

Durability in coastal areas



UV resistance



Warranty



Gloss level



Cleaning



Durability in coastal areas



UV resistance



Warranty



Gloss level



Cleaning



Durability in coastal areas



UV resistance



Warranty



Gloss level



Cleaning



larson® METALS

larson® METALS is the range of composite panels by **Alucoil** in which the sheets of metal that form the panel can be stainless steel, copper, brass or zinc. These products transmit truth, they are ecological as there is no surface treatment and living because they allow the evolution of the metal with the usual flatness of **Alucoil** panels.



KV Gladan, Sweden
ARG Arkitekter © Ake Eson Lindman



Aquarium de Gijón, España.
A. Plancauelo Arquitectos



Iradier Arena, Vitoria, Spain.
© De Basotxerri



Collège Pierre Mendès, France
LCR Architectes
© Sylvain Mille



Iserberg School of Management, United States
© Bjarke Ingels Group

larson® ILLUSIONS

This is the range of composite panels by **Alucoil** where the sheets of metal is made of have finishes with unique effects such as:

- HOLO
- SPARKLING
- ANODIZED LOOK
- WOOD
- DESIGN
- TEXTURED
- MIRROR
- ALUNATURAL



SHAPES

larson® panels allow a multitude of shapes, even 3D, or an even more attractive, exceptional façade.



PERFORATION

The ability to perforate and warrant **larsen® FR** metal composite panels is a reality, opening up design possibilities unimaginable until now with a plethora of perforation combinations at your disposal. Whether by CNC or punching processes, **Alucoil** offers the possibility to utilize round, square, triangular, star, and many other shapes in different perforation sizes and patterns. As well as its use for wall cladding, the use of perforated composite panels for internal applications is a clear commitment to modern design. A warranty requires prior analysis of project specifics by **Alucoil** and is limited to panels manufactured in Miranda de Ebro.

- High quality 5005 series aluminum alloy .
- Corrosion and resistant pretreatment.
- Exceptional bond strength.
- Double sided coated panels - Perforated façade panels
- One-sided coated panels - Perforated interior ceiling panels
- Multiple perforation patterns



#HASHTAG

larsen® coated panels with **digital technology for surface printing** in standard finishes such as imitation brickwork, stone, cement, mineral, forest, metal and mesh.

“Pick your idea and we'll build it”

Unlimited finish options for *“ad hoc”* projects, with detailed studies in each case.



INSTALLATION SYSTEMS

Alucoil offers several installation systems for composite panels recognized under the CE marking, being the first company in the world to obtain that designation. **Alucoil** has several installation systems tested with **larson®** panels.

T-cassettes & LCH-1
Cassettes installation system



T-LC-4 / LC-6 & LC-4 / LC-6
Cassettes installation system



T-RIVETED & RIVETED
Panels installation system



BUILDING REHABILITATION

The rehabilitation of the façade of a building avoids detachments or humidity problems with the least possible inconvenience. It also improves its thermal and acoustic insulation, saving money and creating a greater comfort; aesthetic change with the highest quality, and all this with a certified System, which complies with the Technical Building Code (CTE), seeking maximum respect for the Environment.

Rehabilitation in the Bilbao neighborhood of Sagarminaga with **larson® FR** panels.



QUALITY

TESTS AND CERTIFICATES

TEST	larson® FR	larson® A2
Salt spray chamber test (CNS) *4000 hours / UNE EN ISO 9227 / Alucoil's lab	NON-DELAMINATION	NON-DELAMINATION
Initial adherence PEELING TEST Alucoil's lab	600 - 700 (N/25mm)	500 - 600 (N/25mm)
Loss of adhesion after 4000 hours in CNS *PEELING TEST / UNE EN ISO 9227 / Alucoil's lab	0% - 10%	Product not recommended for coastal areas, humid environments or extreme temperatures.
Core heating value *UNE EN ISO 1716 / Alucoil's lab	12,91 MJ/kg	1,74 MJ/kg

TYPE OF CERTIFICATE	AREA OF APPLICATION	CERTIFICATE
ENVIRONMENTAL	International	EPD® Environmental product declaration → larson® FR
PRODUCT WITH INSTALLATION SYSTEM	European Union	ETA 14/100 European technical assessment CE MARK → larson® FR + LCH-1 system
	Spain	DIT PLUS 405P/15 Documento de idoneidad técnica → larson® FR + LCH-1 system
	Germany	U MARK Z-10.3-808 → larson® FR + Riveted system
	France	QB 64-79 & QB 142-153 → larson® FR/A2 Avis technique 2.2-14-1643-V3 → larson® FR/A2 + LCH-1 system Avis technique 2.2-11-1469-V3 → larson® FR/A2 + Riveted system
PRODUCT	European Union	ETA 18/0712 European technical assessment CE MARK → larson® A2
	United Kingdom	BBA 08/4551 → larson® FR
	USA and Canada	ETL SDRReport 29779 → larson® FR
	Switzerland	VKF 30224 → larson® FR VKF 30219 → larson® A2
	Ukraine	UA.BR. 042,012-20 → larson® FR

FIRE TESTS AND CLASSIFICATIONS

EUROPEAN UNION	FIRE CLASSIFICATION OF CONSTRUCTION PRODUCTS AND BUILDING ELEMENTS larson® FR with riveted & cassette systems B-s1, d0 according to EN 13501-1. larson® A2 with riveted & cassette systems A2-s1, d0 according to EN 13501-1.
UNITED KINGDOM	FULL-SCALE FIRE PERFORMANCE OF EXTERNAL CLADDING SYSTEMS larson® FR with riveted system, according to BS 8414-1, BR 135 passed. larson® A2 with cassettes system, according to BS 8414-2, BR 135 passed.
FRANCE	FULL-SCALE FIRE TEST LEPIR II larson® FR & larson® A2 with riveted & cassettes suspended systems, according to LEPIR II. Reaction to fire tests. Heat release, smoke production and mass loss rate. Part 1: Heat release rate (cone calorimeter method) and smoke production rate (dynamic measurement). Amendment 1. larson® FR . PASSED according to ISO 5660-1.
CZECH REPUBLIC	FIRE BEHAVIOUR larson® FR according to CSN 73 0863.
USA and CANADA	FULL SCALE FIRE TEST Standard fire test method for evaluation of fire propagation characteristics of exterior wall assemblies containing combustible components. larson® FR with EVO system, according to NFPA 285. Standard test method for surface burning characteristics of building materials. larson® FR according to ASTM E84-12c. Full scale standard method of fire test of exterior wall assemblies. larson® FR 6 mm, according to CAN ULC S134 92. Product evaluation larson® FR new system against fire compliance [OK]. larson® FR 4 & 6 mm, according to CAN ULC S134. Standard method of test for surface burning characteristics of building materials and assemblies. larson® FR 6 mm, according to CAN ULC S102-10.ue po

SUSTAINABILITY

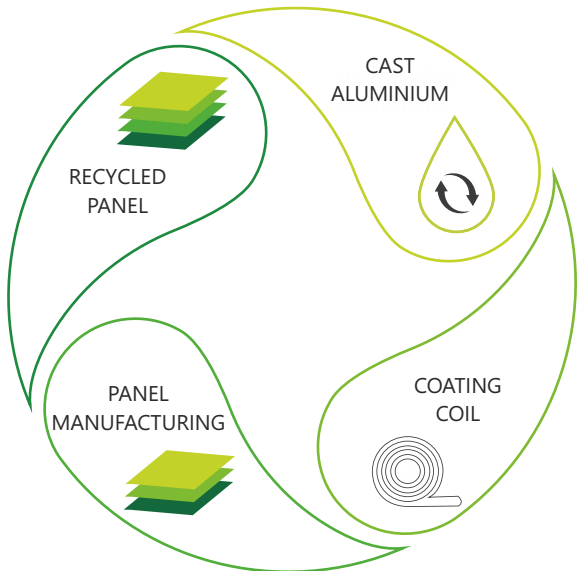
Alucoil's procedures are **certified in accordance with the standards ISO 9001**, that guarantees quality management systems, **and ISO 14001**, that backs **Alucoil's** commitment to environmental preservation through the management of environmental risks linked to their activities. In addition, the quality of **Alucoil** products is backed by the most stringent international certifications and regulations, always exceeding the standards.

Alucoil's manufacture can be considered **ecofriendly** as none of **Alucoil's** processes emits greenhouse gases, the waste aluminium is separated and recycled correctly so it can be reused within the circular economy.

The manufacturing process of **larson*** panels is ongoing, so the use of the raw materials is optimised without creating large excesses. All waste from production is managed and recycled so it is turned back into raw materials.

Once the use of **larson*** panels comes to an end, they are easily recyclable, separating each sheet of raw material, which is then melted down and returned to the circuit of the circular economy.

larson* was the first composite aluminium panel in the world to obtain an environmental **product declaration (EPD)** under the international EPD System. This certificate provides information on a product's environmental behaviour.





Alucoil® Design
Grupo Alibérico
Endless Architectural Design Possibilities

Alucoil has a website where the client can find out about the main projects completed. It is a showroom for projects and the available finishes, where you can consult the material, colour, year of construction and the architect of the project, as well as the exact location. In addition, it offers the client a virtual introduction to the range of finishes and colours available from **Alucoil**, as well as the new developments that are constantly being made in the different paint qualities available.



www.alucoildesign.com





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