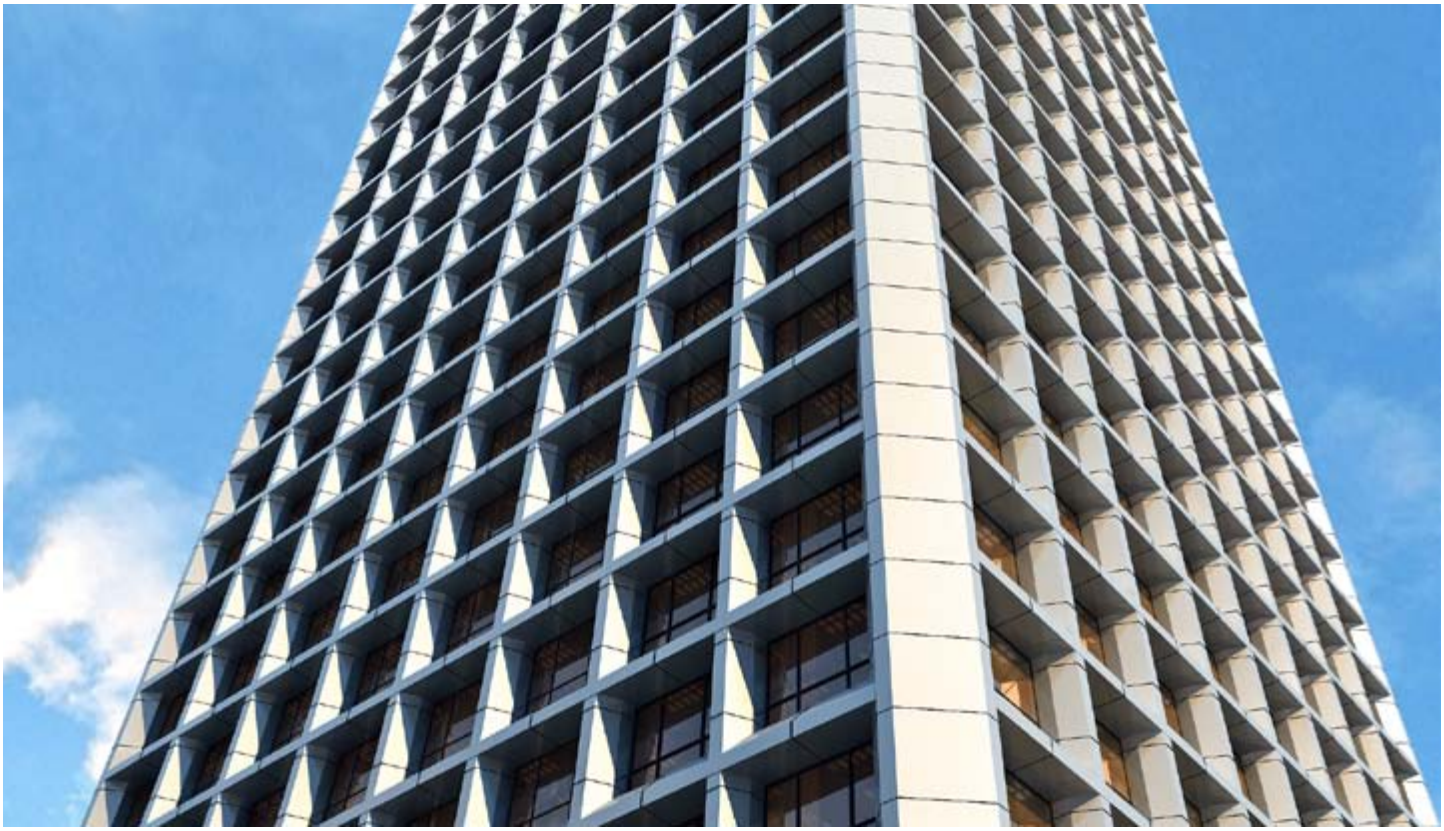
solid surface ventilated façade

solid surface broadens the possibilities of façade design.



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KRION®
ventilated façade

bildtec.


Bershka
Bershka


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Features

Solid surface ventilated façade system combines the excellent features from SYSTEMPOOL's Solid Surface with the know-how developed by **butech** in the design and installation of this type of façades. It is accredited by the most demanding international organisms and the prestige of the PORCELANOSA brand name.

Solid surface ventilated façade system adapts perfectly to cladding, and allows the designer to carry out designs that would be impossible with other materials: curved, back-lit, engraved decoration, or façade design that plays with different planes. The most innovative designs are made possible thanks to the system's technical characteristics and great flexibility.

We have the guarantee of the quality of our materials, the technical characteristics of our system, and our experience.

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What is Solid Surface®?

KRION®
PORCELANOSA SOLID SURFACE

Solid surface® is a product that is solid, compact, pore-free, with uniform properties throughout its section, and which can be transformed to obtain figures and complex volumes. The Solid surface has a high resistance to temperatures and chemical agents, are easy to clean and maintain, and offer warmth and beauty, making these solid surfaces ideal for the most demanding applications.

Unlike other materials used professionally, it can be injected, cut, machined, and glued, achieving invisible joints. This property allows designs to freely incorporate functionality and ergonomics criteria which would be otherwise difficult to obtain.

Features.

Solid surface is a new generation solid surface developed by SystemPool, a company from the PORCELANOSA Group. It is a product that is warm and velvety to the touch, similar to natural stone, solid, with a uniform mass, non-porous, available both in slabs and in molded figures, and that allows for an invisible joint between the different pieces.

This product is also hygienic, unreactive, non-toxic, virtually fireproof, e asy to maintain and repair, it has multiple transforming possibilities, and a high resistance to chemical agents, water vapor, or the weather.

Advantages.

Anti-graffiti.
Fire-resistant.
Resistant to cigarette burns.
Eco-friendly.
Antibacterial (no additives).
Great durability.
Resistant to high temperature.
High degree of hardness and mechanical strength.
Moldable.
Large surfaces without joints.

Maintenance.

In order for the material to regain its initial state, **butech** recommends to strictly follow the manufacturer recommendations for cleaning tough stains, which are to rub the surface using a green fiber Scotch-Brite® scouring pad. This way the tough stains will disappear, so that any cleaning team will be able to carry out these maintenance tasks without needing to resort to more sophisticated items or special cleaning agents.

It can be entirely restored, which means that it can return to its original appearance. Even cigarette burns can be removed with a normal detergent and a scouring sponge.

KRION® Stone

Formats (mm)
2,480 x 750 x 11
2,480 x 900 x 11
3,620 x 750 x 11
3,620 x 900 x 11

5101. **Stone White**

KRION® Pure Lux

Formats (mm)
3,670 x 750 x 12

1100. **Snow White**

Formats (mm)
3,590 x 750 x 12
3,590 x 1,340 x 12

1101. **Ice**

1103. **White**

1501. **Arena**

1502. **Vainilla**

1503. **Lady**

1504. **Soap**

1902. **Light Grey**

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Properties

Anti-graffiti.
Graffiti can be completely removed after they have been made on the surface, and regardless of the time passed since they are made, by using a Scotch-Brite ® type scouring sponge.

Fire resistance.
Fire-resistance rating is B-s1, d0 according to the UNE-EN 13501-1: 2002 standard; this classification corresponds to Flame retardant material. (It is equivalent to classification M1 according to UNE 23727:1990 standards).

Considering the Spanish Technical Building Code (CTE), the Euroclasses A1, A2, and B, correspond to the non-combustible and low combustibility product classes. They represent those construction products which are safer in terms of fire safety.

Documentation: Tests from the Technical Fire Center 1010100-01 CL.

Cigarette burn resistance.
Cigarettes are consumed 10 mm, and are then deposited on the material until 20 mm more are burned up. They are then removed, and the stain they leave is perfectly removed using a scouring sponge.

Documentation: Tests in accordance with UNE-EN 438-2: 2005 standards.

Resistance to solar radiation.
The temporal equivalence of artificial aging results is not empirical, although correlations can be established between this study and the results obtained from 10 years of natural aging in the area of Valencia.

Artificial aging tests consisting of a total of 12 extreme exposure alternate cycles, for a continuous period of 2016 hours, produce the following color material modification:

Pure Lux Color variation: $\Delta E = 0.55$

This value corresponds to a variation that is very slight and practically unrecognizable

Stone Color variation: $\Delta E = 5.24$

This value corresponds to a moderate color change and is only superficial, affecting 10 surface microns that can be removed using a Scotch-Brite® type scouring sponge, thus recovering the original color.

Therefore, material aging in the long run is minor, and it is possible to recover the initial appearance with basic maintenance.

Documentation: AIDIMA Report 1001022-03/04/05; QUV Chamber Tests.

Permeability to water.
The water absorption that Solid surface has under different unfavorable conditions, such as water vapor application, immersion in boiling water, or permanent placement in water without aeration, stays in peak values of 0.15 %, desorbing all of the water after the immersion.

This extremely low absorption level guarantees the non-existence of problems related with material hydrolysis.

Documentation: Tests in accordance with UNE-EN ISO 62, UNE-EN 438-2, NEMA LD 3-2000; AIDIMA Report 1001022-03/04/05.

Resistance to thermal shock.
It passes the shock tests, which consist of 1,000 cycles of 30 seconds each, alternating water at 90 °C with water at 15 °C.

This property reduces the chances of cracking from sudden temperature changes.

Documentation: AIMPLAS Tests in accordance with ISO 19712.

Resistant to both microbial and fungal attack and proliferation.
Solid surface complies with the most demanding hygienic-sanitary regulations, and is suitable for high requirement applications such as clean rooms or operating rooms.

This property, as well as its non-corrosiveness, ensures the material's high durability.

Documentation: Tests in accordance with ASTM G-21 and UNE EN ISO 846 standards.

Backlighting.
Pure Lux allows the creation of back-lit atmospheres. Spectacular lighting effects can be achieved by combining different material thicknesses.

Solid Surface vf Façade system

PORCELANOSA Group is at the forefront in terms of production, R&D, and technical innovation, in the different fi elds co vered by th e va rious co mpanies that make up the group. In these fields, **butech** i s t he c ompany t hat i s i n charge of the development, management, and implementation of the different building systems that may affect more avant-garde projects, such as the Ceramic Ventilated Façade, the Solid Surface Façade, the Attached Façade, the Raised Access Floor, the Drop Ceilings, and the Geothermal Energy.

Among these technical products, **butech** has developed an innovative system for Solid Surface installation in ventilated façades. This system, known as **Solid Surface** allows us to take advantage of all the technical and aesthetic qualities of Solid Surface combining them with the advantages offered by ventilated façades.

The best materials, always high quality aluminum and stainless steel, are used for the construction of the ventilated façade system. These materials can adjust to the different shapes that Solid Surface can adopt in the façade, broadening the designer's creative freedom.

Additionally, the **Solid Surface** system has been tested jointly (Solid Surface +profiles) so that its suitability to the different conditions that we find during construction are tested, obtaining the most demanding certificates from agencies such as the French CSTB.

The Group offers high technology products, with high-end technical and aesthetic features that adapt to the needs of designers and architects, and a team of technicians capable of developing these projects in the most economically viable and safe way. **butech**'s professional team treasures the knowledge acquired across the many projects undertaken throughout its development, integrating high degrees of specialization which enhance every part of the design, development, and implementation process.

All this project technical development can obviously include the documents that the customer might need to certify the whole constructive system, the technical specifications of the materials used, the specific construction details for the project, such as calculations of wind suction, anchor checking, determination of the stress that the façade structure transmits, calculation of the heat transfer coefficient of the enclosure thickness, determination of the façade weight, sizing of the façade for a proper system expansion, etc.

Once all the project technical development has been carried out, one of the main factors for a correct project completion is obviously a correct implementation, and **butech** currently has installer teams that specialize in the installation of any type of project, no matter how complex it is.

Currently the **Solid Surface** system has several certifications and tests available that guarantee both the quality of the work carried out, and the construction system and materials used.

butech Technical Department.

The creation of unique façades requires multi-disciplinary contributions from qualified professionals. Butech stands out for the development specialization of any type of project, both conventional and non-conventional. It offers the following services:

Phase 1. Preparation of estimate.

Initial layout study, as long as the information and necessary plans are provided. A design is proposed, and based on this design a bill of quantities and rough cost estimate are made in accordance with technical, aesthetic, and economic criteria that make it viable.

Delivery of system standard details.

Adjustments and modifications based on indications made by the customer, which had not previously been made. Drafting of a more adjusted cost estimate, and the chance to provide singular point technical details.

Phase 2. Development of the project.

This phase only starts once the project is accepted.

Technical visit to the customer to determine all the project details, expansion joints, window finishings, and singular point solutions.

Based on all the conclusions that come out of the technical visit, and after a real on-site measurement, the final construction estimate is prepared.

Drafting of the various calculation documents that the client might need and butech can provide.

Development of specific project construction details.

Phase 3. Implementation of the project.

Once the final construction estimate is accepted and the contract is accepted.

Initial construction layout.

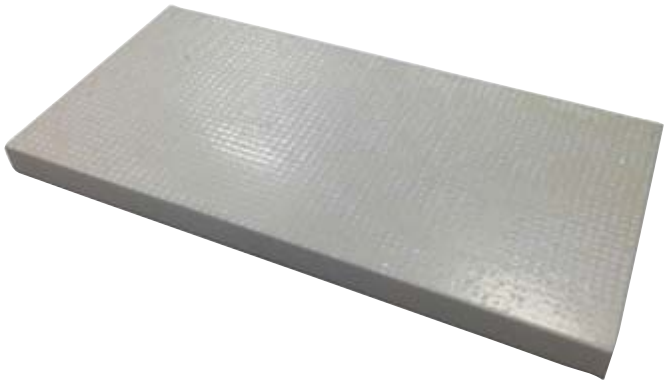
Placement of system structural elements.

Installation of Solid Surface slabs.

Façade sanding and cleaning.

All the necessary visits will be made during the whole construction execution in order to ensure the correct implementation that the project might require, depending on its complexity.

Benefits of Solid Surface

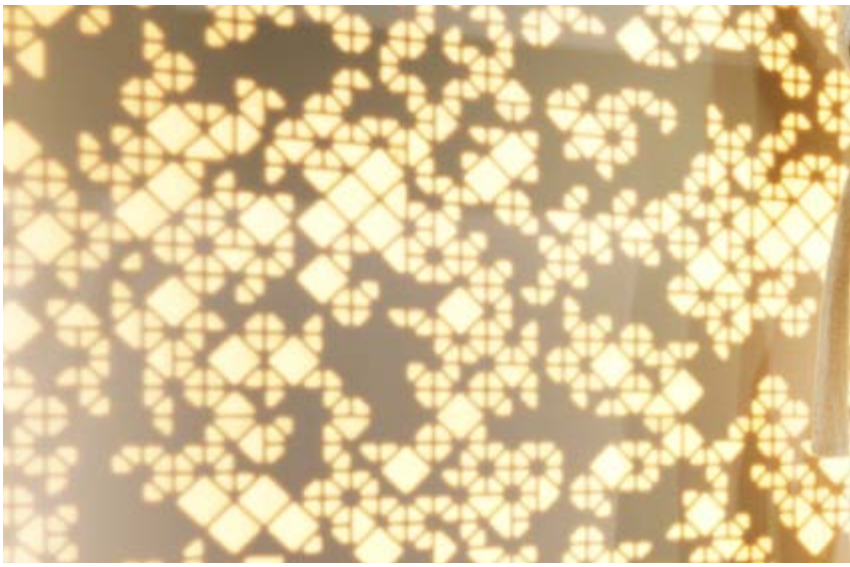


Safety net.
Solid surface façades are supplied with an elastomeric safety net attached with polyester resin. The safety net offers an extra guarantee in terms of safety, protecting from a possible detachment caused by a large impact.

B-s1-d0 Fire resistance.
Solid surface is a material that has an excellent performance against fire, so that its outdoor use is totally recommended. The results have been obtained in accredited external laboratories, and show that we get the best certification in comparison with the other Solid Surface products existing in the market.

Aging of the material.
As in the previous section, we have tests from accredited external laboratories certifying that the material barely ages over time due to the effect of ultraviolet rays.

Benefits of Solid Surface



Backlighting.

Besides being able to include light as a façade decorative supplement, Pure Lux product family offers the possibility of backlighting a solid surface thanks to the translucent characteristics of the material itself.

Within this type of lighting, we could differentiate two possible types offered by the product range:

Full backlighting of the slabs.
Pure Lux Light slabs can be completely illuminated from behind thanks to the material's translucent properties, without having to do any recesses. The only determining factor for this type of decorative solution is finding the perfect constructive solution for developing an anchoring system that does not interfere with the lighting areas.

Partial backlighting of the slabs.
Pure Lux slabs can be partially lit from behind, recessing the material through numerical control. This machining allows for the light to be only visible in these points. This solution lets us to cover an important range of decorative solutions: mosaics, corporate logos, designs using stripes...

Thermal bending.
Another major advantage offered by the use of Pure Lux outdoors is being able to design curved areas with no joints; these designs could not be made at present with other types of materials currently available in the market.

Machining.
The possibility of using numerically controlled machining, together with the possibility of joining the pieces afterwards, makes such materials suitable for developing any conceivable design that combines formats, mosaics, pixelations, irregular pieces, etc...

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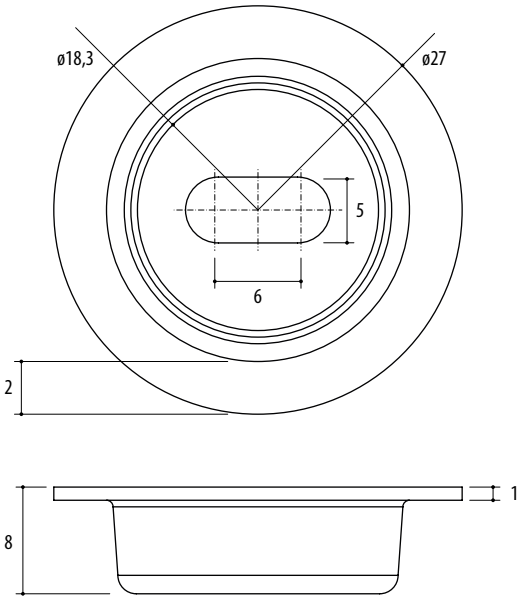
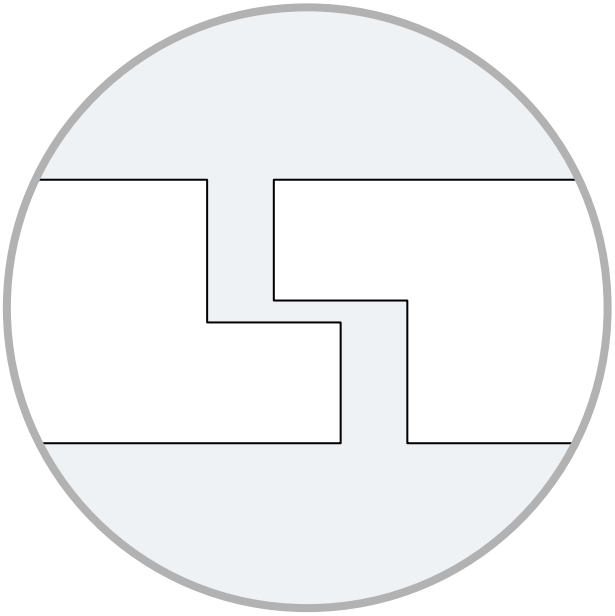
Technical features

Property	Method	Units	Results Stone (11 mm)	Results Pure Lux (12 mm)
Density	DIN ISO 1183	g/cm^3	1.787 - 1.800	1.710 - 1.726
Flexural modulus	DIN EN ISO 178	MPa	9,786 - 9,894	8,596 - 8,724
Flexural strength	DIN EN ISO 178	MPa	52.3 - 54. 7	75.1 - 76.9
Elongation	DIN EN ISO 178	%	0.55 - 0.59	1.08 - 1.12
Compression resistance	EN ISO 604	MPa	111 - 115	97 - 101.2
Impact resistance (continuous load)	DIN ISO 4586 T11	N	> 25	>25
Impact resistance (falling ball)	ISO 19712	Ball 324 g/² m	Does NOT break (>120 cm)	Does NOT break (>120 cm)
Surface hardness (Mohs scale)	DIN EN 101		3	3
Abrasion resistance (use)	DIN ISO 4586 T6	% mass / 100 rev.	0.148	0.11
		mm^3 / 100 rev.	82	64
Immersion in boiling water	DIN ISO 4586 T7	Weight %	0.2	0.25
Resistance to bacteria and fungi	DIN EN ISO 846		Do NOT thrive	Do NOT thrive
Dimensional stability 20 °C	DIN ISO 4586 T10	% change in length	0.01 (90% HR and 23% HR)	0.02 (90% HR) and 0.08 (23% HR)
Resistance to dry heat 180 °C	ISO 19712-2	4	Slight change brightness/color	Slight change brightness/color
Translucency (xenon arc)	DIN ISO 4586 T16	"Blue wool"	> 6	> 6
Non-slip properties	UNE-ENV 12633:2003 (USRV values)	Less than 120 sanding	CLASS 2	CLASS 2
80-Sanded finish anti-slip properties	UNE ENV 12633:2003	Rd (roughness)	45. CLASS 2 (humid and greasy areas)	45. CLASS 2 (humid and greasy areas)
120-Sanded finish anti-slip properties	UNE ENV 12633:2003	Rd (roughness)	19. CLASS 1 (interior humid areas)	19. CLASS 1 (interior humid areas)
180-Sanded finish anti-slip properties. With non-slip surface treatment	UNE ENV 12633:2003	Rd (roughness)	22. CLASS 1 (interior humid areas)	22. CLASS 1 (interior humid areas)
180-Sanded finish anti-slip properties	UNE ENV 12633:2003	Rd (roughness)	16. CLASS 1 (interior humid areas)	16. CLASS 1 (interior humid areas)
220-Sanded finish anti-slip properties. With non-slip surface treatment	UNE ENV 12633:2003	Rd (roughness)	18. CLASS 1 (interior humid areas)	18. CLASS 1 (interior humid areas)
Transverse resistivity	UNE 21-303:1983	Ωm	$> 5.1 \times 10^{10}$	$>5.1 \times 10^{10}$
Surface resistivity	UNE 21-303:1983	Ω	579.1×10^{-9}	$>1 \times 10^{-9}$
Toxicity of combustion gases	NF F 16-101		Class F0	Class F0
Fire classification	EN 13501-1:2003		Euroclass B, s1, d0	Euroclass B, s1, d0
Thermal conductivity	UNE 1267 (2002)	W / m^2	q = 113.1	q = 113.1
	UNE 1267 (2002)	$m^2 . K / W$	R < 0.05	R = 0.05
	UNE 1267 (2002)	W / m . K	λ approx. 0.428	λ = 0.396
Resistance to thermal shock (90 - 20 °C)	ISO 19712-2 (Sheet)	250 Cycles	Satisfactory	Satisfactory
Resistance to thermal shock (65 - 10 °C)	ISO 19712-3 (Shape)	500 Cycles	Satisfactory	Satisfactory

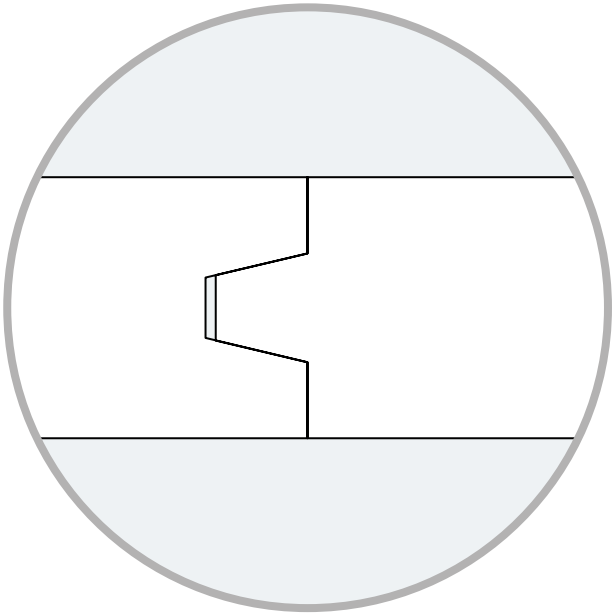
Solid Surface Cap



Expansion recessing

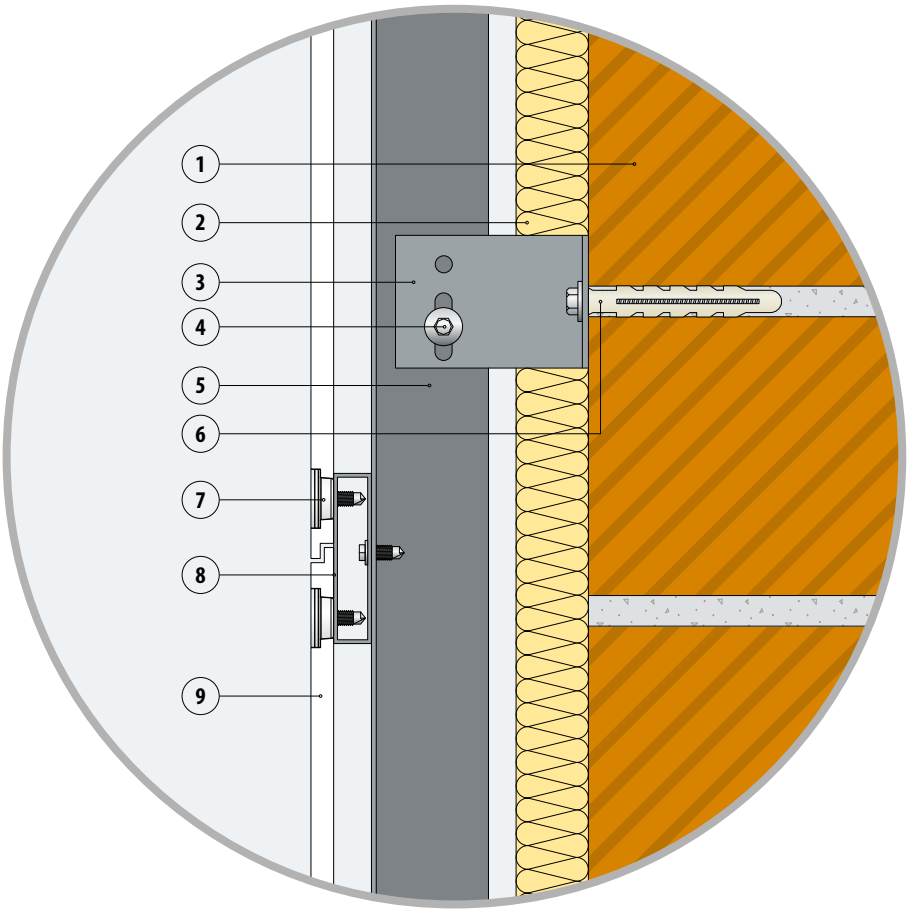


Tongue and Groove for sheet joining



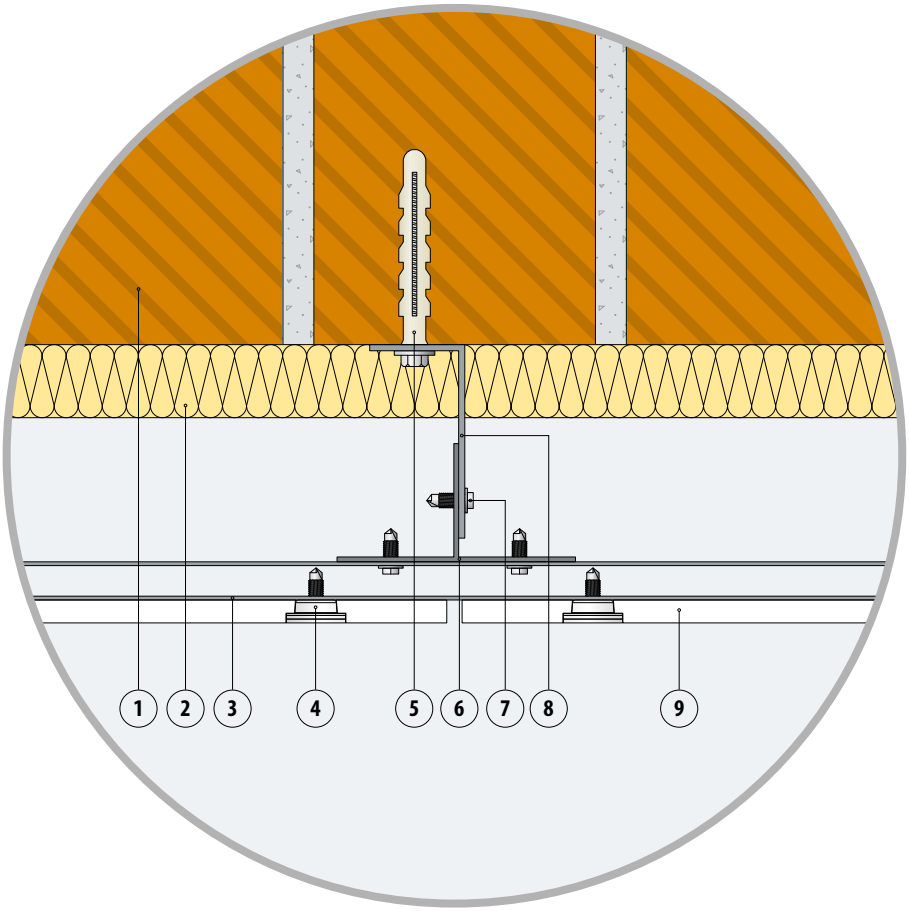
Vertical cross-section

1. Enclosure
2. Thermal / acoustic insulation
3. "L" shaped Separator
4. Union "L" / "T" screw
5. "T" Profile
6. Union anchorage "L" shaped separator / enclosure
7. Solid Surface Cap
8. Tubular profile
9. Solid Surface



Horizontal section

1. Enclosure
2. Thermal / acoustic insulation
3. Tubular profile
4. Solid Surface Cap
5. Union anchorage "L" shaped separator / enclosure
6. "T" Profile
7. Union "L" / "T" screw
8. "L" shaped Separator
9. KRION®



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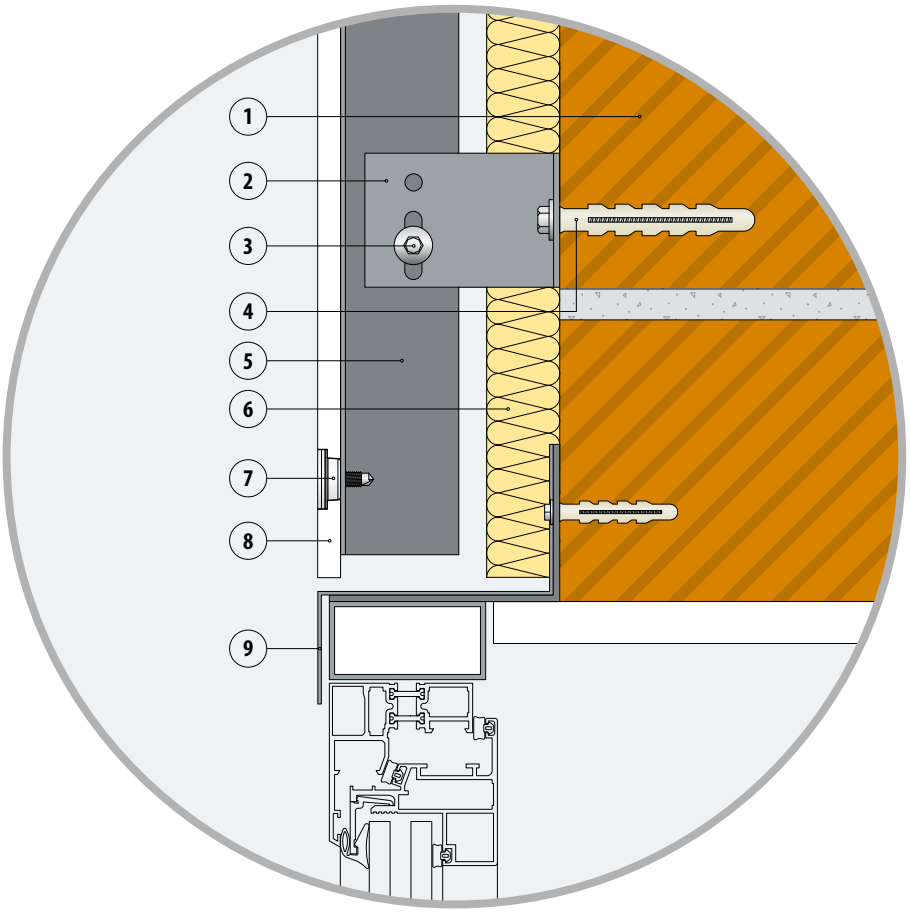
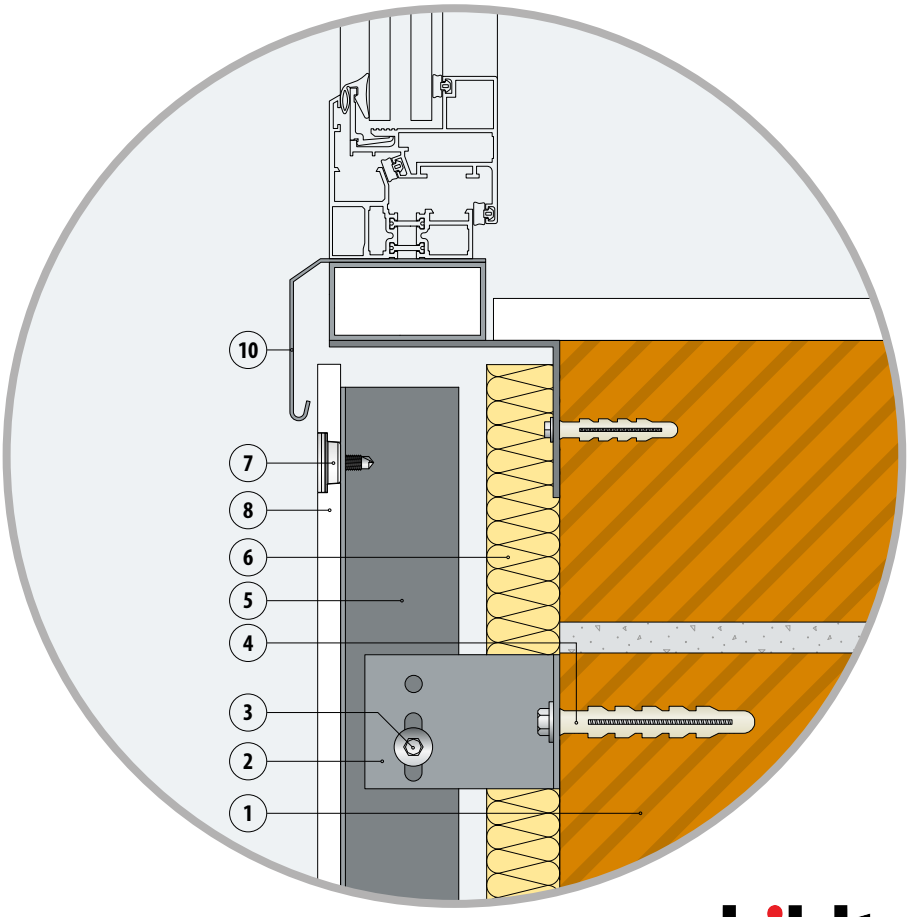
Window section with outer shafts

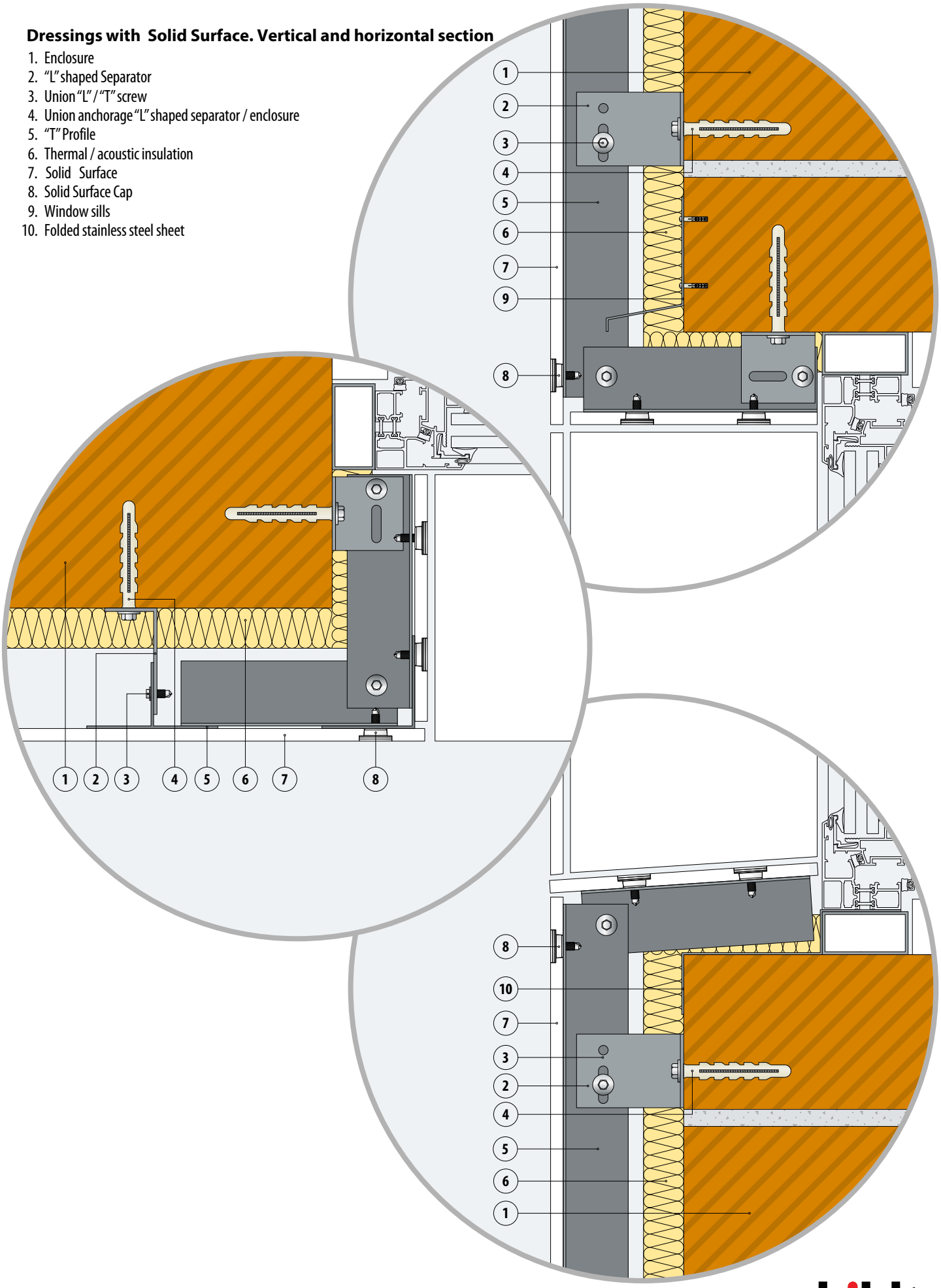
1. Enclosure
2. "L" shaped Separator
3. Union "L" / "T" screw
4. Union anchorage "L" shaped separator / enclosure
5. "T" Profile
6. Thermal / acoustic insulation
7. Solid Surface Cap
8. Solid Surface
9. Folded stainless steel sheet
10. Window sills





Dressings with Solid Surface. Vertical and horizontal section

1. Enclosure
2. "L" shaped Separator
3. Union "L" / "T" screw
4. Union anchorage "L" shaped separator / enclosure
5. "T" Profile
6. Thermal / acoustic insulation
7. Solid Surface
8. Solid Surface Cap
9. Window sills
10. Folded stainless steel sheet



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KRION® vf Façade System certificates and tests

AIDICO
INSTITUTO TECNOLÓGICO
DE LA CONSTRUCCIÓN

Resistance tests to wind effects:
report of **CSTB** tests no. CLC 12-26037368 of 07/03/0212.

Resistance tests to wind effects after fatigue:
report of **CSTB** tests no. CLC 12-26037925 of 14/03/0212.

Impact resistance tests:
report of **CSTB** tests no. CLC 12-26037369 of 19/09/2012.

Insert pull-out resistance tests, flexural and tensile strength tests on the welded joints, in the initial state and after aging and heat + humidity:
report of **CSTB** tests no. CLC 12-26037398/26037404 of 03/08/2012.

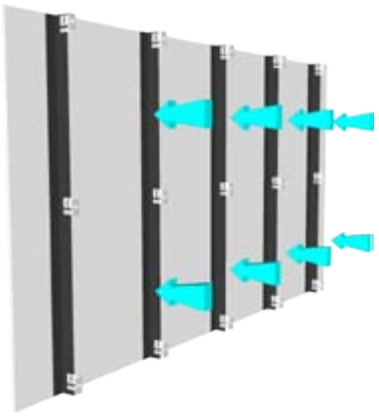
Insert pull-out resistance tests, flexural and tensile strength tests on the welded joints, after ice / thaw cycles:
report of **CSTB** tests no. CLC 12-26037400/26037404 of 03/08/2012.

Reaction to fire tests:
PV number 1010100-01CL and 1010122-01CL, carried out at the Institute AIDICO Technical Fire Center, in Spain.

Wind suction test.

According to the tests made by an official in stitute fo r ob taining th e AT EX (Experimental Technical Attestation), the breakage limit value of wind suction equals 601.02 kg/m², always breaking by punching at the cap.

Uniform values have been obtained for the different samples taken. It is therefore a very high value, which allows us to install this façade system with Solid surface cladding in areas that have a high wind exposure.

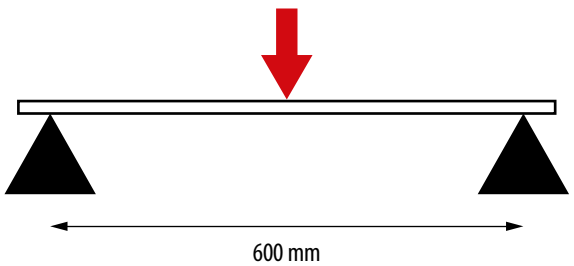


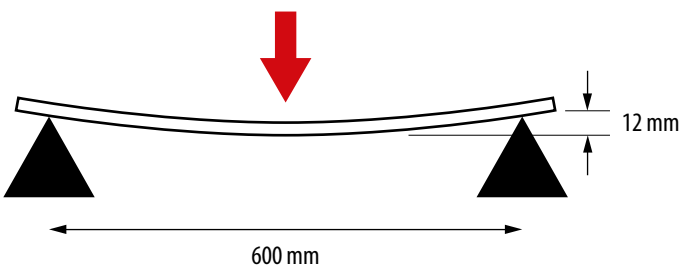
AIMPLAS
INSTITUTO TECNOLÓGICO
DEL PLÁSTICO

Simple flexure test.

According to the flexure tests carried out at AIMPLAS (Technological Institute of Plastics) Solid surface's elastic modulus is 8,690 Mpa, and the flexural strength is 53.5 Mpa.

Substantial variations are not obtained in results when testing aged samples.





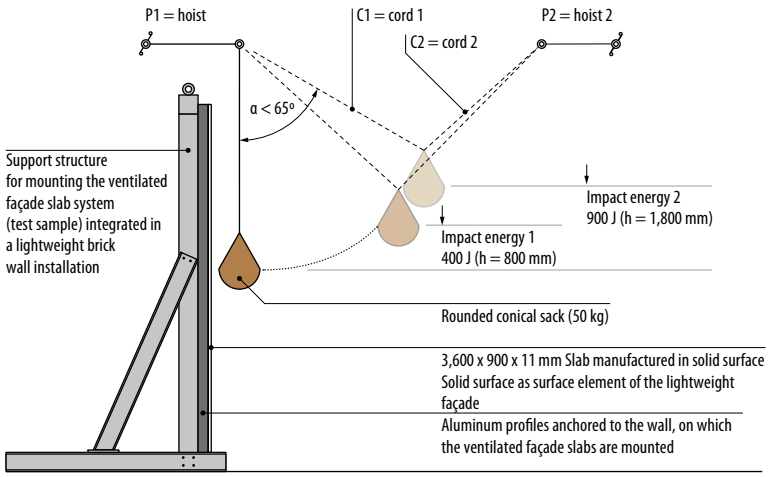
Impact test.

Summary of report findings on test number IE100045, obtained from the four tested arrangements of the Solid Surface lightweight façade slab system, for the two types of tests, rigid and soft body:

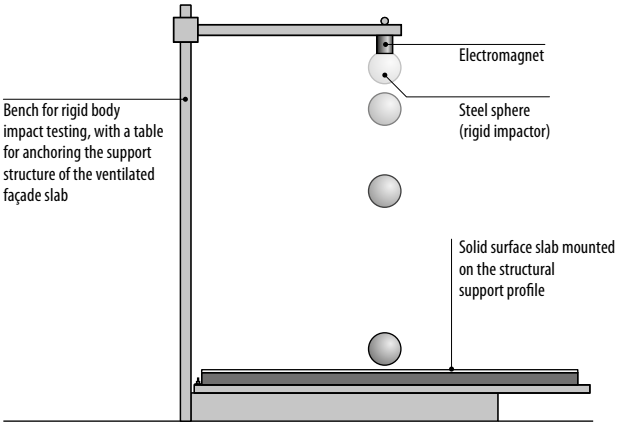
Types of test	Arrangement and description	Evaluation parameters of the test			
		Collapse	Penetration	Projection	Degradation
Soft body impact	**56013-2-1**. On center of 900 x 900 x 11 mm slab. ($E_{kinetic}$ = 900 J · h = 1.8 m)	Ok	Ok	Ok	(1)
	56013-2-2a. Test on 900 x 900 x 11 mm slab, with 4 fittings. ($E_{kinetic}$ = 900 J · h = 1.8 m)	Ok	Ok	Ok	(1)
Rigid body impact	**56013-3-2**. On center of 900 x 900 x 11 mm slab. ($E_{kinetic}$ = 6 J · h = 1.2 m · m = 0.5 kg)	(1)	Ok	(1)	Ok
	56013-4-2. On center of 900 x 900 x 11 mm slab. ($E_{kinetic}$ = 10 J · h= 1.0 m · m = 1 kg)	Ok	Ok	Ok	(1)

(1) In this case, for this test arrangement, this evaluation parameter does not apply.

Soft body impact test.



Rigid body impact test.



Installation and assembly

SYSTEMPOOL, in collaboration with **butech**'s Technical Department, has developed the necessary tools, materials, and techniques for implementing Solid surface both in interior decoration and building façades. All PORCELANOSA Group's experience in the installation of ventilated ceramic façades is applied to Solid surface, thus achieving the most innovative designs.

The experience of PORCELANOSA Group's ventilated façade mounting teams, together with the ability of our technicians, make Solid surface's ventilated façade a new reality which serves contemporary architecture.

Cutting and pasting of KRION®

Chemical welding.
In first place, we must prepare the chemical welding kit. Once prepared, we shall join the slabs in a seam, so that the welding kit paste joins the two pieces. After joining the pieces, let dry.

Gluing.
Whenever we want to join edges, these should be straight or at 90° angles. Before applying the adhesive, the area should be cleaned with a cloth and methylated spirit; this way we will leave the area 100% clean. In order to achieve invisible joints, the use of Solid surface adhesive is essential.

Linear cutting.
If we want to make linear cuts, we shall use a circular saw with hardened metal or diamond teeth.

Curved cut.
If we want to make linear cuts, we shall use a circular saw with hardened metal or diamond teeth.

KRION® polishing and finishing

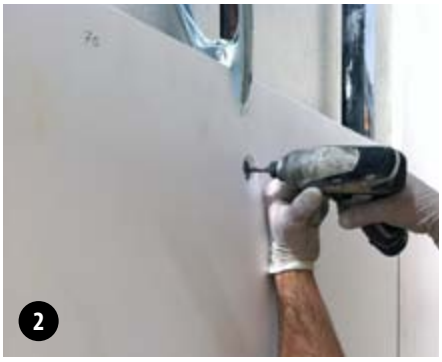
Polishing.
A random orbital sander must be used, with movements from top to bottom or from left to right.

Finishing.
The finishing, whether it is glossy or matt, can be done at the end of the work with sandpaper. This finishing can be chosen by the customer.

You can request more information at sistemas@butech.es

Assembly and installation of KRION® vf

Place the **butech** aluminum profiles.



Once the **butech** aluminium profiles are placed, perfectly aligned and plumbed, the slabs are then screwed on. The slabs have inserts that house inside them the Solid surface aluminum clamps, which guarantee a correct fastening.

After cleaning and drying the surface on which we are going to perform the chemical welding with the next slab, a continuous seam of Solid surface liquid adhesive is applied inside the female part of the slab.

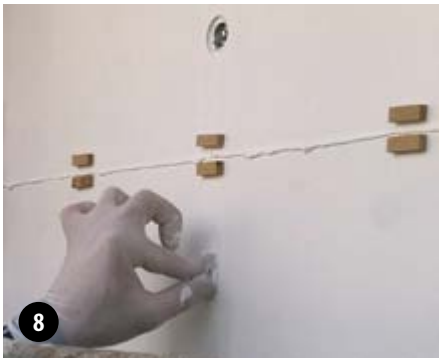
Image of prepared Solid surface slabs with adhesive.

Next, the male part of the next slab is inserted into the female part, so that the Solid surface adhesive overflows.

Afterwards, we must stick wooden wedges every 15 cm for installing clips to apply pressure between slabs.

The fastening clips are installed so they exert pressure and ensure a perfect joining of the two slabs.

After this, remove the clips and wood wedges.



Next, we glue the insert plugs with Solid surface adhesive, so that it overflows.

In order to glue these plugs, they must be clean and dry.

After 24 hours, the surface sanding may be carried out, eliminating all the rugosities, stains, and excess adhesive, obtaining the final finishing of the Solid surface slabs.

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TECHNOLOGY FOR TOMORROW'S BUILDER

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