



TECHLAM®
Façades

LEVANTINA
THE NATURAL STONE COMPANY

TECHLAM®
Ceramics



VENTILATED FAÇADE

The TECHLAM® ventilated façade is a cladding system, consisting of fixing a system of profiles to the external face of the walls of the enclosure. The external face is then protected by an insulation layer and the profiles support the ceramic panels and create an air cavity between the wall and the outer ceramic material. The TECHLAM® ventilated façade technique ensures the presence of an air cavity covering the whole wall which allows air to flow in the façade, protects the building from rainwater and prevents condensation in the air cavity.

The elements of the TECHLAM® ventilated façade

1. Insulating material fixed to the wall of the enclosure to clad.
2. Substructure consisting of loadbearing and adjustable profiles, applied to the exterior of the building, on which the exterior cladding is hung.
3. Air cavity between the insulating material and the TECHLAM®.
4. Continuous facing (exterior finish) which remains separate from the wall of the enclosure.

Advantages of TECHLAM® Ventilated Façades

- Energy efficiency. Energy saving of 25-40%.
- Savings in energy costs as it facilitates thermal and acoustic insulation, and improves waterproofing and fire resistance.
- Significant reduction in wear and tear over time and therefore lower repair costs.
- Reduction in maintenance costs. It does not need to be repainted.
- Reduction in damp through less condensation.

- Anti-graffiti treatment.
- Elimination of damp and efflorescence on external walls due to the system and the materials used.
- Elimination of surface condensation.
- Ease of installation and replacement if required.
- Significant improvements in thermal and acoustic insulation of the building compared to other commonly use products.
- The fixing and installation systems make it suitable for use in restoration projects.

TECHLAM®

Levantina was the first company to equip its factories with the advanced technology to manufacture this thin ceramic.

TECHLAM® is a 3mm thick ceramic sheet weighing 7.1 Kg/M² and is available in panels of up to 1000x3000 mm. These characteristics mean that this product can provide unique solutions for all kinds of applications in the fields of architecture and interior design.

An array of building projects can be carried out with this new concept in functionality. Its versatility in terms of size, colour, ability to be used with other materials and technical properties of durability and flexibility of installation make this material a benchmark for many applications, including façades.

It is easy to install and so saves time and money during construction of both new-build and restoration projects.



TECHNICAL PROPERTIES

Versatility: TECHLAM® is available in large panels (1000x3000 mm) which can be cut to all sizes.

Impermeability: Level of moisture absorption close to 0, impermeable and resistant to liquids.

Hygienic surface: It does not emit noxious substances or allow formation of mould, fungus or bacteria, therefore making it completely compatible with foodstuffs.

Easy to clean: It does not require special care or cleaning products.

Colours do not change: The absence of organic pigments makes it resistant to UV radiation and the most severe climatic conditions.

Resistance to fire and high temperatures: It has a spread of fire index of 0.

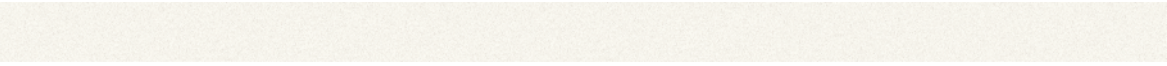
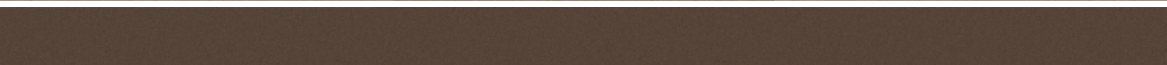
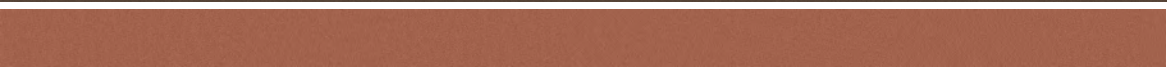
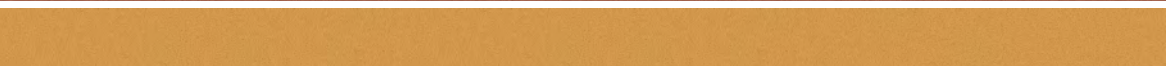
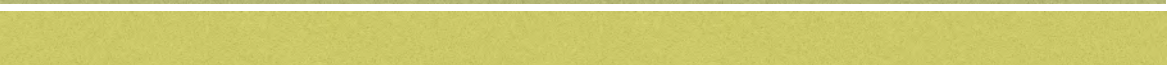
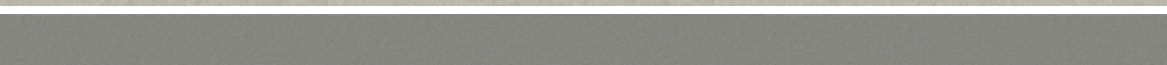
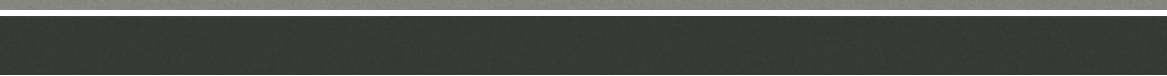
Resistance to chemical products: Solvents, disinfectants and detergents.

Resistant to bending: Has a high resistance to breakage.

Resistance to wear and tear: Its surface and hardness make it highly resistant to scratching and abrasion.

Environmentally friendly: 100% natural. Does not emit any substances to the environment and can be easily recycled to manufacture sand and cement or similar products.

BASIC Collection

	Basic Neu
	Basic Sand
	Basic Capuccino
	Basic Tardor
	Basic Coffee
	Basic Clay
	Basic Orange
	Basic Gorri
	Basic Blau
	Basic Green
	Basic Pistaccio
	Basic Caelum
	Basic Grey
	Basic Antracita
	Basic Black

Finishes: matte
Thickness: 3mm.3+mm.3+3mm.3+3+3mm.

Sizes


100x300cm


100x100cm


50x100cm


50x50cm


30x50cm

HYDRA Collection

	Hydra Argen
	Hydra Plomo
	Hydra Beige
	Hydra Moka
	Hydra Brown
	Hydra Wengue

Finishes: matte
Thickness: 3mm.3+mm.3+3mm.3+3+3mm.

Sizes


100x300cm


100x100cm


50x100cm


50x50cm


30x50cm

VULCANO Collection



Vulcano Lahar

Vulcano Vapor

Vulcano Ceniza

Vulcano Humo

Vulcano Roca

Finishes: matte
Thickness: 3mm.3+mm.3+3mm.3+3+3mm.

Sizes

100x300cm

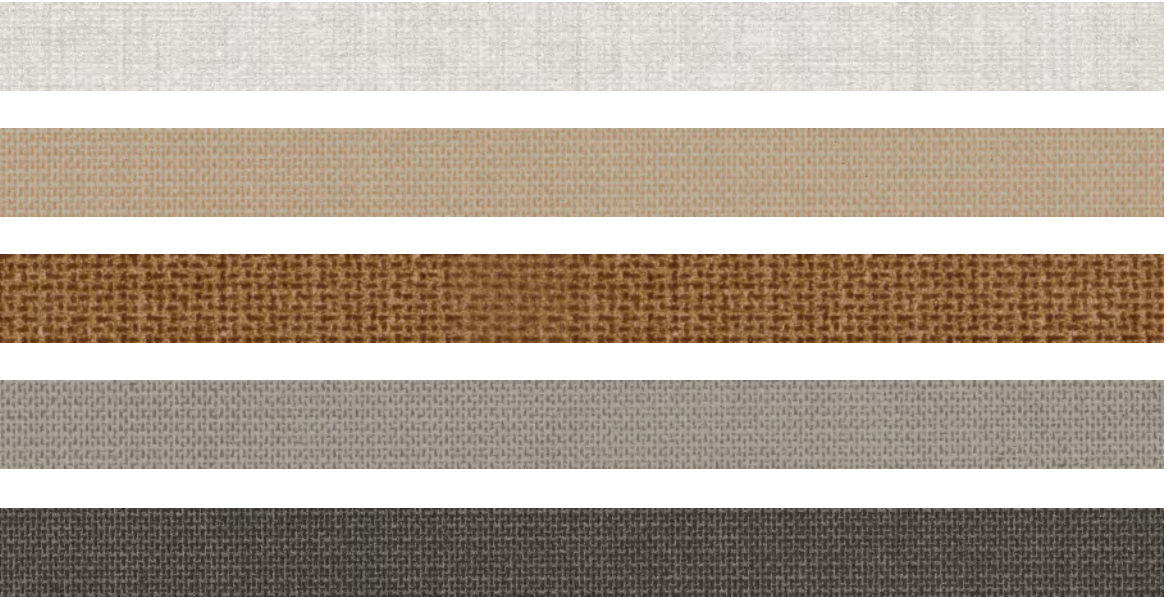
100x100cm

50x100cm

50x50cm

30x50cm

ZAHIR Collection



Zahir Perle

Zahir Crème

Zahir Argile

Zahir Gris

Zahir Noir

Finishes: matte
Thickness: 3mm.3+mm.3+3mm.3+3+3mm.

Sizes

100x300cm

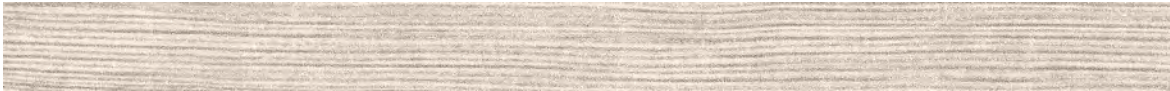
100x100cm

50x100cm

50x50cm

30x50cm

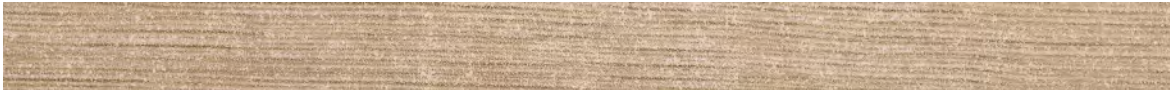
MADEIRA Collection



Madeira Fresno



Madeira Haya



Madeira Roble



Madeira Teca



Madeira Nogal



Madeira Cerezo



Madeira Embero Gris

Finishes: matte
Thickness: 3mm.3+mm.3+3mm.3+3+3mm.

Sizes
(Madeira Collection special sizes)

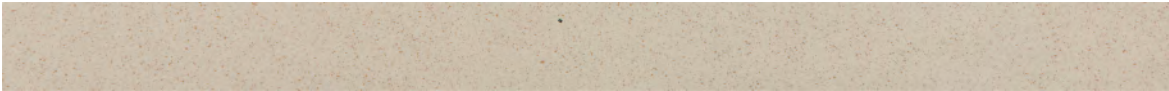


100x300cm

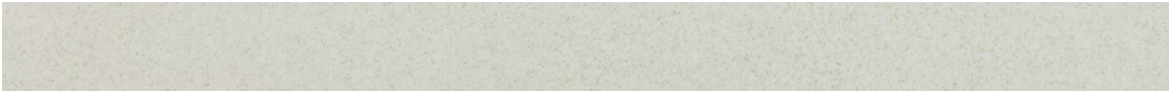


20x100cm

BLIZZARD Collection



Blizzard Capuccino



Blizzard Neu



Blizzard Grey



Blizzard Cendra



Blizzard Black

Finishes: matte
Thickness: 3mm.3+mm.3+3mm.3+3+3mm.

Sizes



100x300cm



100x100cm



50x100cm



50x50cm



30x50cm

The TECHLAM® 3+ system of ventilated façades which can be used in new-build or restoration projects is composed of TECHLAM® 3+ fixed to a metal substructure using adhesive and mechanical fixings.

The substructure consists of vertical aluminium profiles and their fixings intended to be placed on flat and vertical surfaces, made of brick, cement, metal or wood structures.

Below we present four fixing systems for TECHLAM® 3+ and the aluminium substructure. These four systems are:

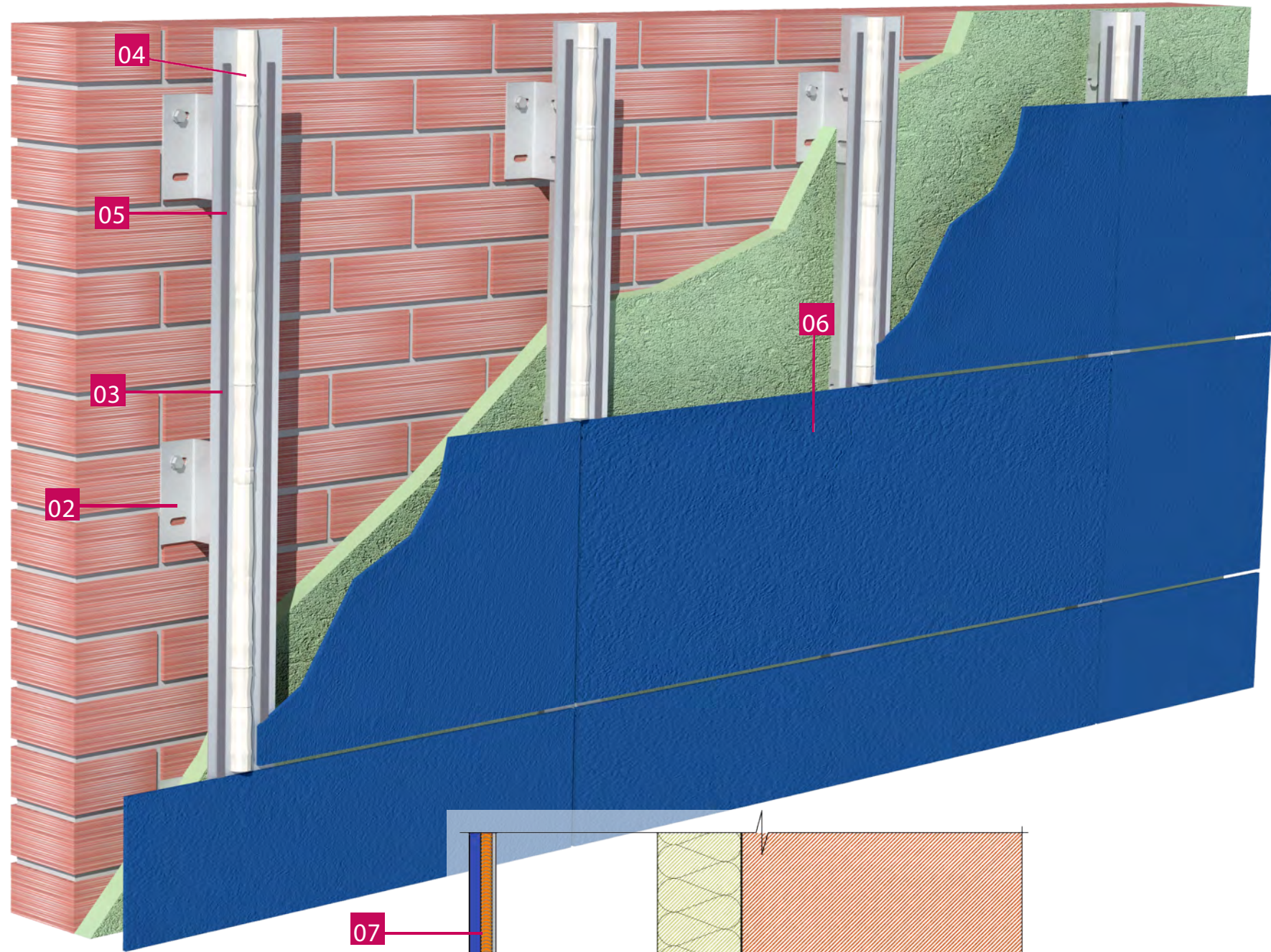
QD – DIRECT CHEMICAL FIXING

RQ – CHEMICAL HOLDING SYSTEM

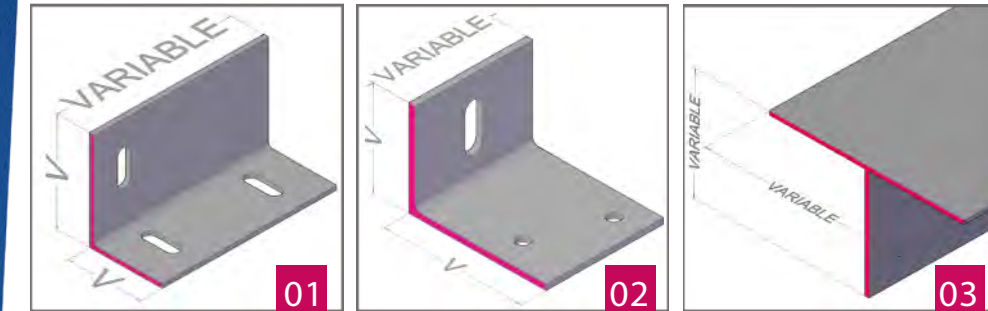
RQAM - CHEMICAL HOLDING SYSTEM + MECHANICAL SUPPORT

RMAM - MECHANICAL HOLDING SYSTEM + MECHANICAL SUPPORT

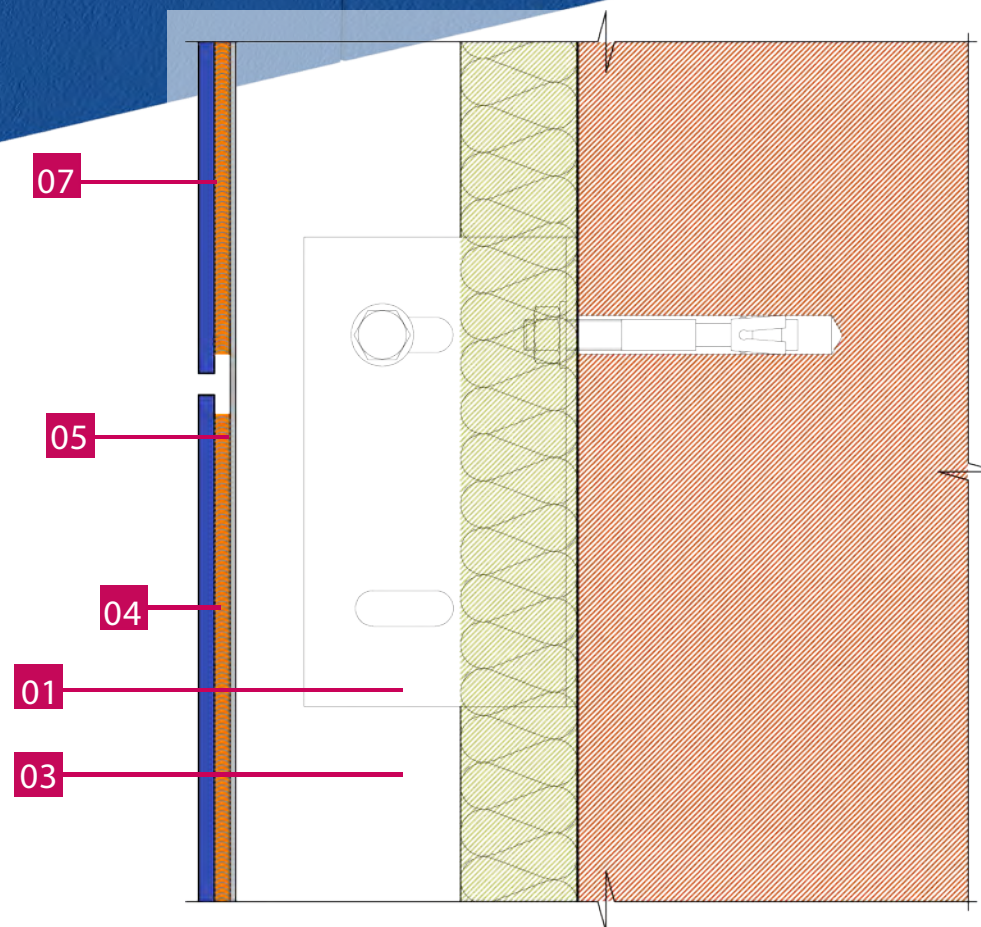


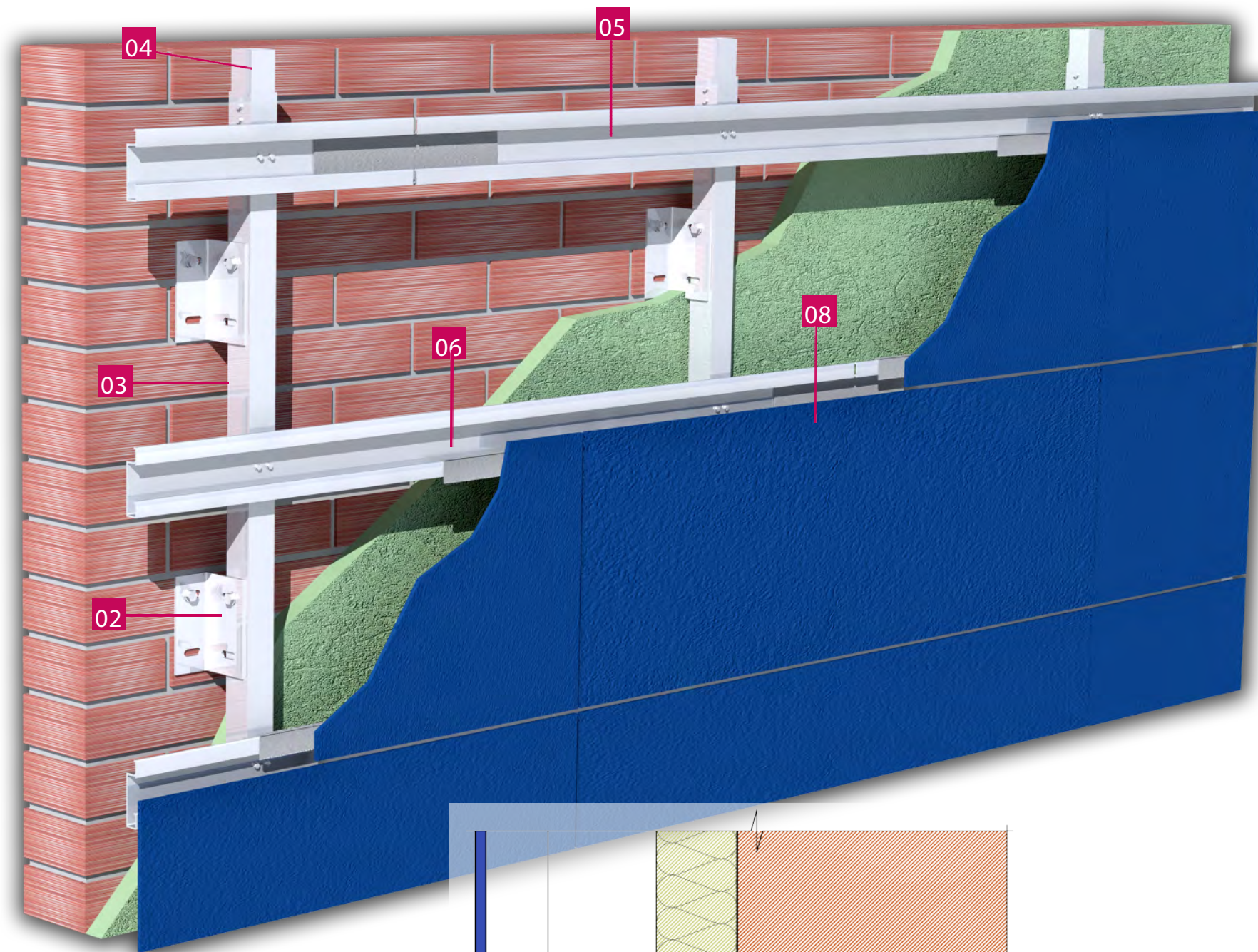


QD - DIRECT CHEMICAL FIXING

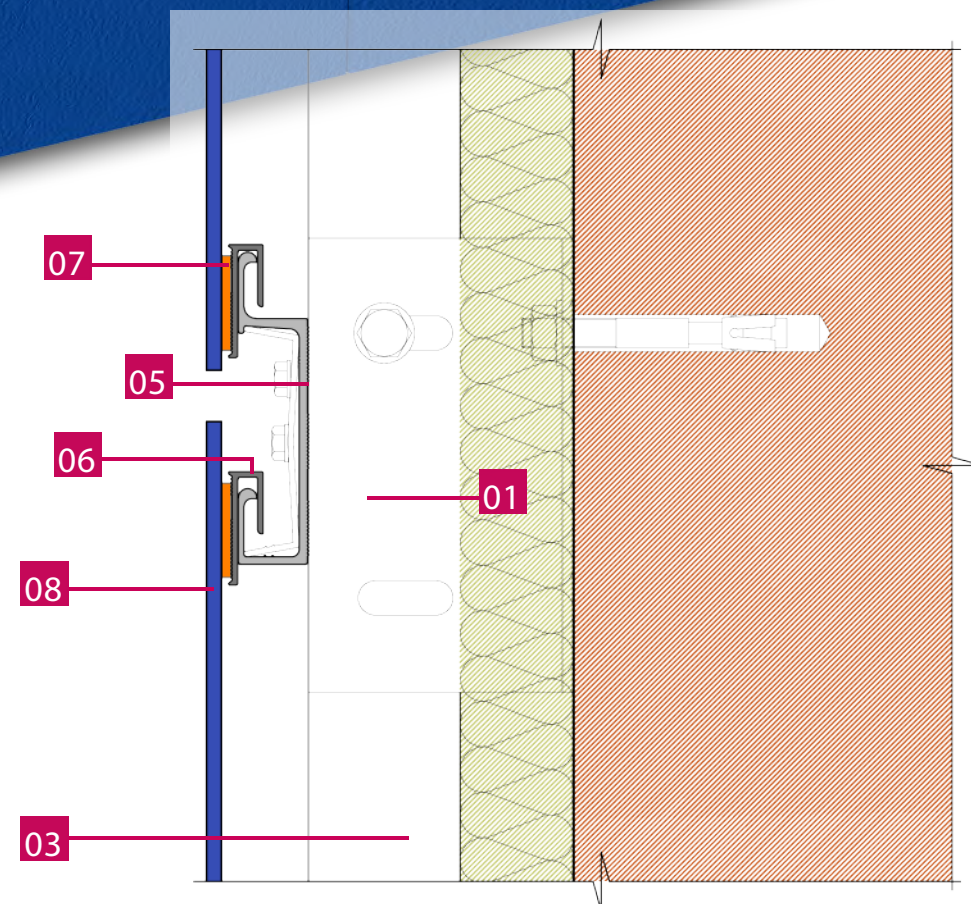
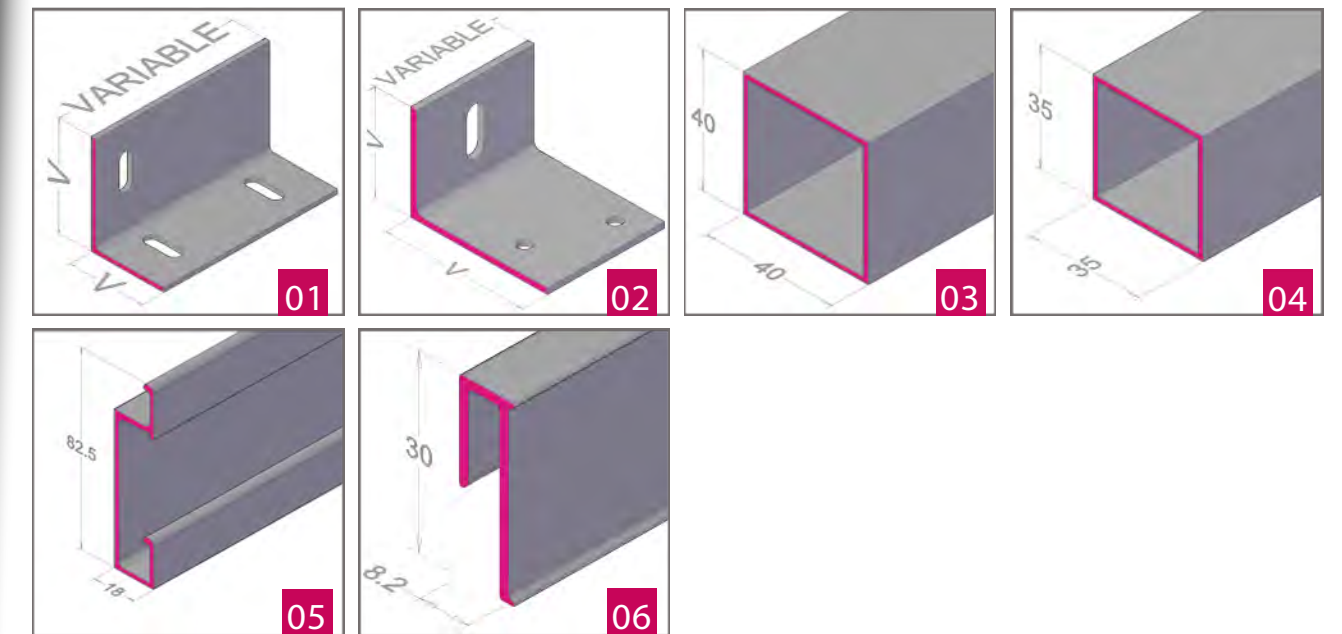


- 01. SUPPORT Bracket
- 02. RETENTION Bracket
- 03. Vertical T Profile
- 04. BOSTIK SIMSON Adhesive
- 05. Double-sided tape
- 06. TECHLAM® 3+ sheet

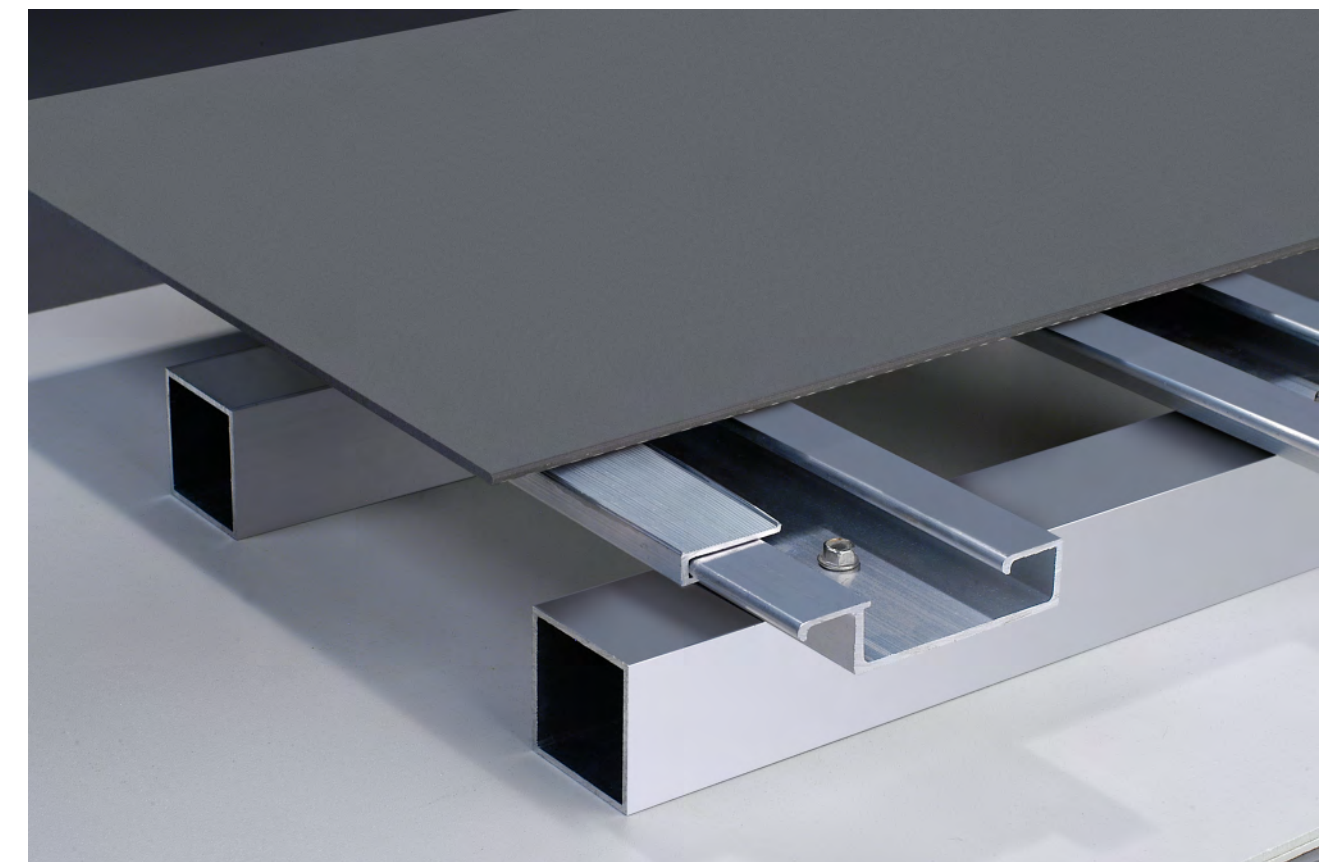


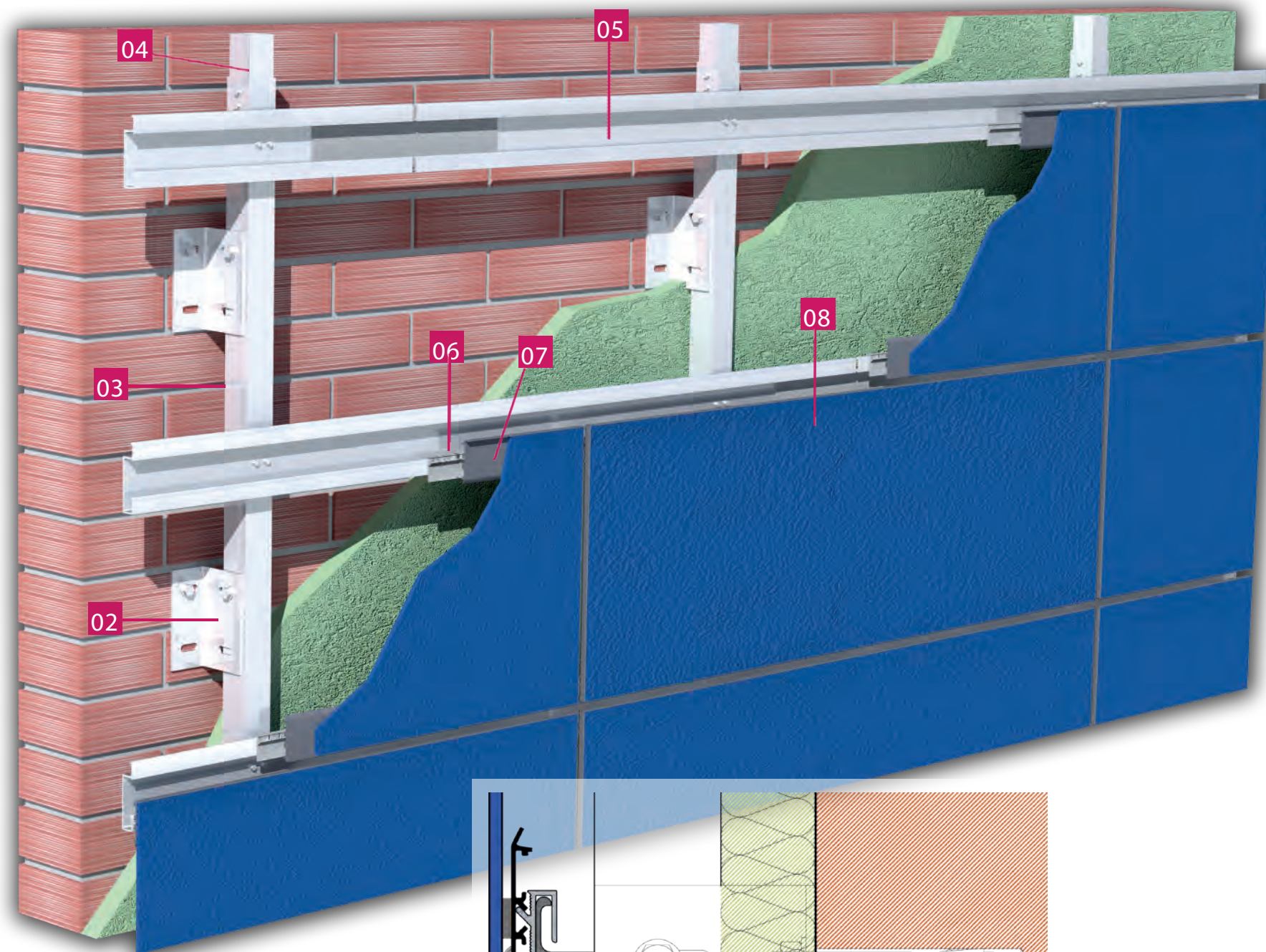


RQ - CHEMICAL HOLDING SYSTEM

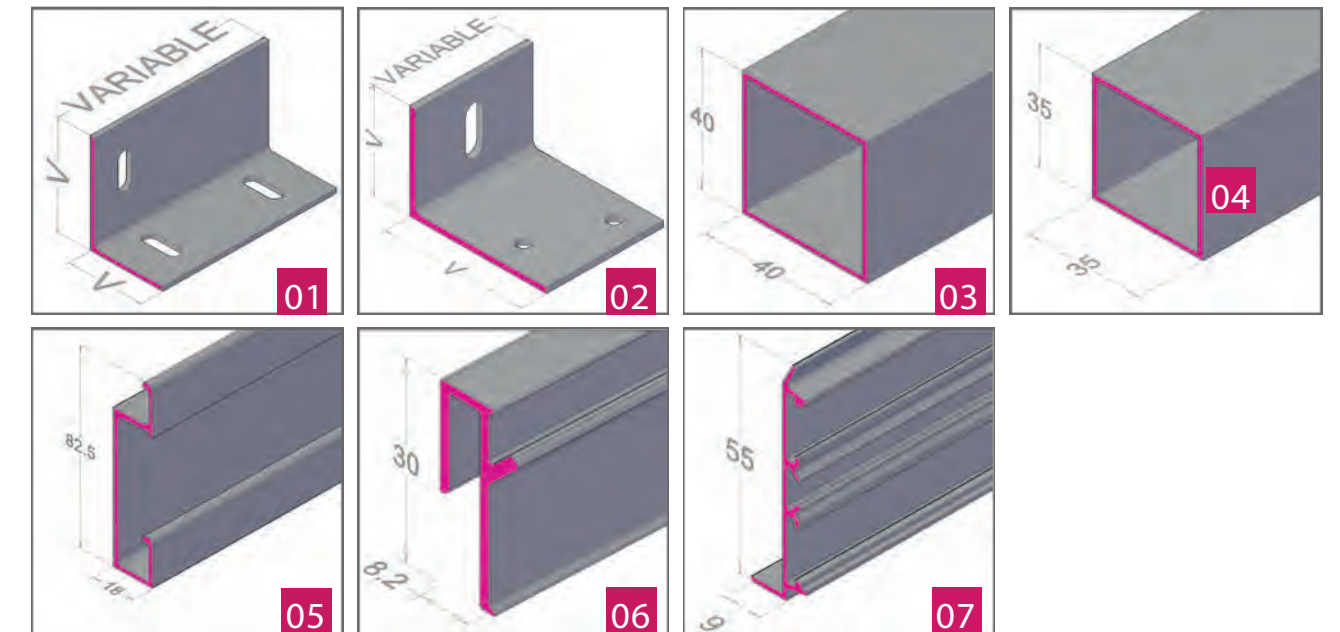


- 01. SUPPORT Bracket
- 02. RETENTION Bracket
- 03. Vertical T 40 Profile
- 04. Vertical T 35 Profile
- 05. HORIZONTAL Profile
- 06. Profile WITHOUT RETENTION
- 07. BOSTIK SIMSON Adhesive
- HM PANEL TACK
- 08. TECHLAM® 3+ sheet

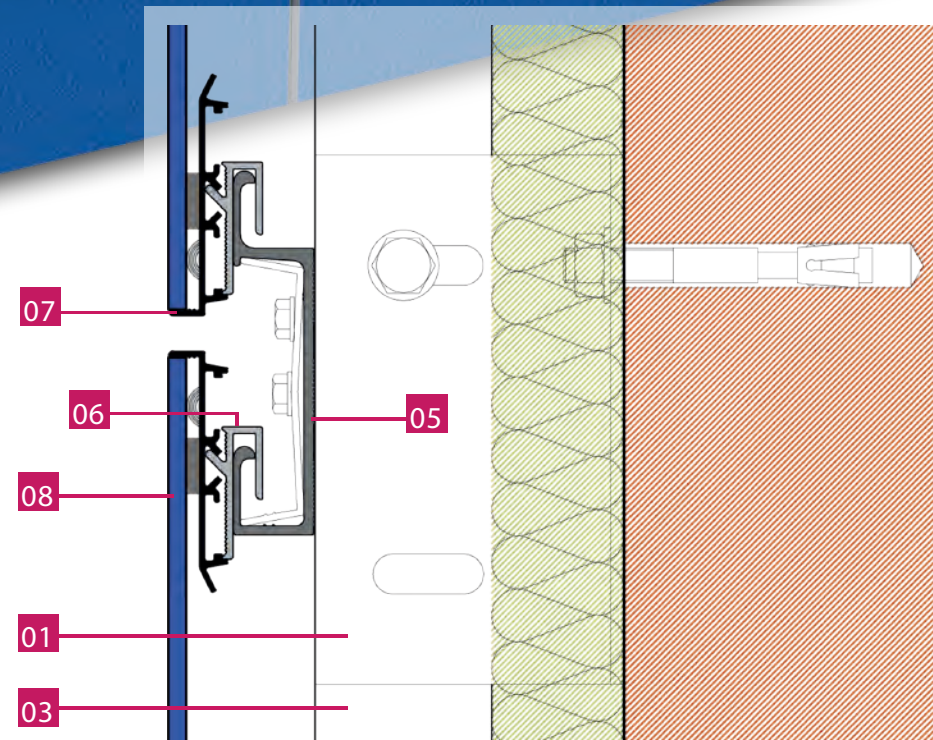


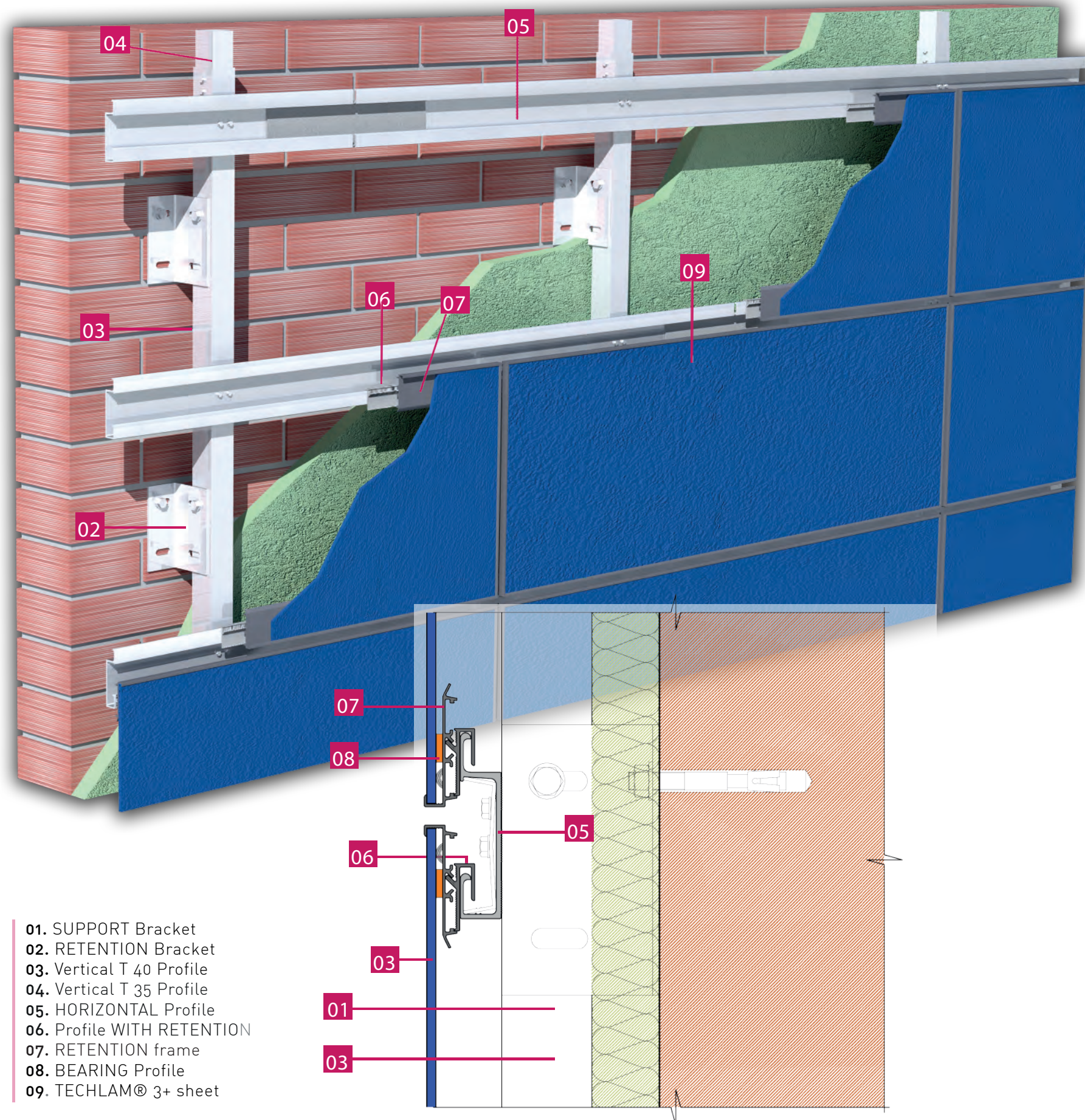


RQAM - CHEMICAL HOLDING SYSTEM + MECHANICAL SUPPORT

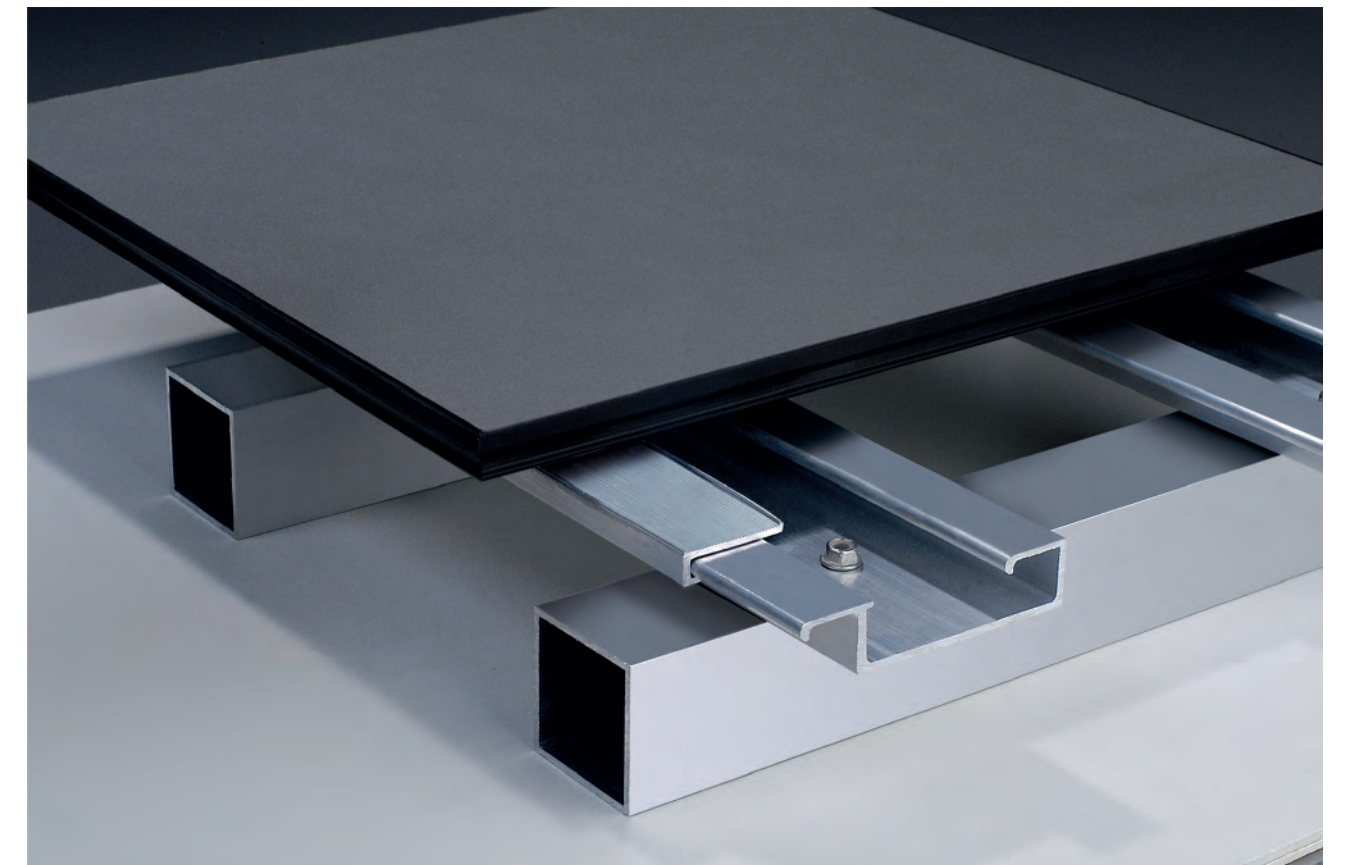
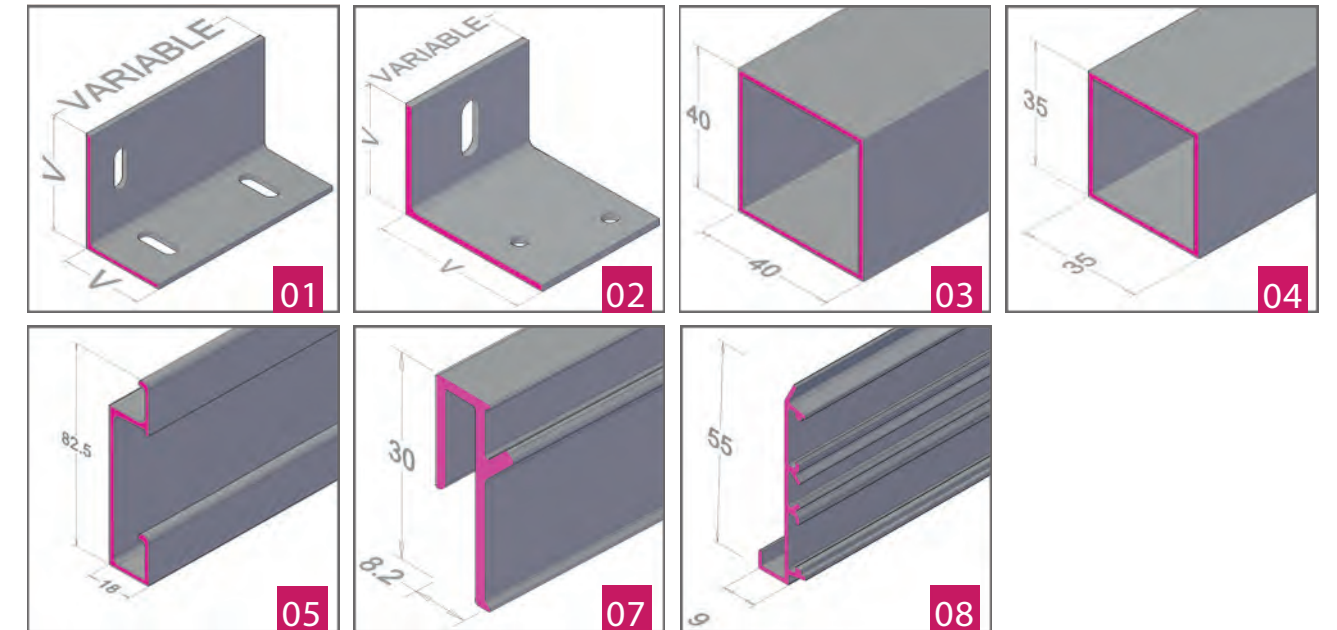


- 01. SUPPORT Bracket
- 02. RETENTION Bracket
- 03. Vertical T 40 Profile
- 04. Vertical T 35 Profile
- 05. HORIZONTAL Profile
- 06. Profile "7" WITH RETENTION
- 07. BEARING Profile
- 08. TECHLAM® 3+ sheet





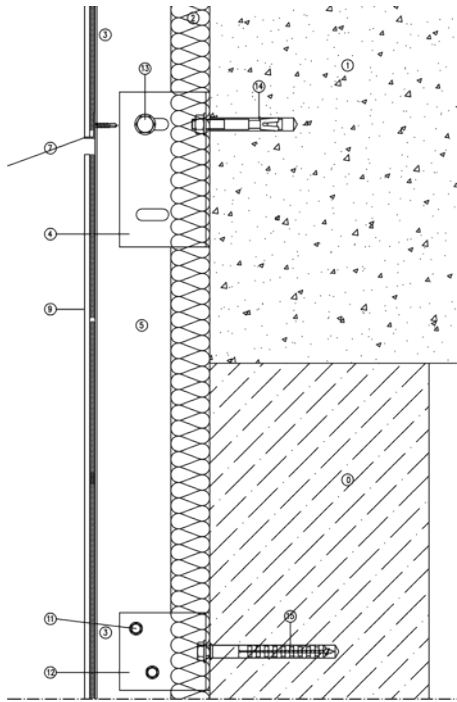
RMAM - MECHANICAL HOLDING SYSTEM + MECHANICAL SUPPORT



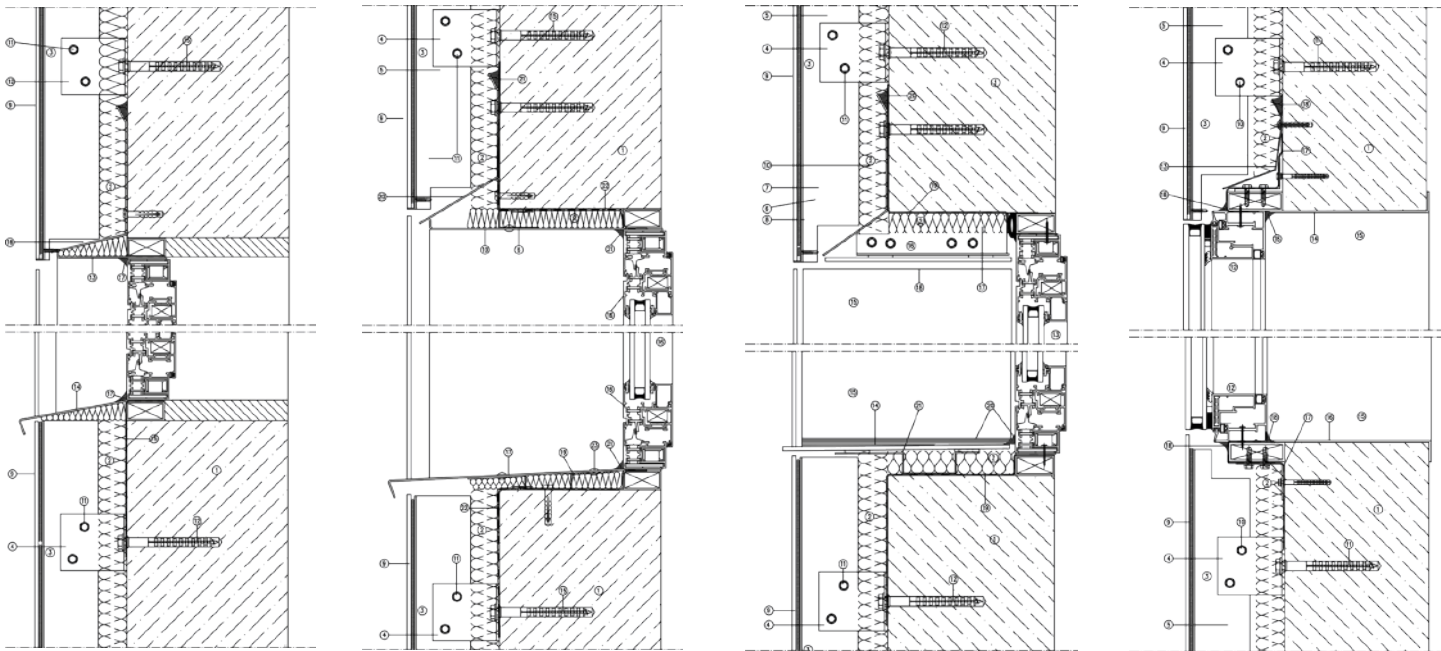
TECHNICAL DOCUMENTATION INCLUDED

It has all the necessary construction details for each of the fixing models to carry out your VENTILATED FAÇADE building project with TECHLAM®. They are available in either DWG or PDF format.

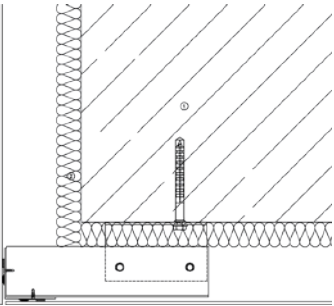
- Details of fixings
- Detail of cladding join
- Detail for parapets
- Details for external corners
- Details of the frames
- 4 Details of horizontals (studs)
- 4 Details of verticals (lintels and flashing boards)
- Perspective application to cladding
- General section with corner finishes
- Details of PCO 1200 profile assembly
- Plans for finding details



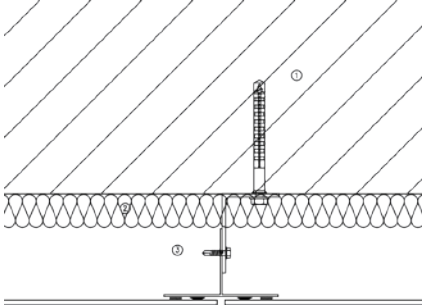
FIXING DETAIL



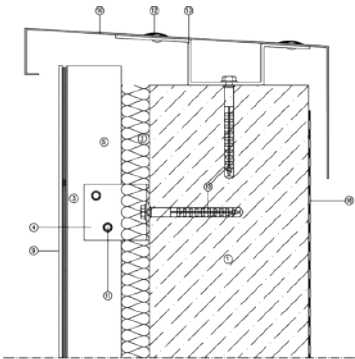
DETAILS OF THE FRAMES IN LINTELS AND FLASHING BOARDS



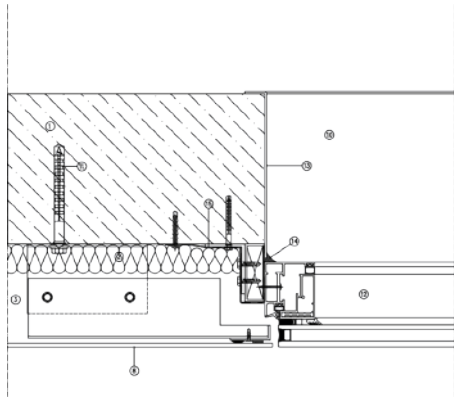
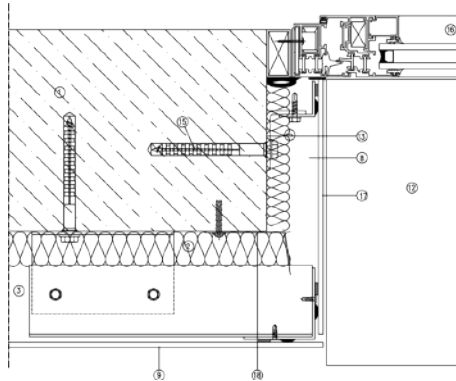
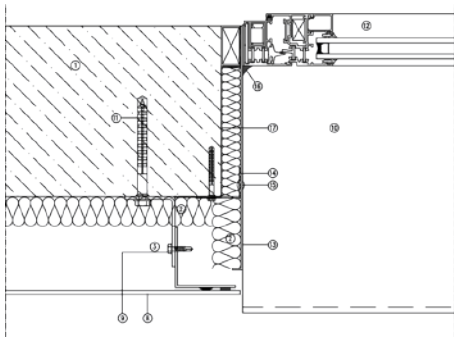
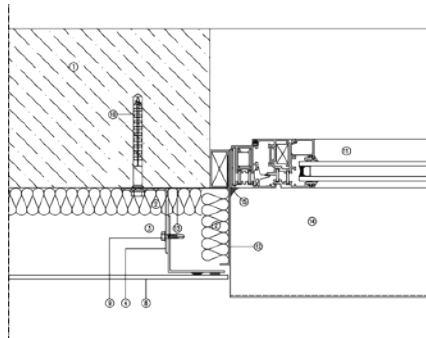
DETAIL FOR EXTERNAL CORNER



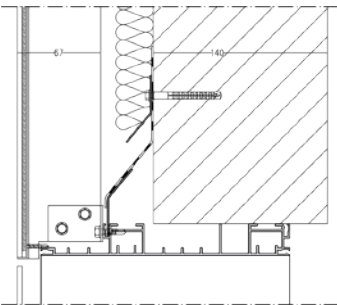
DETAIL OF CLADDING JOIN



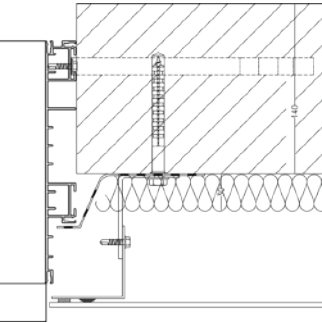
DETAIL FOR PARAPETS



DETAILS OF STUDS FRAMES



DETAILS OF PCO 1200 PROFILE ASSEMBLY





COMPLIANCE WITH NATIONAL LAWS

Structural safety

The cladding system of ventilated façades described does not contribute to the stability of the building and the Basic Requirements of Structural Safety do not therefore apply to it. The structural behaviour of the ventilated façade must be such that it does not compromise compliance with the rest of the Basic Requirements and in particular those of Safety of Use and Occupation, as indicated in the Law on Building Planning: “Safety of use, so that normal use of the building does not involve a risk of an accident to people” (art.3.1.b.3.) and other functional aspects of the building elements or the facilities which allow satisfactory use of the building” (art.3.1.c.4.). The support of the ventilated façade system , usually composed of an enclosing wall, must comply with the regulations relating to the relevant essential requirements of structural safety, taking into consideration the actions and stresses caused by installing the ventilated façade. The join between the substructure of the system and the subsequent enclosure must be planned so that the extreme tensions limit and the limit of durability values are not exceeded during the period of use.

Safety in case of fire

The construction of the enclosure, including the insulation, must comply with the TCB, Basic Document on Safety in case of fire (BD-SF), in which it refers to stability when faced with fire, as well as the reaction to fire of the other materials used.

In accordance with the Decision of the EU 96/603, the ceramic cladding material is classified as A1, without the need for tests, so it complies with the requirement in TCB-BD-SF relating to the exterior spread of fire (SF, point 1.4) for the exterior cladding materials of the façade and the interior surfaces of the ventilated chambers of the façade. The cladding material has a reaction to fire classification superior to that required by the regulation.

Safety of use

In the lower areas of the façade, e.g. ground floors next to areas accessible to the public and when the risk of impact is low or zero, it is recommended that the panels be fixed with mortar or else have an intermediate complementary crossbeam (not to be included in the calculation of the action of wind).

Health

The supporting wall of the ventilated façade system must guarantee the minimum level of impermeability required for the building it is incorporated in, as described in the Technical code for Building TCB-BD-HS relating to health in order to satisfy the basic requirement for protection against damp (HS 1). As the system is described in the Technical Report, the ventilated air chamber can be considered “a very highly resistant barrier to water leaks” (B3) as described in TCB-BD-HS, HS1, section 2.3.2. In any case special attention will have to be paid in the design of the façades to incorporating windows and lighting elements as well as the correct solution to specific points, the exterior fixings, etc. to achieve appropriate impermeability at these points so as to avoid the accumulation and leaking of water.

Acoustic Protection

The complete enclosure solution and especially the support element plus the insulation must conform with the requirements in the TCB-BD-HS relating to acoustic protection. The construction solution of the meeting point of the façades with the vertical separation elements will have to be studied so that the transmission of noise through the sides is avoided.

Energy saving

The complete enclosure building solution must satisfy the requirements of the Technical Code for Building TCB-BD-HS, relating to energy saving, as far as hygrothermic behaviour is concerned. “In calculating thermal transmission, as set out in Appendix E of the TCB-BD-HS, the air chamber will be treated as a “chamber of very ventilated air” and the total thermal resistance of the enclosure can be obtained disregarding the thermal resistance of the air chamber and the other layers between the air chamber and the exterior environment and including a superficial exterior resistance corresponding to calm air, equal to the superficial interior resistance of the same element (HE-1, Appendix E).”

Tests of adhesion strength ceramic

Tables of results after tests:

ENVIRONMENT: 21 days at 23°C and 55% R.H. 70°C: 21 days at 70°C

WATER: 21 days immersed in water at room temperature

CYCLES 1: Cycles of 70°C + room temperature + immersion in water

CYCLES 2: Cycles of immersion in water + room temperature + 70°C

	AMBIENT	70 °C	WATER	CYCLES 1 70°+23°+water	CYCLES 2 water+23°C+70°C
Without Primer	29,7 Kg/cm	35,6 Kg/cm	24,5 Kg/cm	30,1 Kg/cm	32,8 Kg/cm
With Primer	30,2 Kg/cm	37,8 Kg/cm	24,1 Kg/cm	30,3 Kg/cm	31,8 Kg/cm

These adhesion strength tests confirm the enormous resistance of the adhesive on the ceramic tile in real conditions of use.

Tests of adhesion strength – ceramic with mesh backing + PU

Tables of results after tests:

ENVIRONMENT: 21 days at 23°C and 55% R.H 70°C:. 21 days at 70°C

WATER: 21 days immersed in water at room temperature

CYCLES 1: Cycles of 70°C + room temperature + immersion in water

	AMBIENT	70 °C	WATER	CYCLES 1 70°+23°+water	CYCLES 2 water+23°C+70°C
Without Primer	33,5 Kg/cm	37,1 Kg/cm	18,9 Kg/cm	30,1 Kg/cm	17,4 Kg/cm
With Primer	34,1 Kg/cm	36,8 Kg/cm	25,3 Kg/cm	30,3 Kg/cm	31,2 Kg/cm

These adhesion strength tests confirm the enormous resistance of the adhesive on the ceramic tile in real conditions of use reinforced with a combination of fibre glass netting + PU.

Resistance to wind

This system has been tested on a façade bench submitted to RESISTANCES TO SUCTION AND PRESSURE LOADS FROM THE WIND according to DRAFETAG 034 with sheets of TECHLAM® 3+, and the results were positive and within the limits.

On the other hand, in the RESISTANCE TO IMPACT test the façade complies with category III use.

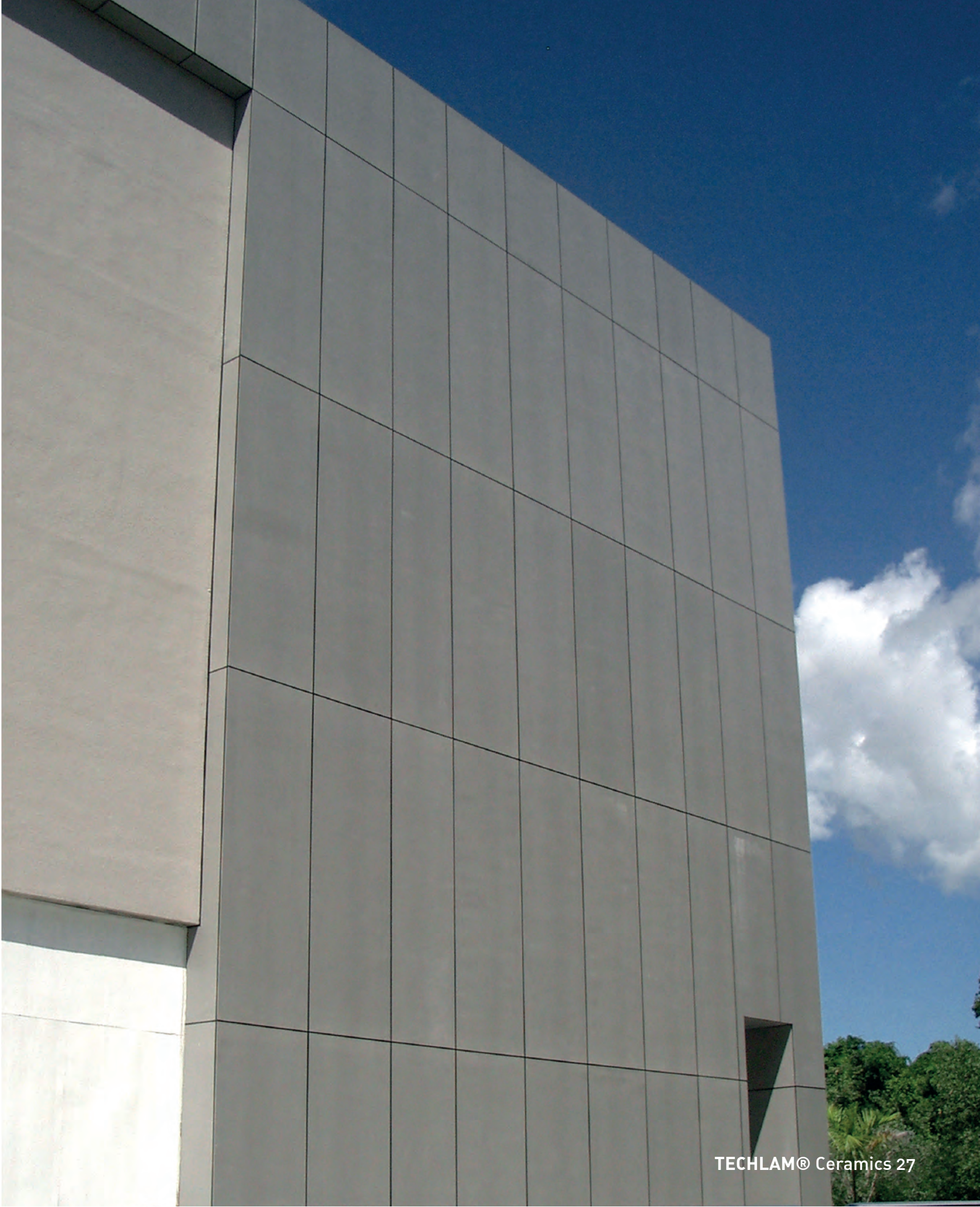
STRUCTURAL CALCULATION

The actions on the Ventilated Façade system were calculated according to TCB-BDSC-HS -AE relating to Building Actions with the load increase coefficients of actions in TCB-BD-SE relating to Structural Safety.

For the calculation of the system it is considered that the ceramic sheets must support the load of the wind (pressure/suction) and transmit it together with its own weight across the substructure and the fixings to the support. The ceramic sheets, fixings, substructure and fasteners must withstand the forces produced by the wind, as well as its own weight.

For buildings of up to 30m and for the limitations in TCB-BD- SE-AE relating to the action of the wind these were determined according to the Basic Document mentioned above using the wind coefficients of pressure and suction in Appendix D of the Basic Document (table D.1) as a function of the slenderness of the building and the position of the sheet, considering as an area of influence that of the panel itself.

For greater heights and/or for those cases outside the field of application of the Basic Document or when actions of the wind are predicted to be over those considered in TCB-BD- SE-AE it will be necessary to carry out a specific study to determine the actions of the wind as well as the wind coefficients of pressure/ suction.



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