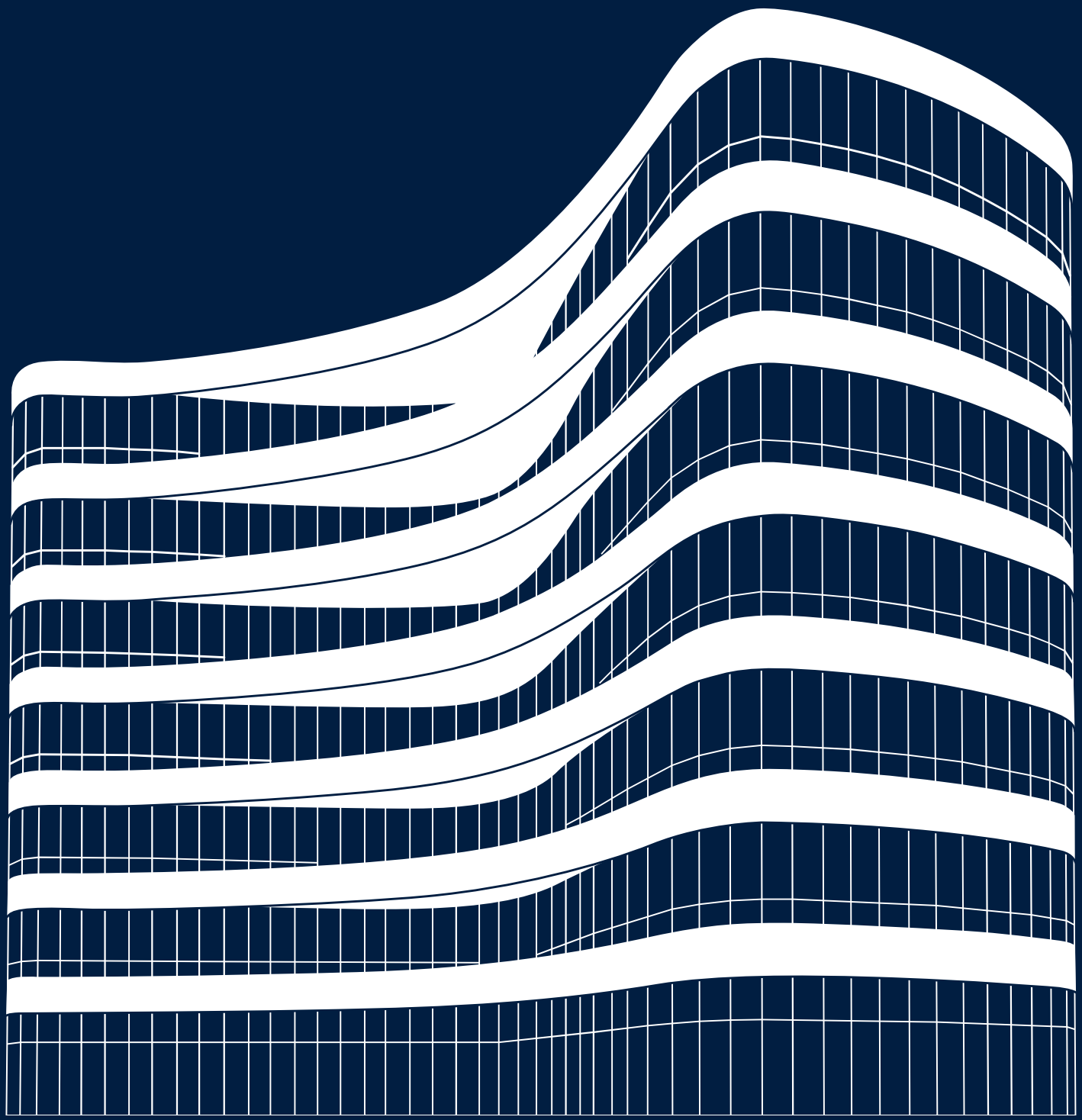
STACBOND

Technical catalogue 2024

Especifications and assembly systems



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STACBOND

Technical catalogue 2024

Especifications and assembly systems

STACBOND

INDEX

STACBOND
Composite panel

STACBOND COMPOSITE PANEL
CHARACTERISTICS

The **STACBOND** composite panel is a product consisting of two aluminium sheets and an inner core with mineral fillers. It has excellent mechanical properties, providing bending stiffness with a reduced weight, a flat surface, durability and ease of maintenance.

They are the ideal solution in all fields of architecture: homes, public buildings, offices, business and industry. That's not to mention their use in promoting a corporate image in, for example, supermarkets, car dealerships, banks and petrol stations. They also offer solutions for the design, transport and industrial sectors.

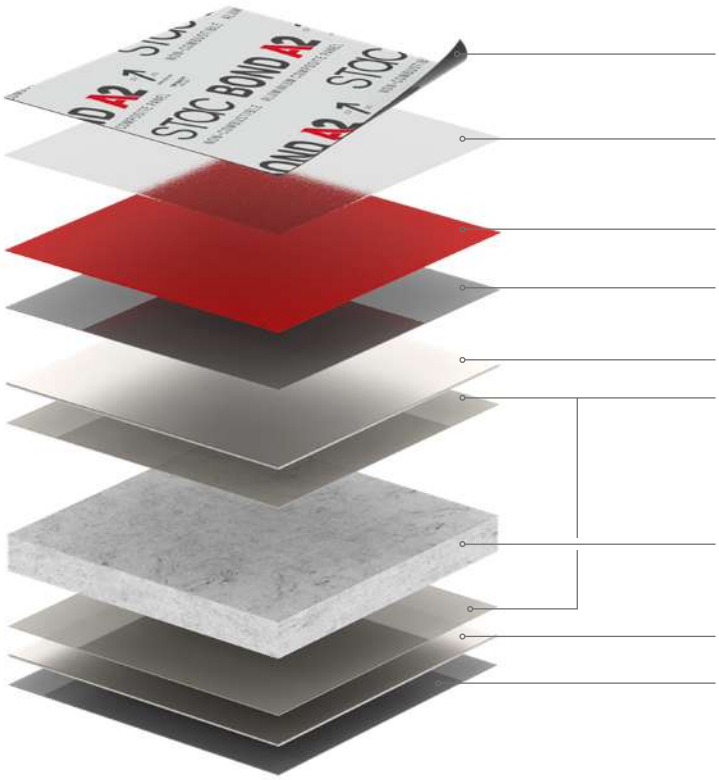
In its manufacturing standard this product consists of an outer sheet of aluminium alloy 5005 and an inner sheet of alloy 3005/3105.

Two different core materials are available in terms of mineral content (incombustible or fire-retardant), which in accordance with standard UNE 130501-1:2007 are class A2-s1 d0 (**STACBOND** A2) and class B-s1, d0 (**STACBOND** FR).

This is lacquered with the highest quality PVDF 70/30 (polyvinylidene fluoride) which provides excellent resistance to ageing and the highest protection against UV rays, as well as having excellent behaviour when machined or formed.

STACBOND offers a full range of colours, shines, textures and natural finishes. Also, they can be supplied in any RAL/PANTONE/NCS colour – please enquire for details.

The **STACBOND** composite panel is available in various standard dimensions of up to 2.000 mm width. Other dimensions can be supplied under request.



* In three-layer finishes or on request.

All RAL colours possible

A2, FR and PE cores

High resistance to UV rays

Excellent weight/ surface value

Easily conformable

Rapid and simple assembly

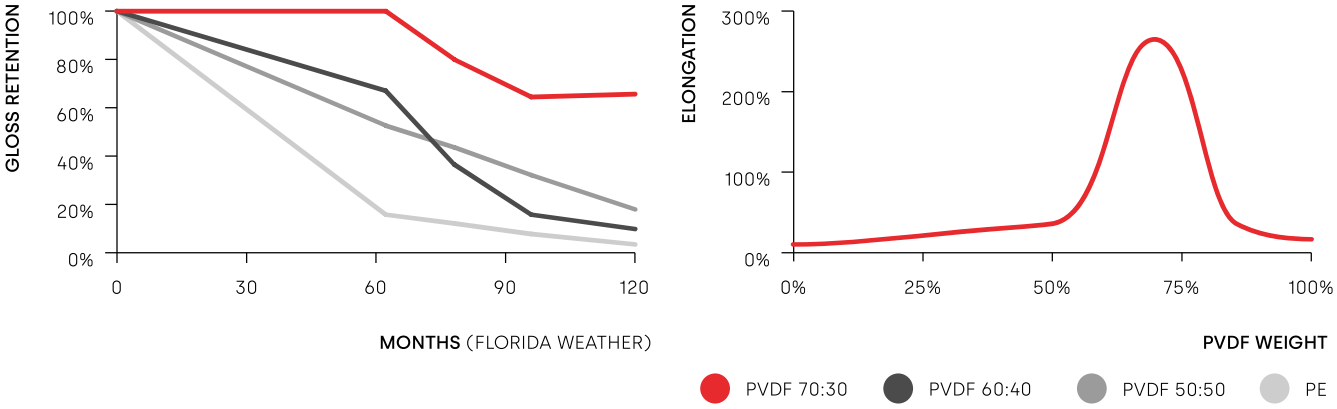
Totally recyclable

PVDF 70/30 PAINT

Highest quality paint, used in most **STACBOND** regular finishes.

The 70/30 code indicates that the paint contains 70% polyvinylidene fluoride and 30% acrylic resin. This ratio is the optimal level to provide a high level of protection against UV rays and high ageing resistance. Mechanically, the paint has sufficient stretch to resist the forming of the panels without deterioration of the coating.

These finishes have a limited range of shine between 25 – 35%, measured at an angle of 60°.



FEVE (LUMIFLON)

FEVE is a type of coating with a very similar structure to PVDF but it is harder and less flexible. It allows a wider shine range.

HDPE (High durability polyester)

HDPE paint is a slightly lower performance finish than PVDF, but allows high gloss range and some special finishes such as textured surfaces.

INNER FACE PROTECTION PRIMER

The epoxy/epoxy-polyester primer is applied at 5 - 10 microns and protects the interior face of the STACBOND composite panel.

STACBOND COMPOSITE PANEL
OUR COMMITMENT TO THE PLANET

CERTIFIED QUALITY

The manufacture of the **STACBOND** composite panel follows a controlled process by means of rigorous internal tests and quality controls, in our own laboratories and externally through audits by the most prestigious construction institutes in all the countries where we are certified.

The granting of these certificates follows the European guideline of the **EAD GUIDE 090062-00-0404** for ventilated façades and allows us to conclude that our construction systems comply with the national regulations of each country.

INTEGRATED QUALITY AND ENVIRONMENT SYSTEM

STACBOND has an integrated quality and environmental system, based on the **UNE-EN ISO 9001** and **UNE-EN ISO 14001** standards. This is possible because the environmental management system (EMS) implemented in our facilities complies with the requirements of these regulations.

ENVIRONMENTAL PRODUCT DECLARATION

STACBOND A2 and **STACBOND** FR products have renewed the Environmental Product Declaration (EPD) for the STACBOND composite façade panel, according to EN ISO 14025:2010 and EN 15804:2012+A2:2019/AC:2021.

The scope of the certificate includes the life phase, raw material sourcing, transport, manufacturing, end-of-life and recycling phase of the product, deconstruction and demolition, transport, waste processing, disposal and reuse-recovery-recycling potential.

ZERO WASTE CERTIFICATE

STACBOND has a system for controlling and monitoring the waste generated in its production process, aimed at guaranteeing reuse, recycling, take-back and recovery, in order to reduce disposal to landfill as much as possible.

STACBOND has therefore been certified as zero waste in accordance with the requirements of the Bureau Veritas certification standard, where it has achieved an advanced level of commitment, certifying an alternative management to landfill of between 80% and 95%.

ENVIRONMENTAL CERTIFICATES

COUNTRY	RECOGNITION	BODY	STACBOND A2	STACBOND FR
INTERNATIONAL	EPD S-P-01289	Tecnalia R&I Guipúzcoa (Spain)	✓	✓
INTERNATIONAL	LEED 2014	USGBC	✓	✓

As part of our commitment to the environment, **STACBOND** does not use chromium in any of the pre-treatment or painting processes.

SYSTEM CERTIFICATION

COUNTRY	RECOGNITION	BODY	SYSTEM								CORE	
			T-CH	T-CH-PRO®	T-SZ	T-SZ-PRO®	T-REM	CH	SZ	REM	A2	FR
EU	IETcc Madrid	ETE 15-0655 - EC Marking	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SPAIN		DIT 553p/19	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
POLAND		ITB-KOT-2017/0043 wydanie 2	✓	–	✓	–	✓	✓	✓	✓	✓	✓
FRANCE	CSTB Paris	Avis Technique 2.2/13-1548-V4(1) Avis Technique 2.2/13-1549-V3(2)	✓	–	✓	–	✓	✓(2)	✓	✓(1)	✓	✓
UNITED KINGDOM		BBA 13/5022		–	–	–	–	✓	✓	✓	✓	✓
ROMANIA		TPC	✓	–	✓	–	✓	✓	✓	✓	✓	✓
GERMANY		DIBt 75-1.10.3-809/1	✓	–	✓	–	✓	✓	✓	✓	✓	✓
SWITZERLAND		VKF - AEAI	✓	–	✓	–	✓	✓	✓	✓	✓	✓
MEXICO		VALUE AMEVEC	✓	–	✓	–	✓	✓	✓	✓	✓	✓
			WET SYSTEM*		DRY SYSTEM*			RAINSCREEN SYSTEM*				
USA		ICC - ESR		✓		✓			✓		–	✓
CANADA		INTERTEK		✓		✓			✓		–	✓

* Compatible certified systems not supplied by STAC.

✓ IN PROGRESS ✓ CERTIFIED

FIRE-RESISTANCE RATING

COUNTRY	REGULATION	STACBOND A2 CLASSIFICATION	STACBOND FR CLASSIFICATION
U.E.	UNE-EN 13501-1:2018	A2-s1, d0	B-s1, d0
POLAND	PN-B-02867:2013	NRO	NRO
USA	ASTM E84	A CLASS: SD:10 FS:0	A CLASS: SD:5 FS:0
	NFPA 285	PASS	PASS
CANADA	CAN/ULC-S102-18	—	A CLASS: SD: 0 FS: 0
	CAN/ULC-S134	—	PASS
HUNGARY	MSZ 14800-6:2020	PASS	—
ISRAEL	EN 13501-1	—	B-s1, d0
FRANCE	LEPIR II	PASS	

STACBOND

Our commitment to the planet

STACBOND RECYCLING SERVICE

GIVING ALUMINIUM COMPOSITE PANELS A SECOND LIFE

At **STACBOND**, we promote the circular economy by recycling, separating and reusing aluminium composite panel components. Both the core and the aluminium are fed back into the production process, thus closing the life cycle of the product.

We have implemented the **STACBOND RECYCLING** programme, a waste material collection system to reduce the environmental footprint of our products as much as possible.

With this composite panel collection and recycling system, **we take advantage of the surplus material in the production and installation of panels in buildings and give a new opportunity to the raw materials we use**, avoiding unnecessary waste of resources.

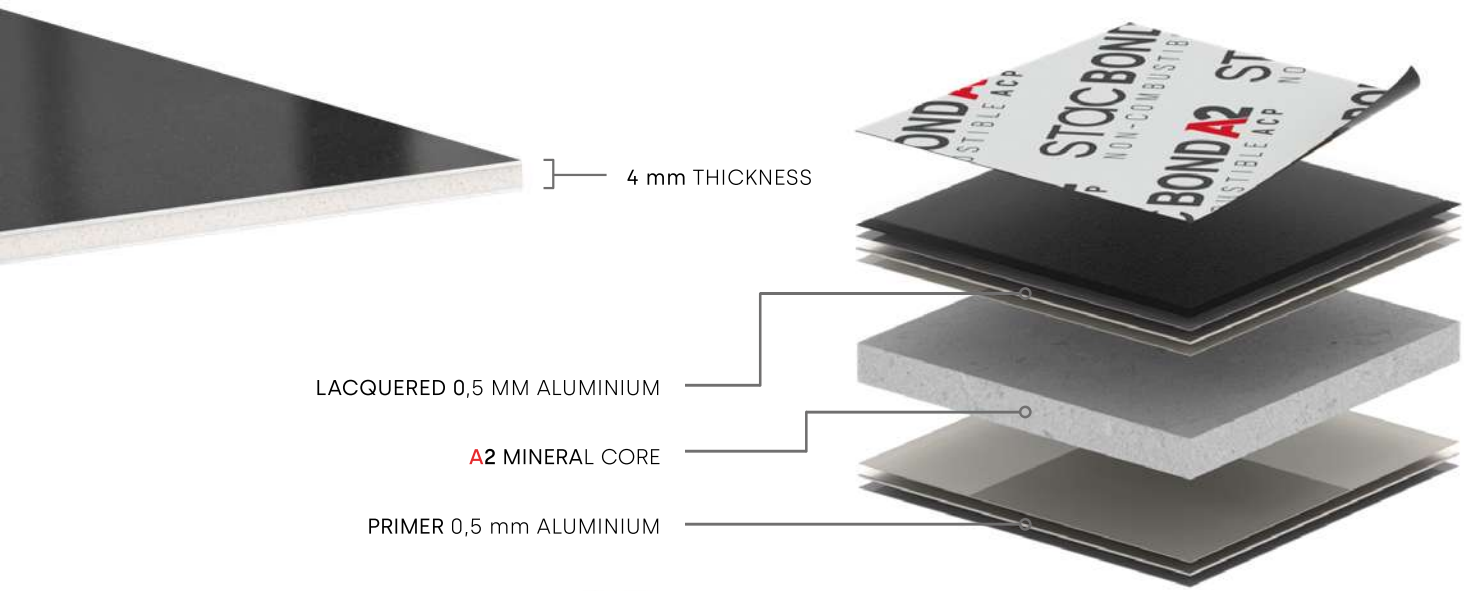
STACBOND A2
Non-combustible ACP

STACBOND A2 is a non-combustible composite panel composed of two sheets of aluminium and a mineral core developed to comply with the most stringent fire-resistance classification rules.

Thanks to the panels' exceptional mechanical properties (high rigidity, excellent flatness, impact resistance, durability and ease of maintenance) and A2-s1, d0 fire-resistance classification (in accordance with UNE EN 13501-1:2007), they are the ideal cladding solution for tall buildings and high-occupancy buildings.

Compliance with the strictest fire-resistance classification requirements, including:

- ✔ UNE-EN 13501:2018 — **A2-s1, d0**
- ✔ LEPIR II — **PASS**
- ✔ PN-B-02867:2013 — **NRO**
- ✔ NFPA 285 — **PASS**
- ✔ ASTM E84 — **A CLASS**
- ✔ MSZ 14800-6 — **PASS**



PANEL PHYSICAL SPECIFICATIONS	UNIT	VALUE	NORM
Total thickness	mm	4	
External painted face thickness	mm	0.50	
Internal painted face thickness	mm	0.50	
Panel weight	kg/m²	9.30 ± 8%	
Visible face aluminium alloy		5005	UNE EN 573-3
Hidden face aluminium alloy		3005 / 3105*	

SHEET DIMENSIONS	UNIT	VALUE
Width (min./max.)	mm	800 / 2000**
Length (min./max.)	mm	2000 / 6000**
Thickness tolerance	mm	- 0.15 / + 0.10
Width tolerance	mm	- 0 / + 2
Length tolerance	mm	- 0 / + 10
Squareness (diagonal tolerance)	mm	± 3
Protective film width tolerance	mm	0; -5

TECHNICAL SPECIFICATIONS OF THE PANEL	UNIT	VALUE	NORM
Peeling	N/mm	≥ 3	ASTM D903 – 98 (2004)
Rigidity (EI)	kNcm²/m	2400	DIN 53293
Resistant module (W)	cm³/m	1.496	
Acoustical insulation Rw (C;Ctr)	dB	29 (-1; -3)	ISO 717-1: 2013
Sound reduction (Rw)	dB	33.3 ± 1.30	
Thermal resistance (R)	m²K/W	0.0168	UNE-EN ISO 12567-1
Thermal transmittance (U)	W/m²K	3.38	
Thermal conductivity (λ)	W/m°C	0.4028	
Operating temperature	°C	- 50 / + 80	

A2 CORE SPECIFICATIONS	UNIT	VALUE	NORM
Density	g/cm³	2.20 ± 0.15	
Fire reaction		A2 – S1, d0	UNE-EN 13501:2018

ALUMINIUM TECHNICAL SPECIFICATIONS	UNIT	VALUE		NORM
Alloy		5005	3005/3105*	UNE EN 573-3
		H42/H44	H42/H44	UNE-EN 515
Modulus of elasticity (E)	N/mm²	70000	70000	EN 485-2
Proof stress ($R_{p\ 0,2}$)	N/mm²	≥ 80	≥ 110	
Tensile strength (R_m)	N/mm²	125 ≤ R_m ≤ 205	130 ≤ R_m ≤ 215	
Elongation (A_{50})	%	≥ 3	≥ 4	
Density (ρ)	kg/m³	2700	2700	
Thermal expansion (α)	mm/m (100°)	2.36	2.36	UNE-EN ISO 10545:1997

Use specifications:

There may be limitations in the manufacture of STACBOND A2 panels with high gloss finishes. Please consult STAC for compatible finishes.

* Aluminium alloy 5005 available by customer request.
** Check with us for other dimensions.

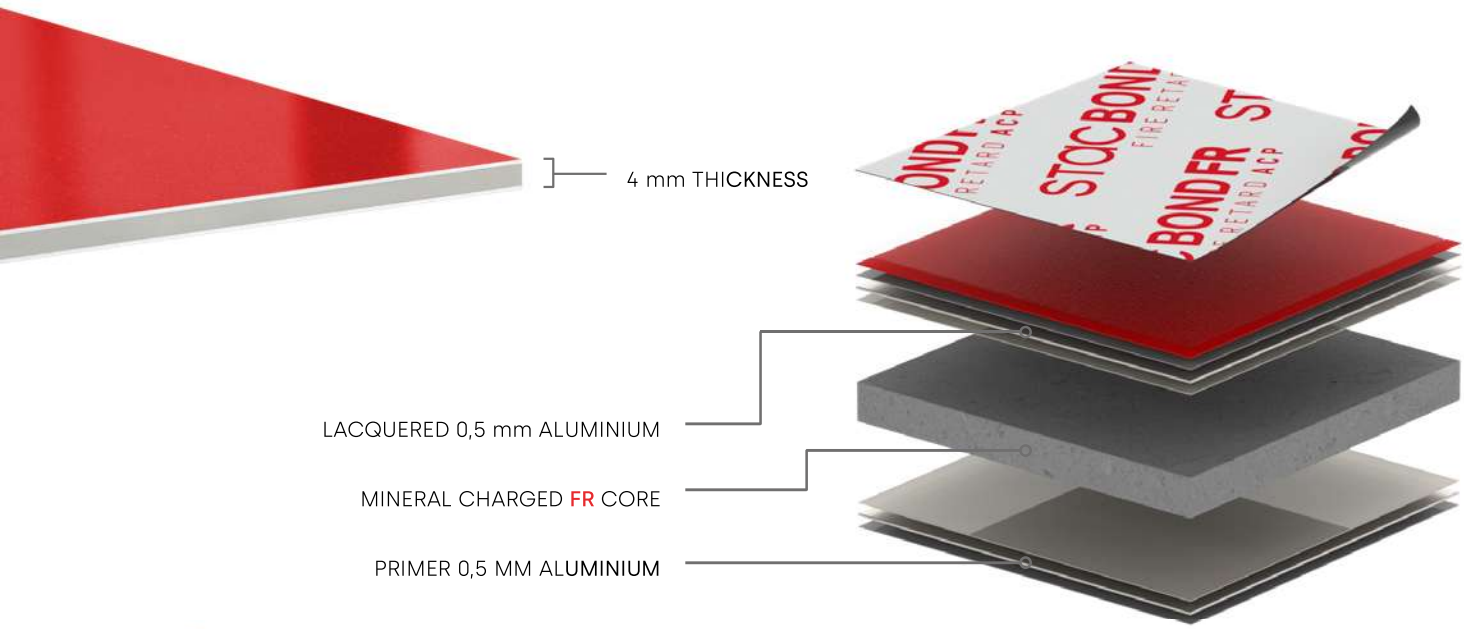
STACBOND FR
Fire retardant ACP

STACBOND FR panels are composed of two aluminium sheets with a fire retardant core made of thermoplastic resins with mineral load.

The panels have excellent mechanical properties including: high rigidity, excellent flatness and impact resistance.

They comply with the majority of requirements for fire-resistance classification:

- ✔ UNE-EN 13501:2018 — **B-s1, d0**
- ✔ PN-B-02867:2013 — **NRO**
- ✔ NFPA 285 — **PASS**
- ✔ ASTM E84 — **A CLASS**
- ✔ CAN/ULC-S102 — **SD: 0 FS: 0**
- ✔ ULC-S134 — **PASS**



PANEL PHYSICAL SPECIFICATIONS

Panel thickness (mm)	Panel weight (kg/m²)	
	Visible aluminium thickness of **0.5 (mm)**	Visible aluminium thickness of **0.3 (mm)**
3	6.10	5.40
4	7.70	7.40
5	9.50	—
6	11.20	—

ALUMINIUM ALLOY	VALUE	NORM
Visible face	5005	UNE EN 573-3
Hidden face	3005 / 3105*	

SHEET DIMENSIONS	UNIT	VALUE
Width (min./max.)	mm	800 / 2000**
Length (min./max.)	mm	2000 / 6000**
Thickness tolerance	mm	- 0.15 / + 0.10
Width tolerance	mm	- 0 / + 2
Length tolerance	mm	- 0 / + 10
Squareness (diagonal tolerance)	mm	± 3
Protective film width tolerance	mm	0 ; -5

PANEL TECHNICAL SPECIFICATIONS	UNIT	VALUE	NORM
Peeling	N/mm	≥ 9.80	ASTM D903 - 98 (2004)
Rigidity (EI)	kNcm²/m	2610	DIN 53293
Resistant module (W)	cm³/m	1.496	
Acoustical insulation Rw (C;Ctr)	dB	33 (-1; -4)	ISO 717-1: 2013
Sound reduction (Rw)	dB	33.30 ± 1.30	
Thermal resistance (R)	m²K/W	0.014	UNE-EN ISO 12567-1
Thermal transmittance (U)	W/m²K	3.38	
Thermal conductivity (λ)	W/m°C	0.448	
Operating temperature	°C	- 50 / + 80	

FR CORE SPECIFICATIONS	UNIT	VALUE	NORM
Density	g/cm³	1.50 ± 0.15	
Fire reaction		B - S1, d0	UNE-EN 13501:2018

ALUMINIUM TECHNICAL SPECIFICATIONS	UNIT	VALUE		NORM
Alloy		5005	3005/3105*	UNE EN 573-3
		H42/H44	H42/H44	UNE-EN 515
Modulus of elasticity (E)	N/mm²	70000	70000	EN 485-2
Proof stress ($R_{p\ 0.2}$)	N/mm²	≥ 80	≥ 110	
Tensile strength (R_m)	N/mm²	125 ≤ R_m ≤ 205	130 ≤ R_m ≤ 215	
Elongation (A_{50})	%	≥ 3	≥ 4	
Density (ρ)	kg/m³	2700	2700	
Thermal expansion (α)	mm/m (100°)	2.36	2.36	UNE-ENISO 10545:1997

* Aluminium alloy 5005 available by customer request.
** Check with us for other dimensions.

PRODUCT MAINTENANCE

STACBOND composite panels present an optimal behaviour against possible changes in appearance caused by prolonged exposure to normal climatic conditions.

Facades made of composite panels are exposed to many aggressive agents present in the environment, such as sulphurous compounds, acids and nitrogen compounds caused by acid rain, chemical salts, dirt, soot, etc. These substances mixed with water and combined with UV radiation from the sun can lead to deterioration of the surface finish and shorten life expectancy of the product. These effects are worse in areas where rainwater cannot wash away the impurities.

As long as care is taken to keep the coating in good condition through regular washing and to ensure that incompatible or highly contaminated materials do not come into contact with the surface, the coating will not crack or delaminate, but changes may occur to the uniform appearance, such as slight changes in colour and brightness.

Specifically, for particularly harsh or difficult environments, such as areas with high levels of UV, areas at risk of sandstorms, proximity to chemical factories, swimming pools, saline environments or areas not exposed to natural rain, more rapid deterioration may occur.

For these reasons, the cleaning of roofing and facades is an important part of the care and maintenance of the cladding.

Regular inspection and maintenance is recommended to maintain the optimal appearance and durability of the coated aluminium. Above all, areas not exposed to natural rain, such as overhangs, may need further cleaning to eliminate potentially corrosive deposits. Leaves, grass, mould and other objects should be removed and any obstructions should be cleaned to prevent overflow. Local defects that can cause premature deterioration of the coating or corrosion of the substrate should be examined and repaired.

CLEANING*

Dirt and stained areas can be cleaned with water and as oft brush. A moderate strength power washer can also be used. The surface should then be rinsed down.

For more stubborn stains a pH neutral soap should be used. The detergent must be thoroughly removed after a few minutes with water. To remove a stain, a soft cotton cloth (or similar) wetted with a non-aggressive solvent such as mineral alcohol may be used.

Cleaning the façade should be carried out from top to bottom so that any detergent is washed away completely. The use of strong or detergents or those which are inappropriate for coloured surfaces may damage the finish. If necessary, we recommend carrying out a test clean on a small, low-visibility area of the panel.

We recommend carrying out cleaning of the façade when climatic conditions allow (avoiding high temperatures or strong, direct sunlight).

Moderate pressure washer

Use of neutral detergents

Washing from top to bottom

* Some special finishes require specific cleaning processes. In the vent of doubt, please consult **info@stacbond.es**

HANDLING

For proper storage and handling of the **STACBOND** aluminium composite panel, the following information should be taken into account:

— Pallets must be handled carefully during transport and unloading,always use suitable equipment such as fork-lift trucks. Never move open pallets.

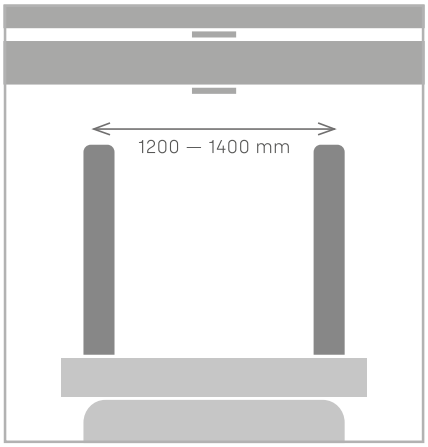
— Whenever possible, store the material in a dry, dust-free interior space and under temperature conditions between 10° — 40° C.

— If stored outdoors, avoid exposing the material to sunlight by protecting it with an opaque protective cover.

— Always store the pallets in a horizontal position up to a maximum of 6 pallets of the same format stacked on top of each other (4 in case of **STACBOND** A2) or 12.500 Kg total weight.

— The plastic film must be removed from the pallets no later than 6 months after receipt.

— The individual panels should be lifted from the pallet supported by its four corners, avoiding dragging one over the other. Whenever possible, move the individual panels in an vertical position.

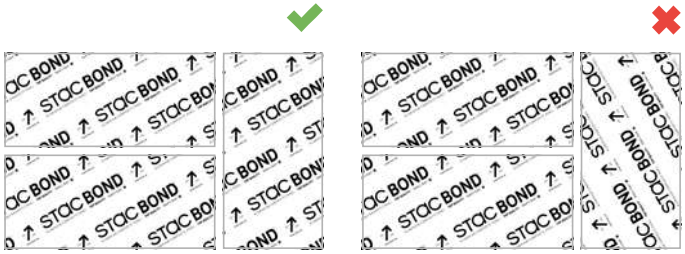


Optimal distance between forklift blades for transporting **STACBOND** composite panel pallets.

PROTECTIVE FILM

The protective film used is a temporary surface protector and once the panel is installed in the facade it should be removed as soon as possible as climatic factors (hours of exposure, climate zone, geographic location or sharp changes in temperature) may affect the adhesive used on the protective film and make removal more difficult.

For the machining and later installation of the **STACBOND** composite panel on the facade, it must be ensured that the orientation of the arrows indicated on the protective film must be the same on the entire surface, in order to avoid variations in the tone of the finish.



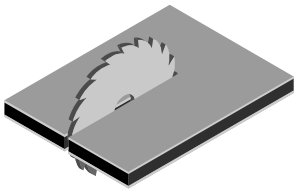
To ensure the integrity and proper functioning of the **STACBOND** aluminum composite panel protective film, the following information should be considered:

— Prolonged storage of the material with high temperature variations can affect the adhesion of the protective film, making it difficult to remove.

— Do not mark with inks that can pass through the protective film and affect the surface of the panel

— Remove the protective film at the latest one month after the installation of the composite panel in the project. Whenever possible, remove it under temperature conditions higher than 10° C. At the moment of removal, the film must be completely removed from the entire visible part of the façade, as partial removal may cause stains or marks to appear on the front face of the panel.

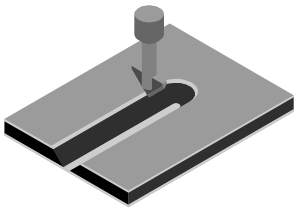
STACBOND COMPOSITE PANEL
PANEL TRANSFORMATION



CUTTING

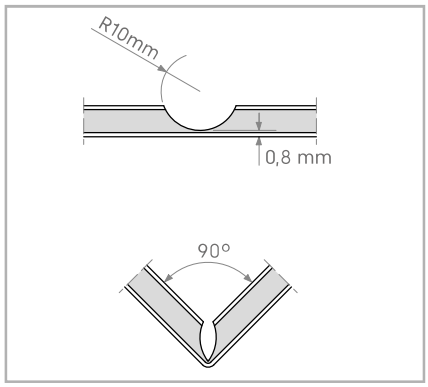
STACBOND composite panel can be cut using CNC machinery or manually using a wall saw or portable milling machine. Straight, curved and angled cuts are possible, depending on the tools used.

Consult **STACBOND** for the recommended parameters for the different types of cutting and the machinery used.

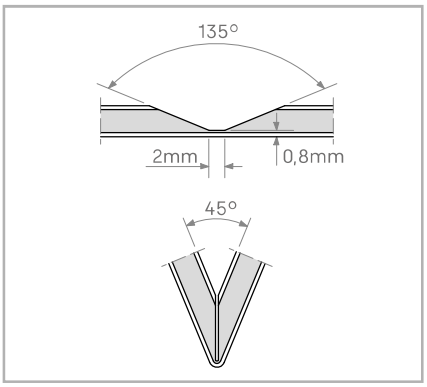


MILLING

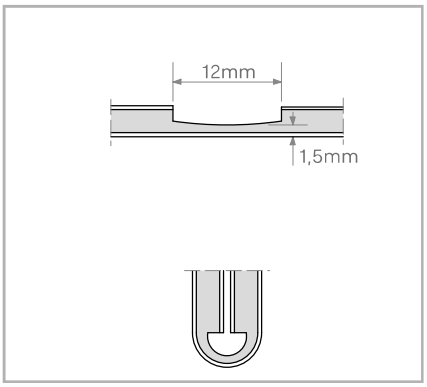
Performed using CNC, wall saw with milling disk or portable milling machine. The partial milling of the panels allows them to be bent into shape. The scoring is done using 90° or 135° milling bits depending on the bend required. To achieve the desired measurements, the fold must be made on the axis of the milling score line. The remaining thickness of the panel allows it to be bent into shape by hand using specific tools or using a composite panel specific press brake.



Spherical milling groove for 90° bends.



V-shaped milling groove for 135°bends.



*Arc milling groove for complete 180° folds.

*Not suitable for A2 panel.

RECOMMENDED MILLING PARAMETERS:

CORE	PROCESS	ROTATIONAL SPEED (r.p.m.)	DISPLACEMENT SPEED (mm/min)
STACBOND A2	CUTTING	20.000 — 22.000	8.000 — 10.000
	MILLING	22.000 — 24.000	10.000 — 12.000
STACBOND FR	CUTTING	24.000	12.000 — 15.000
	MILLING	24.000	15.000 — 18.000

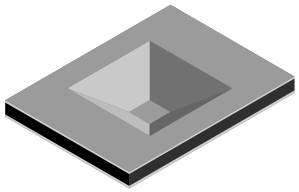
Note: these values are for guidance only and are intended for use with **STACBOND** recommended milling tools. For use with other tools or depending on the type of machine it is necessary to adjust them.

RECOMMENDED TOOLS **A2 CORE**:

— Cutting tool: Ø 6mm milling cutter with diamond insertions (STB-FRESA6PCD).
— Milling tool: Ø 10mm spherical milling cutter with diamond insertions (STB-FRESA10PCD).

RECOMMENDED TOOLS **FR CORE**:

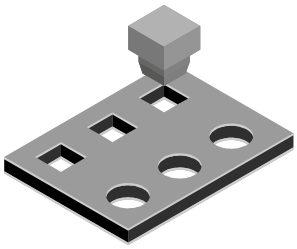
— Cutting tool: Ø 6mm milling cutter with diamond insertions (STB-FD6X80X3,8).
— Milling tool: Ø 10mm spherical milling cutter with diamond insertions (STB-FEMD-10x72).



EMBOSSING AND ENGRAVING

STACBOND composite panels can be embossed and engraved using CNC machines. There are limits on the depth achievable depending on the shape and size of the tool used.

Please consult **STACBOND** about different possible methodologies.



PUNCHING AND DIE-CUTTING*

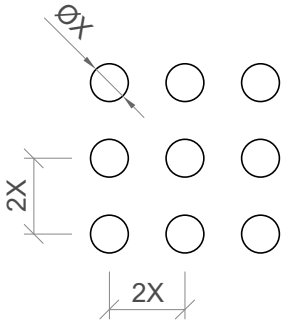
STACBOND composite panels can be punched or die-cut using CNC machines. The recommended parameters to maintain the panels properties and thus their guarantee are as follows:

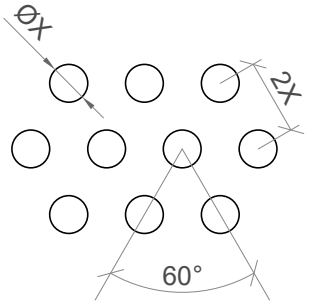
— The smallest punch diameter should be 4 mm.

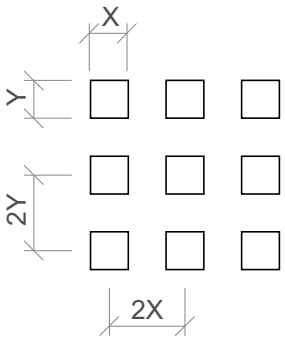
— The distance between centres must be at least double the diameter.

— The perforated surface area must be less than 35% of the total surface are of the panel.

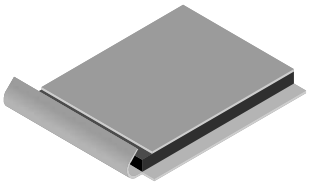
Consult **STACBOND** about possible formats.





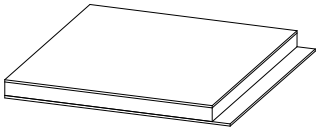
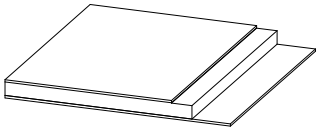
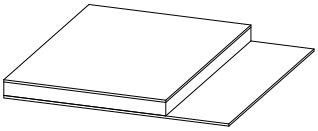
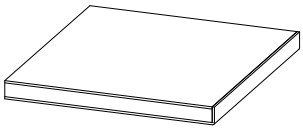
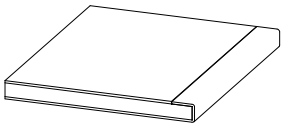
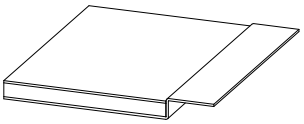


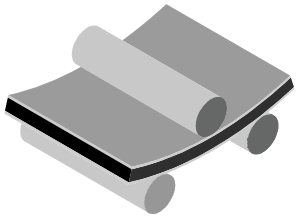
* For perforation parameters with **STACBOND** A2 panels, please check with the **STACBOND** technical department.



EDGE FOLDING OF BORDERS

STACBOND composite panels can be edge folded on their profile. We offer three types of border: Simple (hides border), double interior (hides the border and part of the reverse) and double exterior (hides border and has a tab sticking out which hides the joint with other sheets of the panel). The dimensions of the panel must be oversized to account for the requirements of each type of border.

	SIMPLE FOLDING	DOUBLE INTERIOR FOLDING	DOUBLE EXTERIOR FOLDING
UNFOLDED DIAGRAM			
FOLDED DIAGRAM			
FLAP INCREASE (mm)	**3,5**	**7,5**	**14,0**



BENDING WITH ROLLERS

To make curved panels the best system is using a bending machine with 3/4 rollers. To avoid risk of damage, attention must be paid to the minimum radius of the curve of the internal side.

In the case of **STACBOND** composite panels with flaps, the minimum recommended radius is 500 mm for a maximum flap length of 20 mm.

The minimum bending radius without flaps is determined by the following formula:

ø UPPER ROLLER x 1,5 / 2 = BENDING RADIUS

For example, in a machine where the diameter of the upper roller is 200 mm, we could bend a 4 mm thick composite panel sheet with a minimum radius of 150 mm.

Bending without flaps of lower radius can be achieved by using press brakes with specific tools. Consult **STACBOND** for more information.