



TECHNICAL DATA

Ornimat ■ Decoboard ■
Puro Plus ■ Colormat

EXPORT



Table of contents

MATERIAL DATA	4
1. ORNIMAT – ETA 14/0284	4
1.1 PRODUCTION	4
1.2 SURFACE AND EDGE FINISHING	4
1.3 COLOUR RANGE	4
1.4 GUARANTEE	4
1.5 DIMENSIONS AND TOLERANCES	4
1.6 TECHNICAL CHARACTERISTICS	5
1.7 QUALITY	5
1.8 SPECIFIC ADVANTAGES OF ORNIMAT	5
1.9 TRANSPORTATION, STORAGE AND HANDLING	6
2. DECOBOARD – ETA 14/0284	7
2.1 PRODUCTION	7
2.2 SURFACE AND EDGE FINISHING	7
2.3 COLOUR RANGE	7
2.4 GUARANTEE	7
2.5 DIMENSIONS AND TOLERANCES	7
2.6 TECHNICAL CHARACTERISTICS	8
2.7 QUALITY	8
2.8 SPECIFIC ADVANTAGES OF DECOBOARD	8
2.9 TRANSPORTATION, STORAGE AND HANDLING	9
3. PURO PLUS – ETA 14/0284	10
3.1 PRODUCTION	10
3.2 SURFACE FINISHING	10
3.3 GUARANTEE	10
3.4 DIMENSIONS AND TOLERANCES	11
3.5 TECHNICAL CHARACTERISTICS	11
3.6 QUALITY	12
3.7 SPECIFIC ADVANTAGES OF PURO PLUS	12
3.8 TRANSPORTATION, STORAGE AND HANDLING	13
4. COLORMAT – ETA 14/0284	14
4.1 PRODUCTION	14
4.2 SURFACE AND EDGE FINISHING	14
4.3 COLOUR RANGE	14
4.4 GUARANTEE	14
4.5 DIMENSIONS AND TOLERANCES	15
4.6 TECHNICAL CHARACTERISTICS	15
4.7 QUALITY	15
4.8 SPECIFIC ADVANTAGES OF COLORMAT	15
4.9 TRANSPORTATION, STORAGE AND HANDLING	16
5. COLORMAT BANDO – ETA 14/0284	17
5.1 PRODUCTION	17
5.2 SURFACE AND EDGE FINISHING	17
5.3 COLOUR RANGE	17
5.4 GUARANTEE	17
5.5 DIMENSIONS AND TOLERANCES	18
5.6 TECHNICAL CHARACTERISTICS	18
5.7 QUALITY	18
5.8 SPECIFIC ADVANTAGES OF COLORMAT	18
5.9 TRANSPORTATION, STORAGE AND HANDLING	19
GENERAL GUIDELINES	20
1. EXECUTION	20
1.1 GENERAL	20
1.2 CUT TO SIZE PANELS	20
1.3 GENERAL TIPS FOR WORKING	20
1.4 DRILLING	21
1.5 SAWING	21
1.6 HEALTH AND SAFETY	21

2. PROTECTION AND MAINTENANCE	22
2.1 PROTECTION	22
2.2 MAINTENANCE	22

EXECUTION FACADE CLADDINGS **23**

1. SCOPE OF APPLICATION	23
2. CONSTRUCTION ASPECTS	23
2.1 VENTILATED FACADE WITH OPEN HORIZONTAL JOINTS	23
3. EXECUTION - FACADE	24
3.1 SUBFRAME	24
3.2 THERMAL INSULATION	29
3.3 VENTILATION – WATER RETENTION	29
3.4 PANEL CLADDING	30
3.5 FIXING FACADE PANELS	32
3.6 NAILS – STAPLES	38
3.7 JOINTS – FINISHING – PROFILES	39
3.8 KIT	40
3.9 PRODUCT FOR FINISHING THE PANEL EDGES	40
3.10 EXCEPTIONAL EXPOSURE OF THE PANELS	40
4. EXECUTION CEILING CLADDING	41
4.1 PRINCIPLE	41
4.2 SUPPORTING FRAME	41
4.3 INSULATION	42
4.4 VENTILATION	42
4.5 PANEL CLADDING	43

FIGURES **44**

1. PRINCIPLE – TIMBER BATTENS	44
1.1 SINGLE VERTICAL SUB-FRAME, BATTENS FIXED DIRECTLY ON INNER CAVITY SKIN	45
1.2 SINGLE VERTICAL SUB-FRAME, BATTENS MOUNTED ON SUPPORT BRACKETS	47
1.3 SINGLE VERTICAL SUB-FRAME, BATTENS MOUNTED ON ADJUSTABLE SCREWS	49
1.4 VISIBLE FRAMING - DOUBLE SUB-FRAME, PROFILES AND BATTENS FIXED DIRECTLY ON THE INTERNAL CAVITY SKIN	51
1.5 INVISIBLE FRAMING - DOUBLE SUB-FRAME, PROFILES AND BATTENS FIXED DIRECTLY ON THE INTERNAL CAVITY SKIN	53
2. PRINCIPLE – METAL SUB-FRAME – RIVETS	55
2.1 SINGLE VERTICAL SUB-FRAME WITH BRACKETS	56
3. PRINCIPLE – METAL SUB-FRAME - SCREWS	58
3.1 SINGLE VERTICAL SUB-FRAME WITH BRACKETS	59
4. DOUBLE SUB-FRAME – INVISIBLE MECHANICAL FIXING WITH UNDERCUT ANCHOR	61
5. CEILING CLADDING – SINGLE TIMBER SUB-FRAME WITH SUPPORT BRACKETS	63

ANNEX I – GUIDE VALUES FOR SUPPORT AND FIXING DISTANCES **64**

1. UNITED KINGDOM	64
2. IRELAND	67

ANNEX II – IMPACT RESISTANCE **70**

The aim of these technical data is to provide information about the SVK façade cladding panels and how to install them. They do not relieve the executor of his responsibility concerning the application of the materials. SVK cannot be held responsible for mistakes made during manipulation and placement of the materials.

Details regarding the sub-frame, fasteners and other products / accessories are merely informative and not binding. We advise you to always gather information from the manufacturer or supplier of these products, and to follow their recommendations.

SVK façade cladding panels must always be installed in compliance with the national and/or local building regulations and guidelines. If these do not comply with the SVK guidelines, SVK must be contacted before the work starts.

Our product guarantee is only valid if the placement is executed following our most recent technical data. They are available on request or www.svk.be.

MATERIAL DATA

1. ORNIMAT – ETA 14/0284

1.1 PRODUCTION

Ornimat panels are manufactured from a homogeneous mixture of Portland cement, selected reinforcement fibres, additives and water. This mixture is transmitted in thin layers under constant pressure to a format roller by means of a sieve cylinder machine (Hatschek) until the required panel thickness is obtained. The panels are double pressed and harden at least 4 weeks under normal atmospheric conditions. Subsequently they are extra dried to minimize the dimensional movements.

1.2 SURFACE AND EDGE FINISHING

The front side is finished with a ground layer and 1 finish layer of a high-quality and durable, UV-resistant, two-component polyurethane painting system with a uniform matt look. On the backside a water based coating is provided. The edges are mechanically painted together with the panel surface.

- The front side is flat and smooth.
- The panels are not directional, they can be placed in the longitudinal or transversal direction of the panel.
- A grey coloured coating is applied on the backside of the Ornimat panels.
- Both panel sides can be finished with the same colour coating on request (please contact our sales department for more details).
- For panels with mechanical fixing, the apertures are pre-drilled according to the customer's instructions.
- For eventual further treatment of the edges see § 1.1 "General Guidelines – Execution"

1.3 COLOUR RANGE

The Ornimat colour range consist of the series Essentials, Elements and starting from 50m² in the Inspiration gamma almost all RAL and NCS colours are possible.

SVK is entitled to remove or add colours without prior warning. The colour is measured according CieLab. The tolerance is: $\Delta E^* \pm 1,00$.

1.4 GUARANTEE

SVK provides a guarantee on the Ornimat panels if the materials are handled according to the best practice of the trade and conform with our given prescriptions regarding storage, handling and cleaning and this is for normal use in a normal atmospherical environment.

Tampering of the Ornimat panels and fastening of objects on the Ornimat panels fall beyond the guarantee domain of the panels. Please apply for our specimen guarantee certificate in case you wish to obtain further details.

1.5 DIMENSIONS AND TOLERANCES

Ornimat is always delivered squared, cut to size.

The panels meet the requirements of **Tolerance Level I** as per norm EN 12467.

Dimensions	
Maximum format	3070 x 1220 mm
Thickness	8 mm

Tolerances Ornimat	
Length	± 1,5 mm
Width	± 1,5 mm
Straightness	0,1 %
Squareness	2 mm/m
Thickness	± 10 %

1.6 TECHNICAL CHARACTERISTICS

Ornimat panels comply with the prescriptions of European standard EN 12467 “Fibre-cement flat panels – Product specification and test methods”.

Physical characteristics		Norm
Density – oven dry	≥ 1.700 kg/m ³	EN 12467
Bending strength	Class 5 (≥ 24 MPa)	EN 12467
Modulus of Elasticity (wet)	14.000 MPa	EN 12467
Moisture movement (30-90 %)⊥	0,5 mm/m	EN 12467
Moisture movement (30-90 %) //	0,4 mm/m	EN 12467
Water impermeability	no water drops	EN 12467
Durability		
Class	A	EN 12467
Resistance to frost	R _f ≥ 0,75	EN 12467
Resistance to warm water	R _f ≥ 0,75	EN 12467
Resistance to wet-dry	R _f ≥ 0,75	EN 12467
Resistance to heat rain	pass	EN 12467
Reaction to fire		
Fire reaction class	A2-s1, d0	EN 13501-1
Weight	± 14,6 kg/m ²	

1.7 QUALITY



Produits bardage rapportés
<http://evaluation.cstb.fr>

CSTB
84 avenue Jean Jaurès -
Champs sur Marne
F-77447 Marne-la-Vallée



ETA 14/0284



Ornimat, Decoboard, Puro Plus
2.2/14-1645_V2 publié 19/12/2017

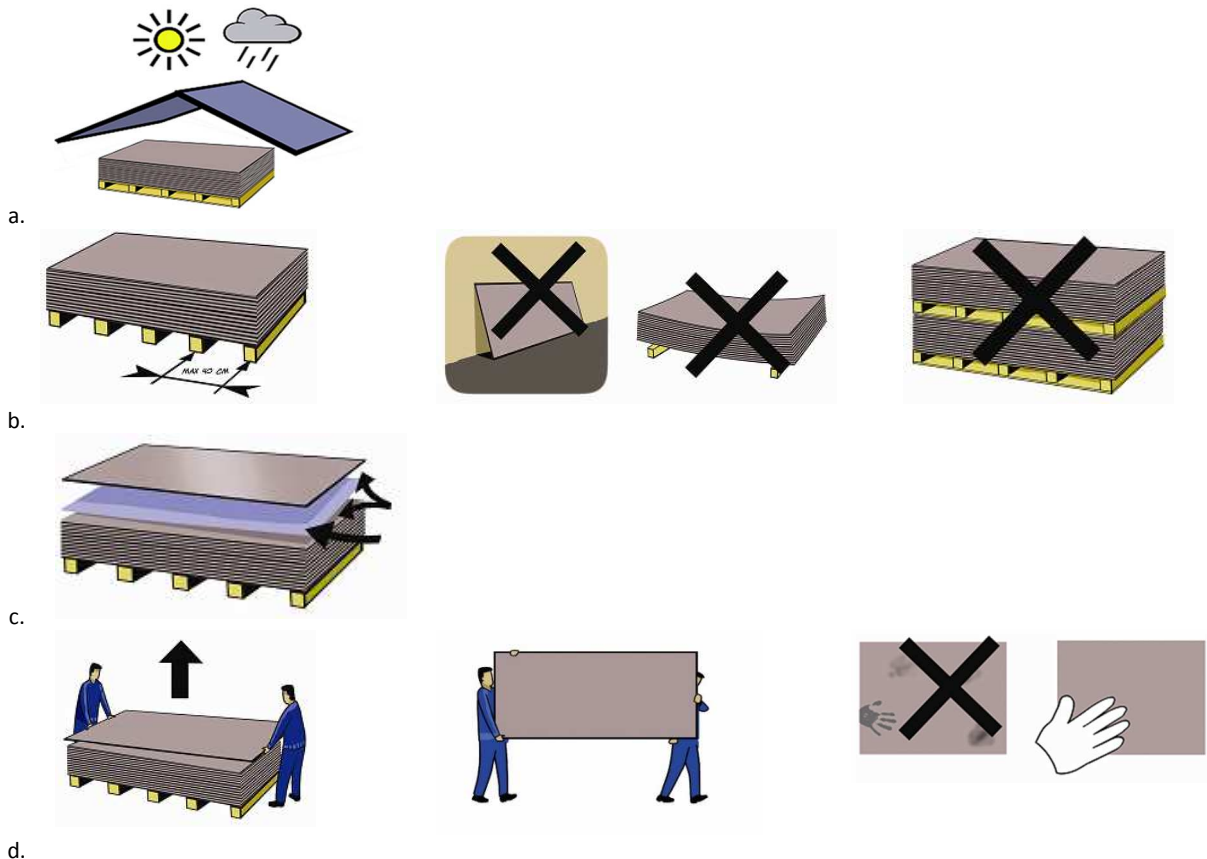


1.8 SPECIFIC ADVANTAGES OF ORNIMAT

- Environmentally sound water based painting system.
- Chemical resistance: resistant to alkalis and diluted acids.
- Resistant to micro-organisms, fungi, microbes, insects etc.
- Non-combustible, limited smoke production.
- Unique delivery concept: Ornimat is delivered cut to size. The panel edges are mechanically painted. There is no need to cut out apertures, openings and special shapes on the construction site. In case the panels are installed with mechanical fixing, the apertures are pre-drilled at the factory, according to the customer's instructions. On the site the panels only have to be mounted. This provides a number of specific advantages: exact sizing; perfect finishing; no expensive cutting waste; no additional cutting for the installer; no need to paint edges on the site.
- Convenient packaging method: A clear and convenient delivery also allows the panels to be easily placed. That is the reason why SVK offers the following service:
 - Panel marks mentioned on the order are indicated on the backside of the panel.
 - The distribution of the panels over various pallets can be adapted to the customer's wishes, as long as this is feasible. In this case, SVK will indicate which panel is to be found in which pack.

1.9 TRANSPORTATION, STORAGE AND HANDLING

- a. SVK Ornimat facade panels are **supplied on pallets, wrapped in foil**. This foil does not provide sufficient protection from weather conditions (rain, condensation and bright sunlight). **The panels must be protected until they are installed.** Respect closely the next prescriptions:
 - SVK Ornimat facade panels must be transported under a watertight canvas.
 - The panels must be stored indoors.
 - Limit the storage period on site to the time that is needed to execute the work and keep the packaging closed until the moment the panels will be installed. If it is impossible to store the panels inside, carefully cover the panels with a vapor-open, watertight canvas and protect them from precipitation and heavy sunshine. Also prevent the panels from becoming wet or dirty due to condensation, water absorption, dust or any other kind of pollution.
 - In case the panels have become wet in the package, dry them as soon as possible. Panels that are stored in wet conditions are not covered by our guarantee policy.
- b. Ornimat panels are always stored horizontally, on an even and dry subsoil, clear of the ground.
 - Use racks, pallets or supporting laths with a maximal distance of 400mm.
 - The panels must be supported sufficiently so that they cannot deform.
 - Never stack Ornimat pallets on each other.
- c. During the packing of the Ornimat panels SVK protects the finished surface of the panels by placing the panels with their front side facing each other. **Between the front sides lies a protective foil.**
 - Always leave this foil between the panels, until the moment they are installed.
 - In case the panels are restacked, always replace the protective foil between the panels.
- d. **Be careful** when transporting or handling the panels, in order not to damage the decorative finishing layer.
 - Lift the panels with two people, without dragging them or moving them over the panel below.
 - Carry them in a vertical position.
 - Avoid staining and wear woolen gloves when lifting the panels.
 - Avoid stains of glue, silicone, polyurethane foam as these can leave irremovable stains.
 - Do not stick labels, tape of any type of adhesive tape on the decorative surface of the panels. These can leave glue residue on the panel and could affect the decorative surface.
- e. Whilst transporting and handling Ornimat facade panels, the legislation related to mobile work equipment for hauling and lifting loads must be respected at all times.



2. DECOBOARD – ETA 14/0284

2.1 PRODUCTION

Decoboard panels are manufactured from a homogeneous mixture of Portland cement, selected reinforcement fibres, additives and water. This mixture is transmitted in thin layers under constant pressure to a format roller by means of a sieve cylinder machine (Hatschek) until the required panel thickness is obtained. The panels are double pressed and hardened at least 4 weeks under normal atmospheric conditions. Subsequently they are extra dried to minimize the dimensional movements.

2.2 SURFACE AND EDGE FINISHING

The front side of the Decoboard panels is finished with a high-quality and durable water based acrylic paint system with a uniform matt look and an enhanced UV resistance. A water based coloured protection layer is applied on the backside of the Decoboard panels. See § 1.1 “General – Execution” for eventual treatment of the edges after cutting.

2.3 COLOUR RANGE

Decoboard Classic

The Decoboard Classic range consists of 4 standard colours. For larger quantities, Decoboard Classic is also available in the Inspiration range in almost all RAL and NCS colours.

The colour deviation is measured according CieLab. The tolerance is: $\Delta E^* \pm 1,00$.

Decoboard Pure

The Decoboard Pure range is semi-transparent finished. The cement structure remains in greater or lesser extent visible through the finishing layer. The panels are directional, the tint of the panels is not uniform and can slightly differ between panels. The range consists of 4 standard colours. Also the presence of small variations (inclusions) in the panel surface belongs to the normal aspect of the panel.

SVK is entitled to remove or add colours without prior warning.

2.4 GUARANTEE

SVK provides a guarantee on the Decoboard panels if the materials are handled according to the best practice of the trade and conform with our given prescriptions regarding storage, handling and cleaning and this is for normal use in a normal atmospheric environment.

Tampering of the Decoboard panels and fastening of objects on the panels fall beyond the guarantee domain of the panels. Please apply for our specimen guarantee certificate in case you wish to obtain further details.

2.5 DIMENSIONS AND TOLERANCES

Decoboard panels are delivered squared or non-squared. Non-squared panels must be squared before installation.

The squared panels meet the requirements of **Tolerance Level I** as per norm EN 12467. For Tolerance Level II (non-squared) see norm EN12467.

Dimensions	Squared	Non-squared
Standard formats	3.070 x 1.220 mm	3.085 x 1.235 mm
	2.520 x 1.220 mm	2.535 x 1.235 mm
Thickness	8 mm	8 mm

Tolerances Decoboard	Squared
Length	± 1,5 mm
Width	± 1,5 mm
Straightness	0,1 %
Squareness	2 mm/m
Thickness	± 10 % e

2.6 TECHNICAL CHARACTERISTICS

Decoboard panels comply with the prescriptions of European standard EN 12467 “Fibre-cement flat panels – Product specification and test methods”.

Physical characteristics		Norm
Density – oven dry	≥ 1.700 kg/m ³	EN 12467
Bending strength	Class 5 (≥ 24 MPa)	EN 12467
Modulus of Elasticity (wet)	14.000 MPa	EN 12467
Moisture movement (30-90 %) ⊥	0,7 mm/m	EN 12467
Moisture movement (30-90 %) //	0,6 mm/m	EN 12467
Water impermeability	no water drops	EN 12467
Durability		
Class	A	EN 12467
Resistance to frost	R _L ≥ 0,75	EN 12467
Resistance to warm water	R _L ≥ 0,75	EN 12467
Resistance to wet-dry	R _L ≥ 0,75	EN 12467
Resistance to heat rain	Pass	EN 12467
Reaction to fire		
Fire reaction class	A2-s1, d0	EN 13501-1
Weight		
	± 14,6 kg/m ²	
2.535x1.235mm	± 45,71 kg	
3.085x1.235mm	± 55,63 kg	

2.7 QUALITY



Produits bardage rapportés
<http://evaluation.cstb.fr>

CSTB
84 avenue Jean Jaurès -
Champs sur Marne
F-77447 Marne-la-Vallée



ETA 14/0284



Ornimat, Decoboard, Puro Plus
2.2/14-1645_V2 publié 19/12/2017

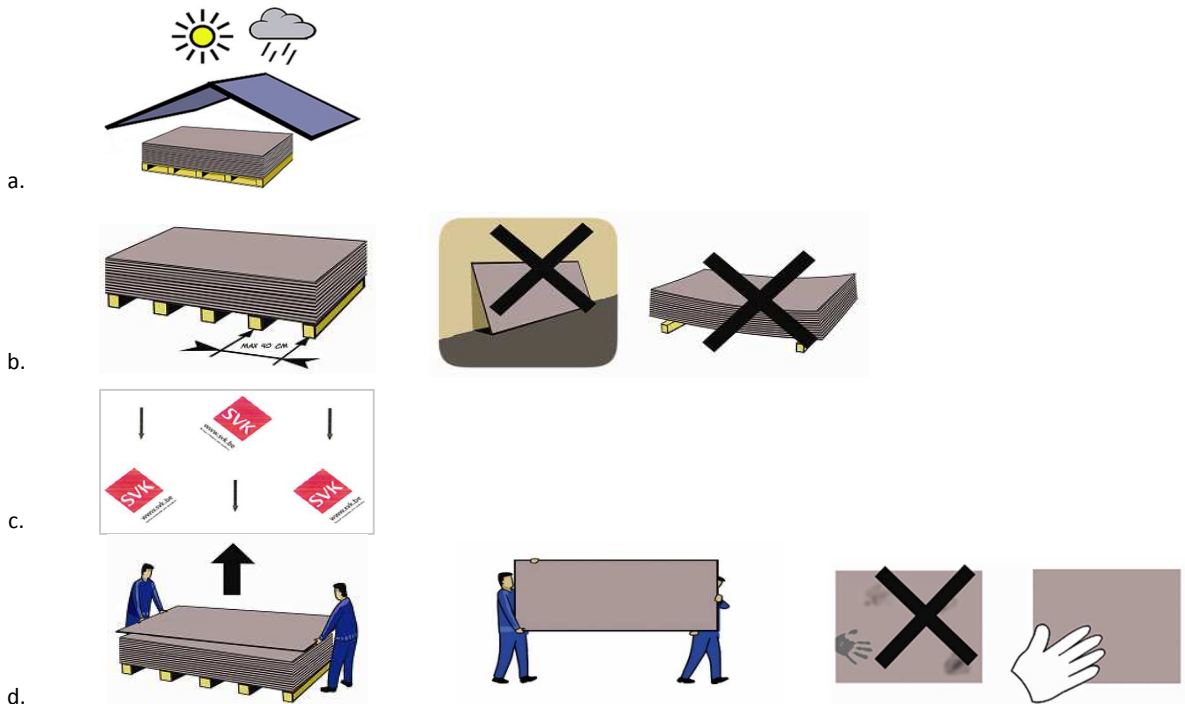


2.8 SPECIFIC ADVANTAGES OF DECOBOARD

- Environmentally sound water based painting system.
- Chemical resistance: resistant to alkalis and diluted acids.
- Resistant to micro-organisms, fungi, microbes, insects etc.
- Non-combustible, limited smoke production.

2.9 TRANSPORTATION, STORAGE AND HANDLING

- a. SVK Decoboard facade panels are **supplied on pallets, wrapped in foil**. This foil does not provide sufficient protection from weather conditions (rain, condensation and bright sunlight). **The panels must be protected until they are installed.** Respect closely the next prescriptions:
 - SVK Decoboard facade panels must be transported under a watertight canvas.
 - The panels must be stored indoors.
 - Limit the storage period on site to the time that is needed to execute the work and keep the packaging closed until the moment the panels will be installed. If it is impossible to store the panels inside, carefully cover the panels with a vapor-open, watertight canvas and protect them from precipitation and heavy sunshine. Also prevent the panels from becoming wet or dirty due to condensation, water absorption, dust or any other kind of pollution.
 - In case the panels have become wet in the package, dry them as soon as possible. Panels that are stored in wet conditions are not covered by our guarantee policy.
- b. Decoboard panels are always stored horizontally, on an even and dry subsoil, clear of the ground.
 - Use racks, pallets or supporting laths with a maximal distance of 400mm.
 - The panels must be supported sufficiently so that they cannot deform. Maximum 3 pallets stacked on each other.
- c. SVK protects the finished surface of the Decoboard panels by placing a protective adhesive foil on the front side of the panel
 - The production direction is shown on the foil.
 - The foil protects the panels against pollution and damage during transport, storage and handling. Despite the protective foil additional care must be taken:
 - Avoid big temperature fluctuations. Especially heat can affect the foil.
 - Limit the storage period.
 - **Remove the protective foil:**
 - For visible fixing systems before the panels are framed.
 - For invisible fixing systems directly after the panels are placed.
 - If the foil is exposed to the weather conditions (heat, rain, condensation) for a prolonged duration the foil could bubble up with the risk of water/condensation infiltrating between the foil and surface which could lead to stains on the panel surface.
- d. **Be careful** when transporting or handling the panels, in order not to damage the decorative finishing layer.
 - Lift the panels with two people, without dragging them or moving them over the panel below.
 - Carry them in a vertical position.
 - Avoid staining and wear woolen gloves when lifting the panels.
 - Avoid stains of glue, silicone, polyurethane foam as these can leave irremovable stains.
 - Do not stick labels, tape of any type of adhesive tape on the decorative surface of the panels. These can leave glue residue on the panel and could affect the decorative surface.
- e. Whilst transporting and handling Decoboard facade panels, the legislation related to mobile work equipment for hauling and lifting loads must be respected at all times.



3. PURO PLUS – ETA 14/0284

3.1 PRODUCTION

Puro Plus panels are manufactured from a homogeneous mixture of Portland cement, selected reinforcement fibres, additives and water. This mixture is transmitted in thin layers under constant pressure to a format roller by means of a sieve cylinder machine (Hatschek) until the required panel thickness is obtained. The panels are double pressed and harden at least 4 weeks under normal atmospheric conditions. Subsequently they are extra dried to minimize the dimensional movements.

3.2 SURFACE FINISHING

The Puro Plus panels are natural grey, calibrated and lightly sanded panels which know all the advantages of fibre cement. They combine a ventilated façade cladding with the industrial appearance of cementitious panels. During the sanding a discrete line-pattern is formed. Sanding makes the panels directional. The direction is noted by the direction of the production stamp on the back side and the arrows on the protective foil on the front side of the panels. The panels are untreated, they show the honest and natural appearance of fibre cement and are characterised by their natural ageing.

As the panels are untreated they are susceptible to the typical cementitious surface phenomena as shades of grey, these underline the natural character of the material. Because differences in colour nuances are possible, it is highly recommended to order the panels for a continuous surface in one time, such to minimize the differences. Even so uniformity of the colour cannot be guaranteed.

Also the presence of small variations (inclusions) in the panel surface belongs to the normal aspect of the panel. Under certain circumstances efflorescence might occur.

These phenomena are not necessarily immediately visible but might even after passing of time, after installation, become visible.

Important measures to this matter are to ensure a dry, ventilated storage of the panels (is not allowed to store the panels outside, not even under a watertight canvas), always process (drill or saw) the panels dry and immediately remove the drill or sawing dust from the panels. Cement dust that is left on the surface attaches itself firmly in the pores and causes unwanted visual effects on the panels after their exposure to weather circumstances.

The intensity of the efflorescence will diminish with time under influence of the weather. As this is a very slow process it is difficult to predict the total duration before the panels will get a more uniform appearance. This depends on the severity of the efflorescence and the degree of influence of the weather.

The removal of efflorescence is not easy, therefore it is advisable to initially not take any action. However if result in short term is desired the easiest way is to manually (without electric tools) remove the efflorescence by lightly sanding the panels with an open sponge, for instance „Scotch-Brite 3M 7447“ or equivalent and rinse the chalk dust away. The sanding has to happen in linear movement, circular movements could fixate the created dust in the pores which could lead to efflorescence again. Chances remain however that panels treated this way, might show again efflorescence in the future and that the appearance of the panel might slightly change.

These aesthetic phenomena of the panel surface belong to the normal aspect of the panel and cannot be considered as a shortcoming. With time these effects will largely even out by patination. They do not affect the intrinsic properties of the panels in any way. The panels comply in regards to the mechanical and physical requirements and durability with the prescriptions of the European Standard EN 12467 “Fibre-cement flat panels – Product specification and test methods.”

3.3 GUARANTEE

SVK provides a guarantee on the Puro Plus panels if the materials are handled according to the best practice of the trade and conform with our given prescriptions regarding storage, handling and cleaning and this is for normal use in a normal atmospheric environment.

Tampering of the Puro Plus panels and fastening of objects on the Puro Plus panels fall beyond the guarantee domain of the panels. Please apply for our specimen guarantee certificate in case you wish to obtain further details.

3.4 DIMENSIONS AND TOLERANCES

Puro Plus panels are delivered squared or non-squared.
Non-squared panels must be squared before installation.

The squared panels meet the requirements of **Tolerance Level I** as per norm EN 12467.
For Tolerance Level II (non-squared) see norm EN 12467.

Dimensions	Squared	Non-squared
Standard formats	3.070 x 1.220 mm	3.085 x 1.235 mm
	2.520 x 1.220 mm	2.535 x 1.235 mm
Thickness	8 mm	8 mm

Tolerances Puro Plus	Squared
Length	± 1,5 mm
Width	± 1,5 mm
Straightness	0,1 %
Squareness	2 mm/m
Thickness	± 10 % e

3.5 TECHNICAL CHARACTERISTICS

Puro Plus panels comply with the prescriptions of European standard EN 12467 “Fibre-cement flat panels – Product specification and test methods”.

Physical characteristics		Norm
Density – oven dry	≥ 1.700 kg/m ³	EN 12467
Bending strength	Class 4 (≥ 18 MPa)	EN 12467
Modulus of Elasticity (wet)	14.000 MPa	EN 12467
Moisture movement (30-90 %) ⊥	1,2 mm/m	EN 12467
Moisture movement (30-90 %) //	1,0 mm/m	EN 12467
Water impermeability	no water drops	EN 12467

Durability		
Class	A	EN 12467
Resistance to frost	R _f ≥ 0,75	EN 12467
Resistance to warm water	R _f ≥ 0,75	EN 12467
Resistance to wet-dry	R _f ≥ 0,75	EN 12467
Resistance to heat rain	pass	EN 12467

Reaction to fire		
Fire reaction class	A2-s1, d0	EN 13501-1

Weight	
	± 14,6 kg/m ²
2.535x1.235mm	± 45,71 kg
3.085x1.235mm	± 55,63 kg

3.6 QUALITY



Produits bardage rapportés
<http://evaluation.cstb.fr>

CSTB
84 avenue Jean Jaurès -
Champs sur Marne
F-77447 Marne-la-Vallée



ETA 14/0284

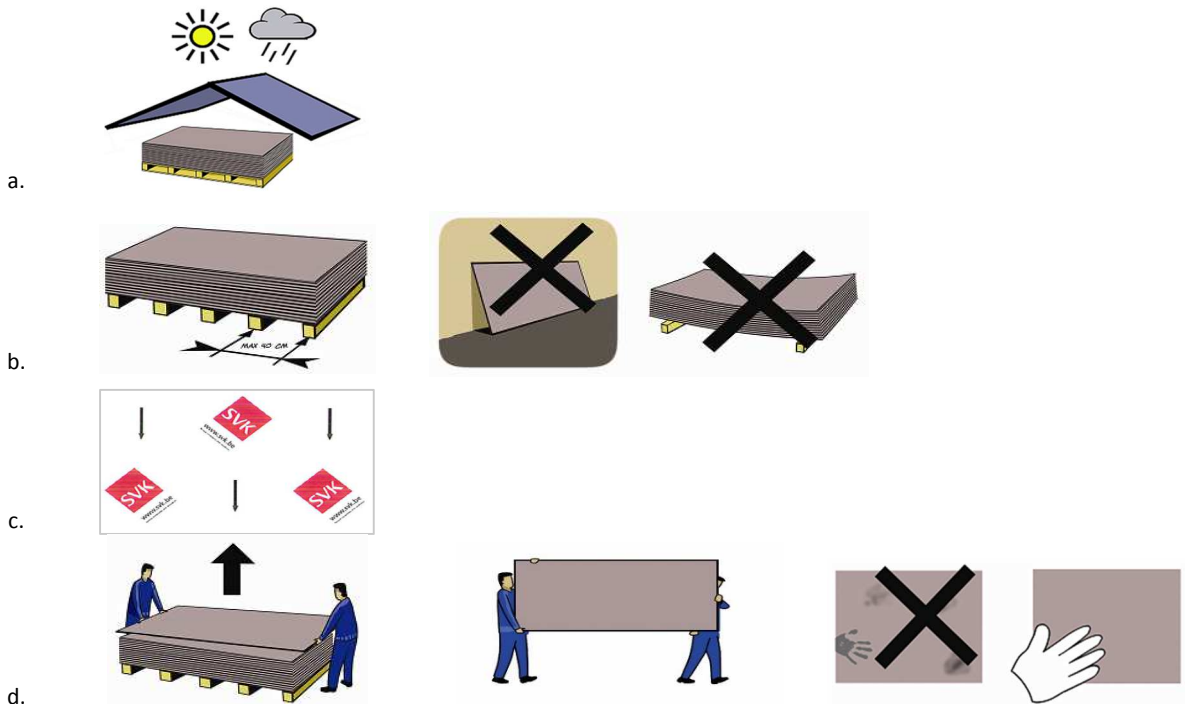


3.7 SPECIFIC ADVANTAGES OF PURO PLUS

- Resistant to micro-organisms, fungi, microbes, insects etc.
- Non-combustible, limited smoke production.

3.8 TRANSPORTATION, STORAGE AND HANDLING

- a. SVK Puro Plus facade panels are **supplied on pallets, wrapped in foil**. This foil does not provide sufficient protection from weather conditions (rain, condensation and bright sunlight). **The panels must be protected until they are installed.** Respect closely the next prescriptions:
 - SVK Puro Plus facade panels must be transported under a watertight canvas.
 - The panels must be stored indoors.
 - **Also on the construction site the panels must be stored dry.** It is not allowed to store the panels outside, not even under a canvas. Storing panels in humid locations increases the risk of bending of the panel surface.
 - Limit the storage period on site to the time that is needed to execute the work and keep the packaging closed until the moment the panels will be installed.
 - Prevent the panels from becoming wet or dirty due to condensation, water absorption, dust or any other kind of pollution.
 - The standard guarantee is only applicable on panels stored in conformity with these guidelines.
- b. Puro Plus panels are always stored horizontally, on an even and dry subsoil, clear of the ground.
 - Use racks, pallets or supporting laths with a maximal distance of 400mm.
 - The panels must be supported sufficiently so that they cannot deform. Maximum 3 pallets stacked on each other.
- c. SVK protects the finished surface of the Puro Plus panels by placing a protective adhesive foil on the front side of the panel
 - The production direction is shown on the foil.
 - The foil protects the panels against pollution and damage during transport, storage and handling. Despite the protective foil additional care must be taken:
 - Avoid big temperature fluctuations. Especially heat can affect the foil.
 - Limit the storage period.
 - **Remove the protective foil:**
 - For visible fixing systems before the panels are fixed.
 - For invisible fixing systems directly after the panels are placed.
 - If the foil is exposed to the weather conditions (heat, rain, condensation) for a prolonged duration the foil could bubble up with the risk of water/condensation infiltrating between the foil and surface which could lead to stains on the panel surface.
- d. **Be careful** when transporting or handling the panels, in order not to damage the finishing layer.
 - Lift the panels with two people, without dragging them or moving them over the panel below.
 - Carry them in a vertical position.
 - Avoid staining and wear woolen gloves when lifting the panels.
 - Avoid stains of glue, silicone, polyurethane foam as these can leave irremovable stains.
 - Do not stick labels, tape of any type of adhesive tape on the decorative surface of the panels. These can leave glue residue on the panel and could affect the decorative surface.
- e. Whilst transporting and handling Puro Plus facade panels, the legislation related to mobile work equipment for hauling and lifting loads must be respected at all times.



4. COLORMAT – ETA 14/0284

4.1 PRODUCTION

Colormat panels are manufactured from a homogeneous mixture of Portland cement, selected reinforcement fibres, additives and water. This mixture is transmitted in thin layers under constant pressure to a format roller by means of a sieve cylinder machine (Hatschek) until the required panel thickness is obtained. After the pressing process the panels are autoclaved.

4.2 SURFACE AND EDGE FINISHING

The Colormat panels are characterised by their natural appearance typical of fibre cement, with colour variations and inclusions. The inclusions themselves can be among others in black, white, red or grey colour and belong to the normal aspect of the panels.

The panels are finished with a transparent impregnation making the panels hydrophobic. The impregnation agent will degrade with time under influence of the weather conditions. Because of the degradation the hydrophobic effect of the impregnation will decay however this has no negative influence on the intrinsic properties and quality of the panels. Surface where the hydrophobing agent is damaged will be visible as this location will absorb more moisture than the remaining part where the hydrophobing agent is intact.

Due to potentially excessive hydrophobic agent, the edges of the Colormat façade panels may appear white. This impacts only the aesthetics aspect of the panels and if desired, can be removed by sanding the edges.

Colormat panels may change in appearance over time as a result of colour loss. The degree of loss is dependent on pigment type, dark colours (dark grey, black) are more susceptible to colour loss. The degree of discoloration depends on the environmental factors such as the location, orientation, UV exposure, air pollution, etc.

These aesthetic phenomena of the panel surface belong to the normal aspect of the panel and cannot be considered as a shortcoming. They do not affect the intrinsic properties of the panels in any way. The panels comply in regards to the mechanical and physical requirements and durability with the prescriptions of the European Standard EN 12467 “Fibre-cement flat panels – Product specification and test methods.”

See § 1.1 “General – Execution” for eventual treatment of the edges after cutting.

Colormat Classic

The Colormat Classic panels are coloured through-and-through and are slightly sanded. This sanding process results in the appearance of a slight superficial line pattern. Sanding makes the panels directional. The direction is noted by the direction of the production stamp on the back side of the panels. Colormat Classic has a nuanced, natural appearance typical of fibre cement.

Colormat Scripto

The Colormat Scripto panels are coloured through-and-through and have a unique look by additional sanding. This sanding process results in the appearance of a clear line pattern. Sanding makes the panels directional. The direction is noted by the direction of the production stamp on the back side of the panels. Colormat Scripto has a nuanced, natural appearance typical of fibre cement.

4.3 COLOUR RANGE

Colormat Classic and Scripto are available in 4 standard and 8 project colours.

SVK is entitled to remove or add colours without prior warning.

Because differences in colour are possible, we suggest to order the panels for a continuous façade in one time, such to minimize the differences. However the uniformity of the colour cannot be guaranteed.

4.4 GUARANTEE

SVK provides a guarantee on the Colormat panels if the materials are handled according to the best practice of the trade and conform with our given prescriptions regarding storage, handling and cleaning and this is for normal use in a normal atmospherical environment.

Tampering of the Colormat panels and fastening of objects on the Colormat panels fall beyond the guarantee domain of the panels. Please apply for our specimen guarantee certificate in case you wish to obtain further details.

4.5 DIMENSIONS AND TOLERANCES

Colormat is delivered squared.

The panels meet the requirements of **Tolerance Level I** as per norm EN 12467.

Dimensions	Squared
Standard formats	3.050 x 1.220 mm
	2.500 x 1.220 mm
Thickness	8 mm

Tolerances Colormat	Squared
Length	± 2 mm
Width	± 2 mm
Straightness	0,1 %
Squareness	2 mm/m
Thickness	± 10 % e

4.6 TECHNICAL CHARACTERISTICS

Colormat panels comply with the prescriptions of European standard EN 12467 “Fibre-cement flat panels – Product specification and test methods”.

Physical characteristics		Norm
Density – oven dry	≥ 1.600 kg/m ³	EN 12467
Bending strength	Class 5 (≥ 24 MPa)	EN 12467
Modulus of Elasticity (wet)	12.000	EN 12467
Moisture movement (30-90 %) ⊥	0,7 mm/m	EN 12467
Moisture movement (30-90 %) //	0,8 mm/m	EN 12467
Water impermeability	no water drops	EN 12467

Durability		
Class	A	EN 12467
Resistance to frost	R _L ≥ 0,75	EN 12467
Resistance to warm water	R _L ≥ 0,75	EN 12467
Resistance to wet-dry	R _L ≥ 0,75	EN 12467
Resistance to heat rain	pass	EN 12467

Reaction to fire		
Fire reaction class	A2-s1, d0	EN 13501-1

Weight	
2.500x1.220mm	± 43,92 kg
3.050x1.220mm	± 53,58 kg

4.7 QUALITY



Produits bardage rapportés
<http://evaluation.cstb.fr>

CSTB
 84 avenue Jean Jaurès -
 Champs sur Marne
 F-77447 Marne-la-Vallée



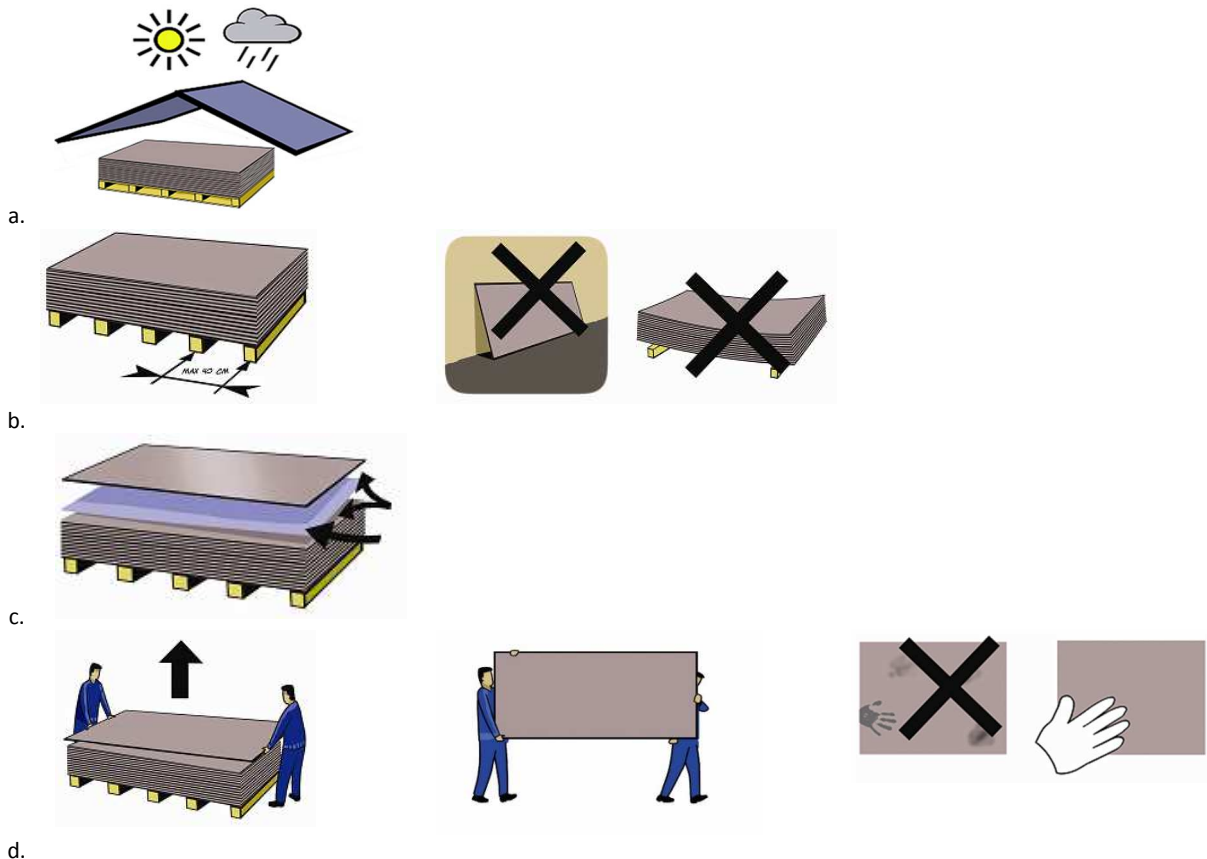
ETA
14/0284

4.8 SPECIFIC ADVANTAGES OF COLORMAT

- Resistant to micro-organisms, fungi, microbes, insects etc.
- Non-combustible, limited smoke production.

4.9 TRANSPORTATION, STORAGE AND HANDLING

- a. SVK Colormat facade panels are **supplied on pallets, wrapped in foil**. This foil does not provide sufficient protection from weather conditions (rain, condensation and bright sunlight). The panels must be protected until they are installed. Respect closely the next prescriptions:
 - SVK Colormat facade panels must be transported under a watertight canvas.
 - The panels must be stored indoors.
 - Limit the storage period on site to the time that is needed to execute the work and keep the packaging closed until the moment the panels will be installed. If it is impossible to store the panels inside, carefully cover the panels with a vapor-open, watertight canvas and protect them from precipitation and heavy sunshine. Also prevent the panels from becoming wet or dirty due to condensation, water absorption, dust or any other kind of pollution.
 - In case the panels have become wet in the package, dry them as soon as possible. Panels that are stored in wet conditions are not covered by our guarantee policy.
- b. Colormat panels are always stored horizontally, on an even and dry subsoil, clear of the ground.
 - Use racks, pallets or supporting laths with a maximal distance of 400mm.
 - The panels must be supported sufficiently so that they cannot deform. Maximum 3 pallets stacked on each other.
- c. During the packing of the Colormat panels SVK protects the finished surface of the panels by placing a protective foil between the panels. The upper panel faces downwards, all other panels face upwards.
 - Always leave this foil between the panels, until the moment they are installed.
 - In case the panels are restacked, always replace the protective foil between the panels.
- d. **Be careful** when transporting or handling the panels, in order not to damage the decorative finishing layer.
 - Lift the panels with two people, without dragging them or moving them over the panel below.
 - Carry them in a vertical position.
 - Avoid staining and wear woolen gloves when lifting the panels.
 - Avoid stains of glue, silicone, polyurethane foam as these can leave irremovable stains.
 - Do not stick labels, tape of any type of adhesive tape on the decorative surface of the panels. These can leave glue residue on the panel and could affect the decorative surface. Surface where the hydrophobing agent is damaged will be visible as this location will absorb more moisture than the remaining part where the hydrophobing agent is intact.
- e. Whilst transporting and handling Colormat facade panels, the legislation related to mobile work equipment for hauling and lifting loads must be respected at all times.



5. COLORMAT BANDO – ETA 14/0284

5.1 PRODUCTION

Colormat Bando 10 mm panels are manufactured from a homogeneous mixture of Portland cement, selected reinforcement fibres, additives and water. This mixture is transmitted in thin layers under constant pressure to a format roller by means of a sieve cylinder machine (Hatschek) until the required panel thickness is obtained. After the pressing process the panels are autoclaved.

With Colormat Bando it is important not to fasten screws or rivets in the panel grooves, the screws and rivets must always be fastened on the strips taking into account the minimal and maximal distances for Colormat panels.

5.2 SURFACE AND EDGE FINISHING

The Colormat Bando panels are characterised by their natural appearance typical of fibre cement, with colour variations and inclusions. The inclusions themselves can be among others in black, white, red or grey colour and belong to the normal aspect of the panels.

The panels are finished with a transparent impregnation making the panels hydrophobic. The impregnation agent will degrade with time under influence of the weather conditions. Because of the degradation, the hydrophobic effect of the impregnation will decay however this has no negative influence on the intrinsic properties and quality of the panels. Surface where the hydrophobing agent is damaged will be visible as this location will absorb more moisture than the remaining part where the hydrophobing agent is intact.

Due to potentially excessive hydrophobic agent, the edges of the Colormat façade panels may appear white. This impacts only the aesthetics aspect of the panels and if desired, can be removed by sanding the edges.

Colormat panels may change in appearance over time as a result of colour loss. The degree of loss is dependent on pigment type, dark colours (dark grey, black) are more susceptible to colour loss. The degree of discoloration depends on the environmental factors such as the location, orientation, UV exposure, air pollution, etc.

These aesthetic phenomena of the panel surface belong to the normal aspect of the panel and cannot be considered as a shortcoming. They do not affect the intrinsic properties of the panels in any way. The panels comply in regards to the mechanical and physical requirements and durability with the prescriptions of the European Standard EN 12467 “Fibre-cement flat panels – Product specification and test methods.”

See §1.1 “General – Execution” for eventual treatment of the edges after cutting.

Colormat Bando Classic

The Colormat Bando Classic 10 mm panels are coloured through-and-through and are slightly sanded. This sanding process results in the appearance of a slight superficial line pattern. Sanding makes the panels directional. The direction is noted by the direction of the production stamp on the back side of the panels. Grooves are beaded in the longitudinal direction of the panels, 2 mm deep and 8 mm wide creating strips 145,5 mm wide. The panels are finished with a transparent impregnation making the panels hydrophobic. Colormat Bando Classic has a nuanced, natural appearance typical of fibre cement.

Colormat Bando Scripto

The Colormat Bando Scripto 10 mm panels are coloured through-and-through and have a unique look by additional sanding. This sanding process results in the appearance of a clear line pattern. Sanding makes the panels directional. The direction is noted by the direction of the production stamp on the back side of the panels. Grooves are beaded in the longitudinal direction of the panels, 2 mm deep and 8 mm wide creating strips 145,5 mm wide. The panels are finished with a transparent impregnation making the panels hydrophobic. Colormat Bando Scripto has a nuanced, natural appearance typical of fibre cement.

5.3 COLOUR RANGE

Colormat Bando Classic and Bando Scripto are available in 4 standard and 8 project colours.

SVK is entitled to remove or add colours without prior warning.

Because differences in colour are possible, we suggest to order the panels for a continuous façade in one time, such to minimize the differences. However the uniformity of the colour cannot be guaranteed.

5.4 GUARANTEE

SVK provides a guarantee on the Colormat panels if the materials are handled according to the best practice of the trade and conform with our given prescriptions regarding storage, handling and cleaning and this is for normal use in a normal atmospherical environment.

Tampering of the Colormat panels and fastening of objects on the Colormat panels fall beyond the guarantee domain of the panels. Please apply for our specimen guarantee certificate in case you wish to obtain further details.

5.5 DIMENSIONS AND TOLERANCES

Colormat is delivered squared.

The panels meet the requirements of **Tolerance Level I** as per norm EN 12467.

Dimensions	Squared
Standard formats	3.050 x 1.220 mm
	2.500 x 1.220 mm
Thickness	10 mm
Depth groove	2 mm
Width groove	8 mm
Width strips	145,5 mm

Tolerances Colormat Bando	Squared
Length	± 2 mm
Width	± 2 mm
Depth groove	± 0,5 mm
Width groove	± 0,2 mm
Straightness	0,1 %
Squareness	2 mm/m
Thickness	± 10 % e

5.6 TECHNICAL CHARACTERISTICS

Colormat panels comply with the prescriptions of European standard EN 12467 “Fibre-cement flat panels – Product specification and test methods”.

Physical characteristics		Norm
Density – oven dry	≥ 1.600 kg/m ³	EN 12467
Bending strength	Class 5 (≥ 24 MPa)	EN 12467
Modulus of Elasticity (wet)	13.000	EN 12467
Moisture movement (30-90 %) ⊥	0,7 mm/m	EN 12467
Moisture movement (30-90 %) //	0,8 mm/m	EN 12467
Water impermeability	no water drops	EN 12467
Durability		
Class	A	EN 12467
Resistance to frost	R _L ≥ 0,75	EN 12467
Resistance to warm water	R _L ≥ 0,75	EN 12467
Resistance to wet-dry	R _L ≥ 0,75	EN 12467
Resistance to heat rain	pass	EN 12467
Reaction to fire		
Fire reaction class	A2-s1, d0	EN 13501-1
Weight		
2.500x1.220mm	± 18,0 kg/m ²	
3.050x1.220mm	± 54,90 kg	
	± 66,98 kg	

5.7 QUALITY



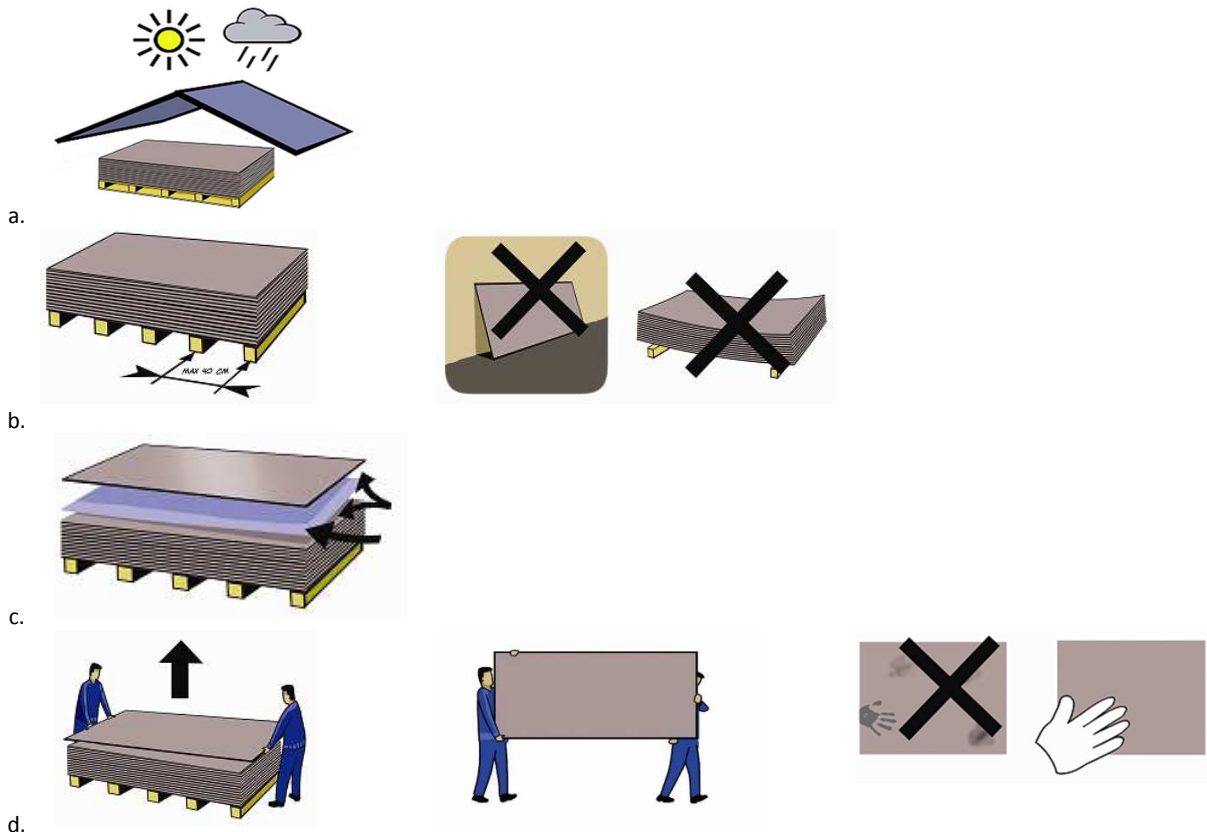
ETA
14/0284

5.8 SPECIFIC ADVANTAGES OF COLORMAT

- Resistant to micro-organisms, fungi, microbes, insects etc.
- Non-combustible, limited smoke production.

5.9 TRANSPORTATION, STORAGE AND HANDLING

- a. SVK Colormat facade panels are **supplied on pallets, wrapped in foil**. This foil does not provide sufficient protection from weather conditions (rain, condensation and bright sunlight). The panels must be protected until they are installed. Respect closely the next prescriptions:
 - SVK Colormat facade panels must be transported under a watertight canvas.
 - The panels must be stored indoors.
 - Limit the storage period on site to the time that is needed to execute the work and keep the packaging closed until the moment the panels will be installed. If it is impossible to store the panels inside, carefully cover the panels with a vapor-open, watertight canvas and protect them from precipitation and heavy sunshine. Also prevent the panels from becoming wet or dirty due to condensation, water absorption, dust or any other kind of pollution.
 - In case the panels have become wet in the package, dry them as soon as possible. Panels that are stored in wet conditions are not covered by our guarantee policy.
- b. Colormat panels are always stored horizontally, on an even and dry subsoil, clear of the ground.
 - Use racks, pallets or supporting laths with a maximal distance of 400mm.
 - The panels must be supported sufficiently so that they cannot deform. Maximum 3 pallets stacked on each other.
- c. During the packing of the Colormat panels SVK protects the finished surface of the panels by placing a protective foil between the panels. The upper panel faces downwards, all other panels face upwards.
 - Always leave this foil between the panels, until the moment they are installed.
 - In case the panels are restacked, always replace the protective foil between the panels.
- d. **Be careful** when transporting or handling the panels, in order not to damage the decorative finishing layer.
 - Lift the panels with two people, without dragging them or moving them over the panel below.
 - Carry them in a vertical position.
 - Avoid staining and wear woolen gloves when lifting the panels.
 - Avoid stains of glue, silicone, polyurethane foam as these can leave irremovable stains.
 - Do not stick labels, tape of any type of adhesive tape on the decorative surface of the panels. These can leave glue residue on the panel and could affect the decorative surface. Surface where the hydrophobing agent is damaged will be visible as this location will absorb more moisture than the remaining part where the hydrophobing agent is intact.
- e. Whilst transporting and handling Colormat facade panels, the legislation related to mobile work equipment for hauling and lifting loads must be respected at all times.



GENERAL GUIDELINES

Unless a type of panel is mentioned specifically, the following directives apply for all SVK façade cladding panels that are treated in this technical data.

1. EXECUTION

1.1 GENERAL

Ornimat

- Ornimat façade panels are delivered cut to size with mechanically painted edges.
- The intention is that the panels are placed on site, without further manipulation needed.
- Ornimat panels can be delivered with straight, inclined or rounded borders. Also drill holes and cut-outs in the panels are made mechanically.
- Finished Ornimat edges do not require additional treatment as they are mechanically painted.
- If additional working of the panels is exceptionally required, be careful to not damage the finished surface. Use Ornimat paint (package 250g) to colour the cut and drilled edges.

Decoboard, Puro Plus and Colormat

- Decoboard, Puro Plus and Colormat panels are delivered in full sheets. These panels can be cut to size on request.
- Decoboard: the edges of the panels are not painted.
- Decoboard Classic: after sawing the edges of the panels can be treated if desired for aesthetical reasons by the SVK Protector edge paint (70ml).
- Decoboard Pure: Treat all edges and holes with SVK Protector colourless or an equivalent impregnator to avoid discolouration of the edges by water.
- Colormat: after sawing the edges of the panels can be treated if desired for aesthetical reasons by the SVK Protector colourless paint or an equivalent impregnator
- Puro Plus: as the panel surface is not treated it is not necessary to protect the edges.

Colormat Bando

- With Colormat Bando is it important not to fasten screws or rivets in the panel grooves, the screws and rivets must always be fastened on the strips taking into account the minimal and maximal distances for Colormat panels.
- After sawing the edges of the panels can be protected if desired for aesthetical reasons by the SVK Protector colourless paint or an equivalent impregnator

1.2 CUT TO SIZE PANELS

Ornimat

Ornimat panels are always delivered cut to size, see § 1.8

Decoboard, Puro Plus and Colormat

SVK can also cut your Decoboard, Puro Plus and Colormat to size, with or without holes.

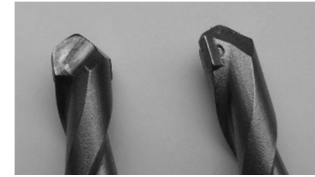
To avoid mistakes we ask that you deliver the correct and complete information. We recommend that you use the SVK Order form, this can be downloaded on our website www.svk.be.

1.3 GENERAL TIPS FOR WORKING

- SVK facade panels are basically treated as a stony sheeting material.
- Always drill and cut SVK facade panels **DRY**. Only drill or cut in a dry environment.
- Wear a dust mask and safety goggles.
- Wear woolen gloves in order to avoid sweat and grease stains on the fibre cement material.
- Always use a tool with dust extraction.
- Always drill and/or cut from the front to the backside. This way, the edges of the front side will remain intact.
- Duly support the panel, provide a stable support and avoid tensions and/or vibrations.
- Eliminate sharp cutting edges by means of smooth abrasive paper (no. 220) or a sanding block. It is advised to always sand the edges to achieve the best result.
- Avoid drilling and cutting dust sediment on the panel surface. In case there is dust on the panels, it should be removed immediately by means of a soft, dry and pure micro-fibre cloth or a soft brush, before the panels are processed any further, exposed to rain or restacked. Cement dust that is left on the panel surface causes unwanted visual effects on the panels after their exposition to weather circumstances.
- For non-treated panels (Puro Plus) is it very important that drill or saw sediment (cement dust) is avoided. The dust fixates in the pores and causes efflorescence once they are exposed to the weather conditions.
- Sawing, drilling holes, protecting the edges, etc. of the Decoboard and Puro Plus panels should happen before the protective foil is removed.

1.4 DRILLING

- Use a carbide high performance cylindrical cross drill for hard fibre cement materials, do not use the hammer function of your drill. The best results are achieved with a drill, specifically designed for fibre cement sheets. It is possible to sharpen the drill at a corner off about 70° to 90° (see photo), which lengthens the tool life and promotes the penetration of the drill in the plate.
- Support the panel at the aperture to be drilled.



1.5 SAWING

Straight cut with buzzsaw or circular saw

- Use only equipment and sawing blades adequate for sawing hard fibre cement sheets.
- Sawing installation: when sawing large quantities of SVK panels, we strongly advise the use of a professional sawing installation. Work accurately, saw always with a guiderail. The rotation and feeding speed must be adapted to the panel type. Correct rotation speed for dry cutting applications must be between 60 and 80 m/s depending upon the material to be cut. The machinery manufacturers adjust the rotation speed to suit the diameter of the blade for which the machine is designed in order to get the correct peripheral speed. For this reason it is very important to use the correct diameter of blade for each machine. It is essential to have enough power to carry out the work. The power of the machine will determine the ability to maintain the peripheral speed and achieve adequate production. In order to achieve the highest performance and correct degree of blade cooling, it is very important to let spin the blade out of the cutting zone during a few seconds, so the blade can effectively cool in air. As SVK façade sheets have a high density, a rotation speed of 2000 à 3000 rpm depending on the blade diameter is required. The feeding speed depends largely on the number of sheets cut in one pass. To cut one sheet of 8 mm, the feeding speed can be increased to 2-6 m/min, provided the machine parameters are correctly adjusted and depending from the total thickness to be cut. The blade should extend approximately 1cm above the sheets for appropriate cooling.

Example:

Cutting blade diameter (mm)	350	400
Thickness fibre cement sheet (mm)	8 – 12	8 – 12
Rotation speed (rpm)	2800 - 3200	3000 - 3600
Feeding speed (m/min)	2 - 4	2 - 6

- A segmented diamond blade combines high performance and cooling of the blades. For large volumes, this is preferred. A continuous diamond band gives the highest quality of cut.



Segmented diamond blade



Continuous diamond blade

For detailed advice regarding the saw blade, we refer to the supplier of the tool.
E.g. supplier: Solga, (www.solgadiamant.com)

Important:

- Always use a tool with dust extraction, always work DRY and always use protective equipment
- When cutting a single sheet the front side of the panel must face upwards

Round apertures with a holesaw.

- Make small saw cuts by means of a holesaw with centre drill.
- Use a toothed saw blade with diamond cladding (e.g. Carat Dustec)

Apertures with a jigsaw.

- Cut the desired shape with a jigsaw.
- Use a saw with carbide teeth (e.g. Bosch T150RF)



For detailed advice regarding the saw blade, we refer to the supplier of the tool. E.g. supplier: Leitz Service (www.leits.org)

1.6 HEALTH AND SAFETY

Processing SVK facade panels will generate dust. If there is sufficient dust extraction, no special protection is required. We still advise to wear a dust mask and safety goggles.

2. PROTECTION AND MAINTENANCE

2.1 PROTECTION

Protection during construction

SVK façade cladding panels are used for decorative finishing. Try to plan the execution at the end of the building phase, in order to avoid damage and pollution due to subsequent work.

Protection from graffiti

The risk of graffiti is imminent at some locations. For surfaces at risk it is then recommended to preventively provide a permanent protection layer against graffiti and other pollution (markers, ink, etc.). SVK panels are not provided with anti-graffiti layer but are adequate for treatment with protective products against graffiti. These can vary dependent on the panel type. As there are different types of anti-graffiti protection, dependent on the subsurface and wishes of the customer, it is recommended to have this executed by a specialized firm.

For further information please contact our Technical Commercial Department (tcd@svk.be).

2.2 MAINTENANCE

General maintenance guidelines

To maintain the attractive appearance each façade, independent of the used material, must be maintained on a regular basis.

This way, persistent pollution, which diminishes the durability of the finishing coating, can be avoided. The cleaning frequency depends on the environment and the panel type.

In the first place, we recommend to restrict pollution as much as possible, especially irregular pollution, by a well-thought out design (provide good sealing, overhangs, drip edges, etc., avoid marks of corrodible materials such as copper, zinc, lead, etc.).

Façade panels with coating (Ornimat/Decoboard): due to their low porosity Ornimat and Decoboard panels are less susceptible to pollution than more porous panels. For standard maintenance we recommend you use clean city water. For more persistent pollution we recommend to use a neutral, non-abrasive all-purpose cleaner with sufficient foaming. Dilute sufficiently following the instruction guidelines. Never use soaps containing linseed oil, nor an ordinary household detergent. First try out the product on a small area.

- Clean with a sponge or a soft piece of cloth. In case of large surfaces, a SOFT brush can be used for soaping, but see to it that hard parts of the brush do not cause scratches on the panel.
- Avoid hard scrubbing: this causes a “polishing effect”, which slightly modifies the panel appearance.
- Do not let the soap solution dry in.
- Amply rinse with water.
- For rinsing afterwards, water can be vaporized over the surface WITHOUT PRESSURE (e.g. a garden hose, which vaporizes the water over the panel under a broad angle). For this working method, it is absolutely necessary that the rear construction is carried out impeccably with regard to water evacuation, ventilation and water tightness.

Façade panels without coating (Puro Plus/Colormat): For standard maintenance the facade panels are rinsed with water that is vaporized over the surface WITHOUT PRESSURE (e.g. a garden hose, which vaporizes the water over the panel under a broad angle). Avoid using any kind of cleaners or detergent. Avoid spraying water straight into the joints. For this working method, it is absolutely necessary that the rear construction is carried out impeccably with regard to water evacuation, ventilation and water tightness.

Exceptional pollution – stain removal

Remove stains as soon as possible. Try to first remove the stains by a regular maintenance.

If this does not lead to the desired result you can contact our Technical Commercial Department (tcd@svk.be).

As there is such a large amount of cleaning products and pollution types, depending of the case, SVK can help you further or refer you to a specialized firm.

This counts as well for pollution by graffiti. If the panels have been treated with anti-graffiti protection we recommend you contact the firm which provided the anti-graffiti treatment. If no protection is provided please contact our Technical Commercial Department.

EXECUTION FACADE CLADDINGS

1. SCOPE OF APPLICATION

These guidelines are valid for applications in buildings up to a height of 40 m with normal exposure to wind. The maximum intermediate distance from the supporting structure is determined, taking into account the own weight and wind loads determined according to Eurocode 1991-1-4 and national building regulations. For countries that are not part of the European Union calculations must be made according to the national regulations. The fact remains that for each construction a study of the facade construction has to be made.

2. CONSTRUCTION ASPECTS

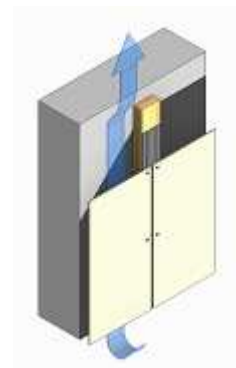
2.1 VENTILATED FACADE WITH OPEN HORIZONTAL JOINTS

An SVK façade cladding is a façade construction with a well-ventilated cavity and with open horizontal joints. The cavity is ventilated with outside air.

The façade cladding is not a watertight shell. As a consequence, the inner cavity wall should be made watertight.

2.1.1 Advantages of the ventilated façade structure

- No internal condensation risk:
Moisture that migrates from inside the building into the cavity is easily evacuated thanks to ventilation. Condensation usually appears on the cold insulation surface. In case the cavity is ventilated, this moisture can be easily removed, and further condensation is avoided.
- Limited heating of the construction due to sunshine:
The surface of a construction can quickly warm up due to sunshine. A dark panel can heat up to a temperature as high as 60° C or more.
Thanks to a sufficient cavity ventilation, the basic building structure is not exposed to such high temperatures.



2.1.2 Advantages of open horizontal joints

- The mechanically painted edges of Ornimat are used to their full.
- Thanks to the open joints the panel edges remain attractive, neither dust nor dirt will accumulate in the joints.
- If needed, the lower horizontal panel joint can be sealed by means of a profile in order to prevent undesired objects from penetrating into the cavity.
- Joints are not to be considered as a ventilation void.

2.1.3 Moisture regulation

It is evident that façade cladding materials (including back structure and fixing) are exposed to moisture on a regular basis:

- Rainwater comes down on the panel surface and enters the cavity through the joints. In case of heavy wind, water is blown into the cavity and can horizontally penetrate several centimetres into the cavity.
- Internal moisture migrates through the construction into the cavity.

Both when defining the material for the back construction as when determining the façade apertures (windows, roof edge, ...), this moisture load should be taken into account.

SVK façade cladding is neither water- nor wind-tight. The air- and water-tightness must always be guaranteed by the construction.

2.1.4 Resistance to fire

An SVK façade cladding is a construction with open joints. As a consequence, it does neither contribute to the fire resistance, nor to the protection against fire penetration nor flashover of the construction.

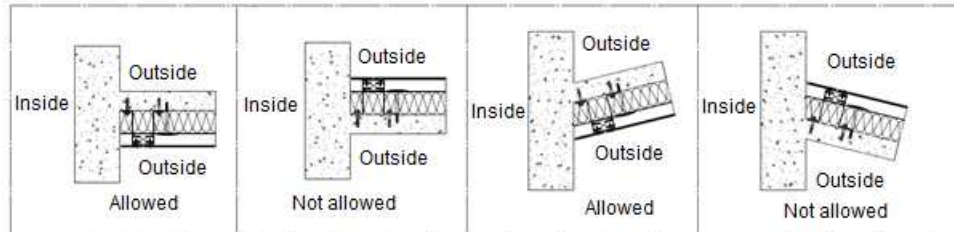
2.1.5 Insulation

- The products used for the insulation of the façade construction must comply with the prescriptions as defined in the ETA-certificate.
- Insulation is attached on the exterior side of the sub-frame, in order to limit temperature fluctuations in the internal skin.
- Insulation at the exterior side of the structural work can be applied almost uninterruptedly; as a consequence, the number of thermal bridges is restricted to a minimum.
- The SVK facade panel as such does not contribute to the thermal insulation of the construction and is not taken into account in this calculation.

3. EXECUTION - FACADE

SVK façade cladding is a self-supporting façade finishing system: the panels transfer their own weight and the wind load through the sub-frame onto the supporting internal skin. The panels can support no other loads than these, so do not fix any objects directly on SVK façade panels.

The guidelines mentioned hereafter refer to vertical, ventilated façade claddings with SVK façade panels, with open horizontal joints. Installing panels as a roof construction is not acceptable. For ceiling applications etc.: see § 4.



3.1 SUBFRAME

The SVK façade panel is installed on a timber or aluminium sub-frame. Always install the panels on vertical studs and provide uninterrupted ventilation.

- Check the stability and the load-bearing capacity of the substrate on which the sub-frame is fixed.
- Use rust-free fasteners, suitable for the material of the sub-frame and the back-construction. Use fasteners with sufficient pull-out resistance. This relates both to the fixings of the sub-frame in the internal skin as to the mutual fixing of the constituent sub-frame elements.
- The dimensions and intermediate distances of the sub-frame must be checked by an engineering agency. Take into account wind zone, terrain category and specific circumstances.
- Pay attention to the alignment of the supports. SVK façade panels follow every unevenness in the structure. The flatness of the supports is identical to the required flatness of the façade cladding.
- Always install panel supporting battens in a vertical position, in order to have a fluent water drainage out of the cavity.
- Provide an expansion joint in the sub-frame at least every 3500 mm (unless the supplier of the sub-frame imposes other distances). See to it that this joint coincides with a panel joint, in order not to have the movement of the sub-frame creating extra tension on the façade cladding panels.

The sub-frame transmits the loads – own weight of the panels and wind load – to the supporting internal skin.

The sections and intermediate distances between the supports are determined with regard to the maximum deflection and the acceptable tensions. Take the exposure of the façade surface into consideration (location, façade height, form parameters).

The hereafter given data (measurements) serve only as guidelines, their validity needs to be verified for each project in function of the specific situation.

3.1.1 Timber sub-frame

Always use wood that guarantees the required durability of the façade finishing. Use durable wood (natural durability or treated – cfr EN 335, EN 460 en EN 350-2). Use wood with strength class C24 (EN338). Only use wood that is clean, dry (moisture < 18%), dust- and grease-free. For countries that are not part of the European Union the national regulations are to be followed.

Horizontal primary battens

In case the insulation is applied between the battens, the dimensions must be based on the fixing distance and on the insulation thickness. The minimum values are: Width: ≥ 60 mm, thickness: ≥ 40 mm.

The intermediate distance of the primary battens is also determined depending on the adhesive strength of the substructure and the insulation panel dimensions.

Rule of thumb: $l \leq 800$ mm.

The intermediate distance of the primary battens also determines the thickness of the vertical battens.

Support brackets

Support brackets should be made of galvanised steel and be resistant to the forces they have to withstand. Moreover, they are protected against rust and other types of degradation. Always use purpose designed support brackets for façade cladding applications.

The permissible distance between the support brackets is determined by a stability study. This takes into account the tensile strength of the fixings in the supporting structure, the wood section and the loadings.

As a rule of thumb the following distances apply:

- vertical sub-frame: 1000 mm
- horizontal sub-frame: 500 mm

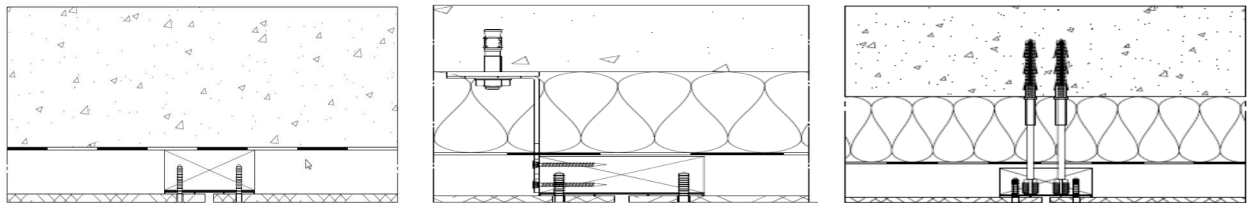
Adjustable screws

The adjustable screws are made of galvanised steel and are resistant to the forces they have to withstand. They are fixed to the wall with a wall plug, adapted to the material from which the wall is made up. Also they have to be protected against rust and other forms of degradation. Use adjustable screws with a body that can rotate independent of the positioning head. This system allows the adjusting of the wooden substructure up to 1/1000, without weakening of the anchoring value in the substructure. Use battens with the proper dimensions. The stability of the wooden substructure is guaranteed when the screws are fixed both horizontal and oblique. The length of the adjustable screws and the amount necessary are determined by a stability study.

Vertical panel supporting battens

For screw fixing, the battens need to be at least planed on one side. They must be planed on 4 sides for bonding. It is advisable to use four sides planed wood for all applications.

Use wood with sufficient form-stability, to avoid deformation after alignment of the frame. Leave a 5mm joint between the battens. The dimensions of the battens are determined by calculation. National regulations may impose minimum sections. For screw fixing, the section is also determined by the minimum edge distance and the penetration depth of the screws. The following indicative values can be taken into account:



Minimum section battens (T x W) Screws

Fixing of battens:	Direct	Support brackets	Adjustable screws
Vertical joint	40 x 90 mm	50 x 90 mm	40 x 90 mm
Intermediate batten	40 x 40 mm	50 x 40 mm	40 x 70 mm
Angle post	40 x 70 mm	50 x 70 mm	40 x 70 mm

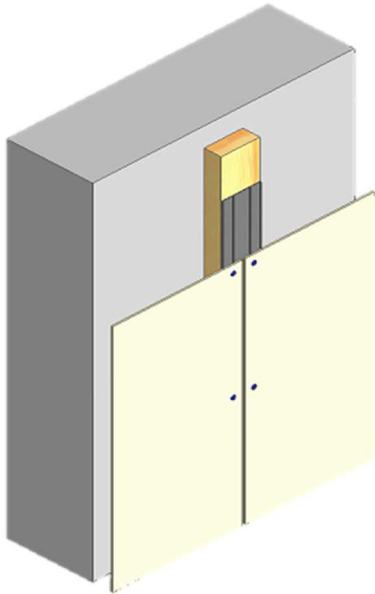
Minimum section battens (T x W) Bonding

Fixing of battens:	Direct	Support brackets	Adjustable screws
Vertical joint	28 x 95 mm	50 x 95 mm	40 x 95 mm
Intermediate batten	28 x 45 mm	50 x 45 mm	40 x 70 mm
Angle post	28 x 70 mm	50 x 70 mm	40 x 70 mm

Place the structure with care:

- Check the straightness of the battens.
- Sign out the battens on the facade in accordance with the plan. Always respect the required intermediate distances.
- Place the supporting structure, with or without support brackets.
- Align the sub-frame.

These are the most commonly applied systems:



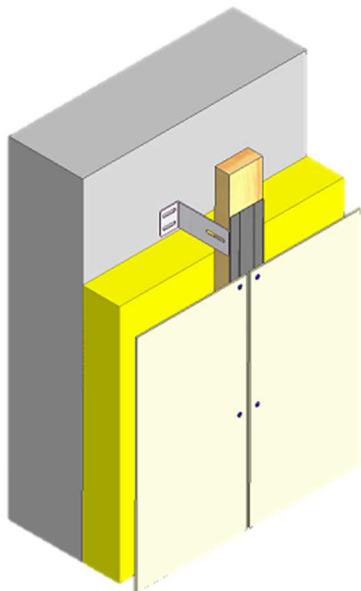
Single vertical sub-frame, battens fixed directly on inner cavity skin

This execution can only be recommended if the surface on which the battens are attached is perfectly even, it is usually applied with wood-frame constructions.

When the sub-frame is directly fixed to the inner cavity skin, alignment with fill plates might be required.

The hole of the fill plate is minimally the diameter of the screw + 5mm.

Fixing methods: screws or bonding strips, see § 3.5



Single vertical sub-frame, battens mounted on support brackets

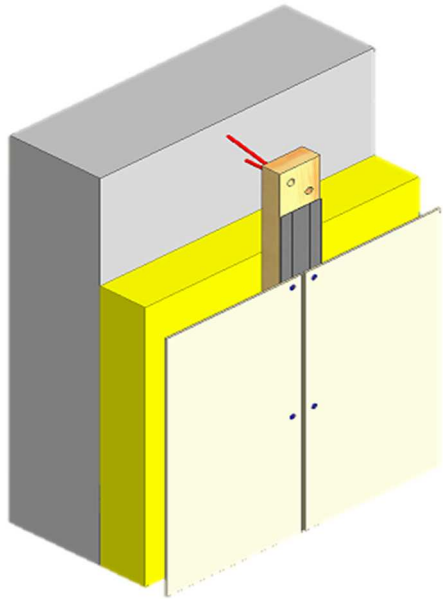
This execution has the following benefits:

- A higher insulation value as the insulation can be applied almost uninterrupted. Use a thermal break to minimize thermal bridges at the support brackets.
- The sub-frame can easily be aligned.
- No direct contact between the battens and the internal skin, which minimizes the risk of moisture ingress.

Support brackets need to be placed alternated right and left of the battens. Moreover they are staggered placed on adjacent battens.

Fixing methods: screws or bonding strips, see § 3.5.

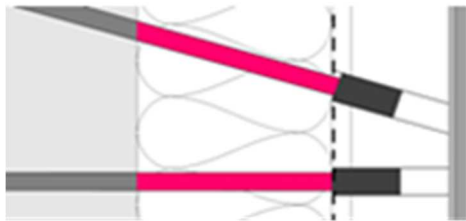
Single vertical sub-frame, battens mounted on adjustable screws



This version offers the following advantages:

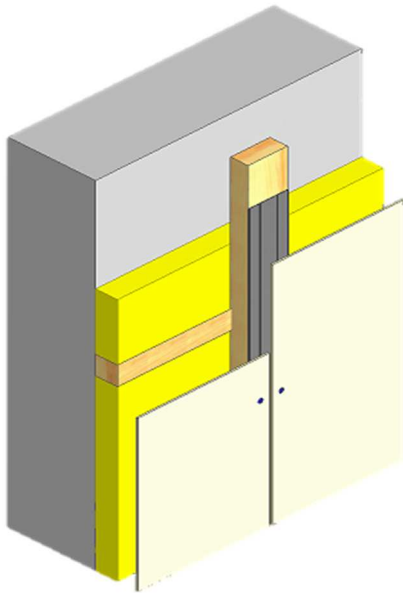
- A higher insulation value because the insulation can be made continuous. There are small thermal bridges at the adjustable screws.
- The sub-frame can easily be aligned.
- No direct contact between the battens and the internal skin, which minimizes the risk of moisture ingress.

Fixing methods: screws or bonding strips, see § 3.5.



When the sub-frame is placed on adjustable screws, place at each fixing a horizontal screw and a screw under an angle (according to the manufacturers recommendations) upwards from the horizontal plane. Follow the prescriptions of the supplier of the adjustable screws.

Double sub-frame, profiles and battens fixed directly on the internal cavity skin



This execution consists of horizontally aligned battens, on which vertical battens are mounted. It is applied when direct installation on the façade with insulation is required and/or the support location does not correspond with the location of the horizontal battens.

Fixing methods: screws or bonding strips, see § 3.5.

In case of double timber frame, the vertical battens are fixed on horizontal battens with two stainless steel wood screws, diagonally applied in the crossing. The screws penetrate at least 30 mm in base batten and the distance of the screw to the edge of the wood is at least 15 mm.

3.1.2 Aluminium sub-frame

General

Thanks to their durability, aluminium sub-frames are increasingly applied. Always use purpose designed systems for façade cladding applications.

The sub-frame consists of profiles and brackets. T-profiles of 120mm and L-profiles of 40 mm wide are commonly used.

Use aluminium alloy EN-AW 6060 T5, conform norm EN 573-3 and EN 755-2.

For countries that are not part of the European Union the national regulations are to be followed.

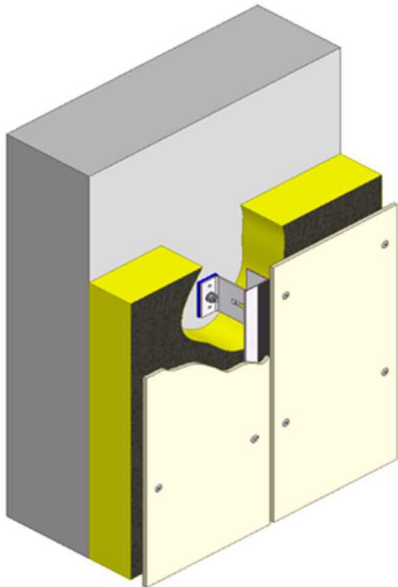
The minimum thickness of the profiles is 2 mm.

Have the calculation of the structure approved by the proper authorities before starting with the execution and work in compliance with the installation prescriptions and execution details of the sub-frame supplier.

Use a system with fixed and gliding anchors, in order to facilitate the levelling and thermal dilatation of the façade. Follow the prescriptions for expansion joints between the profiles. See to it that the position of these expansion joints corresponds with the joints between the façade cladding panels.

The supporting distances applying for wooden supporting structures are not transferable to metal structures.

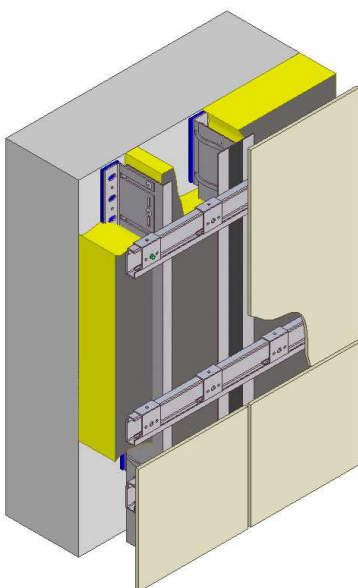
Single vertical sub-frame with brackets



- A higher insulation value as the insulation can be applied almost uninterruptedly. Use a thermal break to minimize thermal bridges at the support brackets.
- Always use a system that was developed for façade cladding.
- An aluminium sub-frame usually consists of a combination of L- and T-shaped vertical profiles on support brackets (see figure).
- Provide a cavity of at least 40 mm wide in order to avoid moisture ingress.

Fixing method: screws, rivets or bonding strips, see § 3.5.

Double sub-frame – invisible mechanical fixing with undercut anchor



- Always use a system that was developed for façade cladding. An aluminium sub-frame usually consists of a combination of T- and L-shaped vertical profiles and horizontal rails.
- Provide a cavity of at least 40 mm wide in order to avoid moisture ingress.

Fixing method: invisible mechanical fixing with undercut anchor, § 3.5.

3.2 THERMAL INSULATION

3.2.1 General / systems

The thermal resistance of a façade construction is determined by the thermal insulation of the internal skin and/or by the insulation that is applied on this internal skin.

In order to obtain an optimal insulation, thermal bridges must be restricted to a minimum. For constructions with high insulation demands, a sub-frame on support brackets or adjustable screws is recommended.

SVK façade cladding panels are installed with open horizontal joints, as a consequence, insulation must be resistant to or be protected from weather circumstances during the complete life cycle of the façade cladding panels.

Check whether the chosen insulation type complies with all prescriptions for:

- thermal insulation
- sound insulation
- reaction to fire
- UV-resistance
- moisture resistance

In any case, use an insulation type with characteristics in compliance with annex I of the ETA certificate (ETA 14/0284).

3.2.2 U-value of a facade cladding with SVK façade panels

SVK façade cladding panels can be used in conjunction with high performance insulation:

- large insulation thicknesses are possible
- thermal bridges are restricted to a minimum

3.2.3 Installation

Depending on the type of sub-frame that is used, insulation is applied between or behind the wooden battens/aluminium profiles. Fix the insulation on the façade in compliance with the manufacturer's prescriptions. Install the insulation panels in close connection with each other and fix them in the construction.

3.3 VENTILATION – WATER RETENTION

3.3.1 Ventilation

A façade cladding in accordance with these directives is an open, ventilated construction. To install a durable façade cladding it is of utmost importance that the construction is properly ventilated.

In order to achieve an adequate ventilation a continuous cavity between the back of the panels and the surface of the insulation or the internal skin is required.

Provide a sufficient cavity width:

Building height	Timber sub-frame		Aluminium sub-frame	
	minimum	recommended	minimum	recommended
0 – 10 m	20 mm	40 mm	30 mm	40 mm
10 - 20 m	25 mm	40 mm	30 mm	40 mm
> 20 m	30 mm	40 mm	30 mm	40 mm

It is important that the cavity is not interrupted and that an air entry and exit are provided, at the top and the bottom of the façade, but also underneath and above every façade aperture (windows, balconies, ...). This will enable a smooth air circulation and consequently quick drying of the cavity space.

The minimum air entry and exit are:

- Façade height ≤ 1 meter: 50 cm² per meter façade length, the voids must have a minimum width of 10 mm. Narrow notches obstruct a good ventilation and cannot be taken into account as a section for air entry and exit.
- Façade height > 1 meter: provide at the top and bottom an uninterrupted void of at least 100 cm² per meter façade length (effective space, after the section loss due to the ventilation profile has been taken into account).

A vertical compartmenting of the ventilated area is advised for big surfaces at the edges.

For fixing on high buildings, we recommend to make horizontal compartments in uninterrupted façade surfaces. At the horizontal compartmenting a profile is used to interrupt the air circulation.

Finish all ventilation voids wider than 10 mm with a perforated ventilation profile, in order to avoid vermin ingress.

For countries where specific ventilation prescriptions are imposed, the most severe of both prescriptions are to be followed.

3.3.2 Water retention

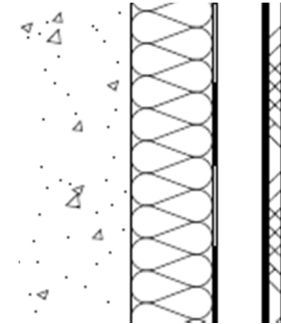
Besides ventilation air, moisture will also get into the air cavity. Due to heavy wind, rainwater is blown into the cavity through the panel joints. As a consequence, it is necessary to take measures in order to protect the insulation and/or the internal skin and to avoid water ingress.

Cavity width up to 40 mm:

- Install a waterproof, vapor-open screen at the cavity side of the insulation, in order to avoid water ingress. Use a vapor-open foil (maximum μ_d -value = 0,05 m) with a high UV-resistance.
- See to it that the screen is elastic and that it has sufficient tear-resistance. Pay attention to overlaps and connections, and provide a perfect sealing. Fix the edges of the foil properly, and see to it that the ventilation is not affected.
- Use a black screen: this provides a uniform black background at the level of the panel joints.

Cavity width exceeding 40 mm:

- Use insulation panels with a UV-resistant, black, protection layer.



3.4 PANEL CLADDING

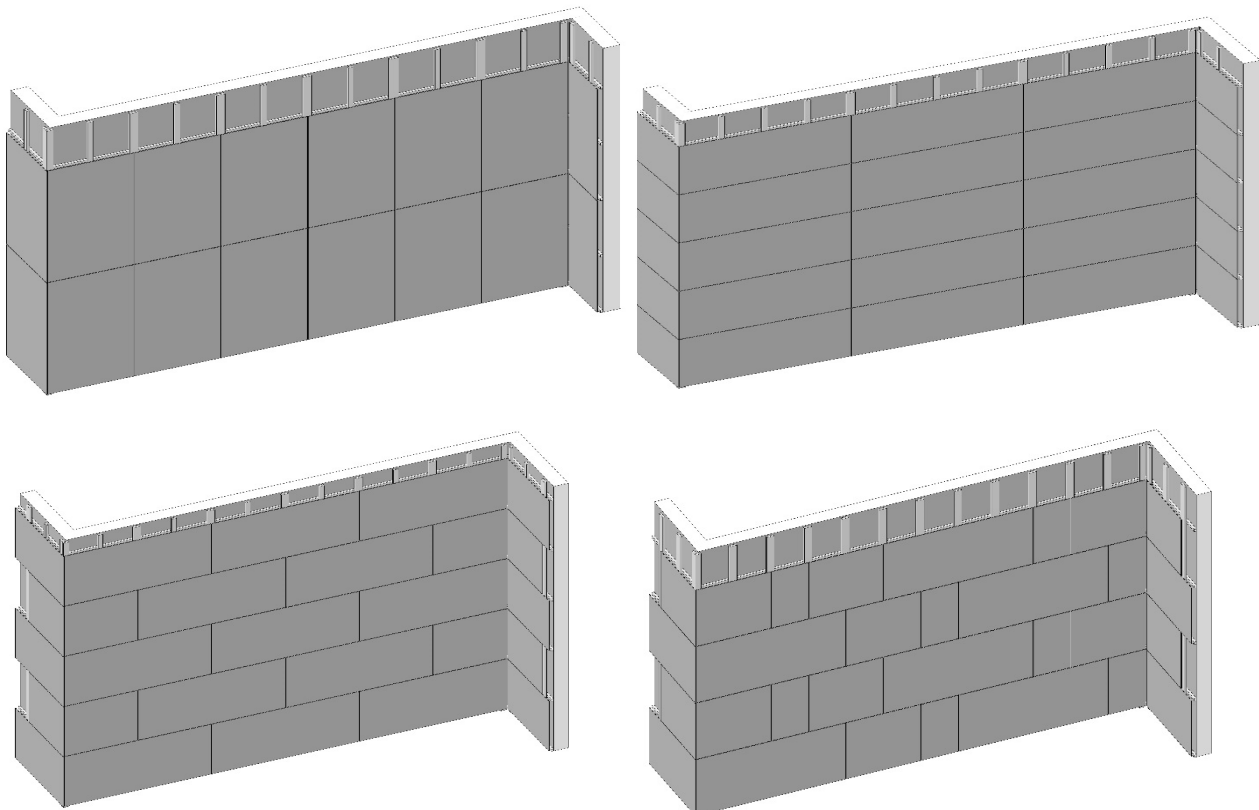
SVK façade panels are high-quality façade cladding panels. Handle the panels with due care so that the cladding retains its esthetic quality and durability.

If possible, the SVK façade cladding panels are installed after the structural work has been finished. Avoid pollution and damage when mounting and finishing the building.

Not only the colour but also the bond and the dimensions of the panels strongly influence the overall appearance of the façade.

The following bond patterns are possible:

- Straight bond
- Stretcher bond
- Random bond



Apply SVK façade cladding panels only with vertical façades. For ceiling cladding see § 4.

Ornimat and Decoboard Classic panels are non-directional, they can be placed horizontally or vertically in their longitudinal direction on the same plane.

Decoboard Pure, Puro Plus and Colormat Classic/Scripto panels are directional due to their structure.

When choosing the bond pattern take into account the prescriptions for supporting and fixing distances. For executions with alternating vertical joints, the execution possibilities must be taken into account: the sub-frame must be adjusted and alignment of the panels must be possible.

In case you choose a bond pattern where the vertical joints are not in line, the façade surface will be polluted in an irregular way at the joints in top panels. We advise not to apply these bond patterns in areas with increased pollution.

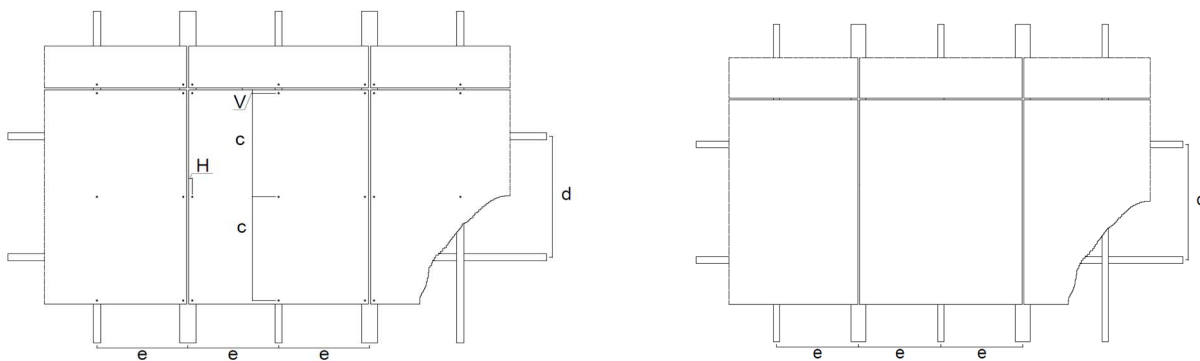
When the grooves of Colormat Bando are placed horizontally water might stagnate in the grooves causing irregular pollution of the surface. We advise not to apply these bond pattern in areas with increased pollution.

3.4.1 Intermediate distances of the support battens and the fixing points of the SVK facade sheets

The distance (e) between the battens and the distance (c) between the fasteners is determined by calculation.

These distances depend on

- the sheet dimensions and the number of supports
- the shape and height of the building
- the used fixing system
- the wind zone
- the terrain roughness
- specific local influence factors



- V Vertical distance towards horizontal edge
- H Horizontal distance towards vertical edge
- c screw distance
- d intermediate distance horizontal battens
- e intermediate distance panel vertical battens

The wind load shall be determined in accordance with the EUROCODE 1991-1-4 and national annex in which the exact design values are given. For countries that are not part of the European Union calculations must be made according the national building regulations.

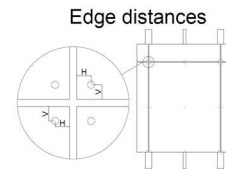
Whatever the results of the calculations, the screw distances (c & e) should never exceed 600mm.

As an example in Annex I are the notes to the calculation and the guide values for the support and fixing distances for mechanical visible fixing (screws and rivets) valid for the United Kingdom and Ireland. This information is a general, non-binding guideline, after all, where required, one has to take into account the specific project-bound circumstances.

The calculated values apply as maximal value between the center of the holes. They are converted to practical values, in function of the panel dimensions and of the desired look.

3.4.2 Edge distance of the fasteners

The distance from the screws to the panel edge must be large enough in order to prevent the edges from breaking. It must not exceed the maximum value either, in order to guarantee the required flatness. The minima applied in these Technical Data are based on tests according to the ETA.



The minimum and maximum values are:	Ornimat – Decoboard – Puro Plus		Colormat	
Edge distance of the screws	Minimum	Maximum	Minimum	Maximum
Vertical distance (V) – with open joint	20 mm	100 mm	70 mm	100 mm
Vertical distance (V) – with joint profile(*)	50 mm	100 mm	70 mm	100 mm
Horizontal distance (H)	20 mm	100 mm	25 mm	100 mm

Edge distance of blind rivets				
Vertical distance (V)	70 mm	100 mm	70 mm	100 mm
Horizontal distance (H)	30 mm	100 mm	30 mm	100 mm

Edge distance of invisible fixing		
Vertical distance (V)	50 mm	100 mm
Horizontal distance (H)	50 mm	100 mm

(*) This is not a standard execution

The edge distances that apply in case of bonding are given by the glue producer. The edge distance should never be more than 100 mm.

3.4.3 Resistance against impact

Depending on the nature and the strength of the exerted forces, when the façade sheets are subjected to possible impact force (hard or soft body), extra precautions may be necessary. More information on the resistance against impact and the precautions to take are in Annex II.

3.5 FIXING FACADE PANELS

3.5.1 General

SVK façade cladding panels are less sensitive to hygro-thermal movement than many other panel materials. However, the panels must not be installed against each other, provide a joint width of 8 mm in order to compensate the movement of the panels and the execution tolerances. The fixing system should not obstruct the hygro-thermal movement, otherwise the panels will be subject to high tensions. Therefore, always use fixing systems that comply with the following criteria.

Working carefully and neatly will deliver the best results with SVK façade cladding panels.

Modify Decoboard and Puro Plus panels (sawing, drilling holes, protecting the edges) before the protective foil is removed.

Remove the protective foil:

- For visible fixing systems before the panels are framed.
- For invisible fixing systems directly after the panels are placed.

Avoid long exposures of the panels and protective foil to the weather conditions.

SVK façade cladding panels can basically be installed from top to bottom or from bottom to top, except with the invisible mechanical fixing where the installing always has to be done from bottom to top. If you wish to restrict the risk of pollution to a minimum, you should work from top to bottom, except with the invisible mechanical fixing where the installing always has to be done from bottom to top.

Each panel is fixed with at least 4 fasteners of the same type.

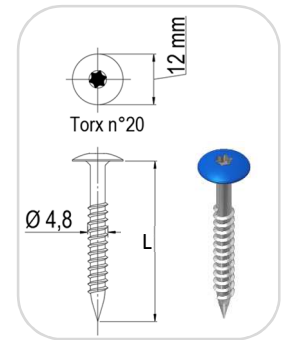
3.5.2 Installation on timber battens – visible fixing with screws (System included in ETA)

The panels are fixated on the profiles with stainless steel screws.

Façade panel screw, timber screw with painted mushroom head \varnothing 12 mm, Torx impact no. 20.

- Application: visible fixing on timber framework.
- Material: Quality A2 under normal circumstances, quality A4 in coastal areas or other areas exposed to an aggressive environment. Applicability to be confirmed by screw supplier.
- Minimum dimension: 4,8 mm (\varnothing) x 38 mm (L).

Characteristics conform ETA 14/0284. Fixing the screws is done with an electric screwdriver with a high quality bit specific for the screw head.



In § 3.1.1 you will find the minimum section of the battens. If you respect these minimum values, the minimum penetration depth of the screws as well as the distance of the screws to the edge of the wood and the joint width between the panels (8 mm) will be assured.

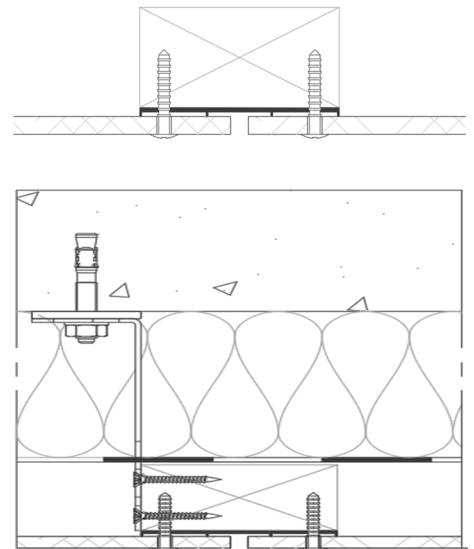
The screw apertures in the panel have a diameter of 6,5 mm. This is wider than the screw diameter in order to allow the panels to move. Always insert a screw in the middle of an aperture in order not to prevent movement of the panel.

Also take into account the minimum and maximum distance of the screws to the panel edge.

Do not over tighten the screws in order to allow the façade cladding panels to work, limit the torque setting of the screwdriver.

Apply the screws perpendicular to the panel surface in order to obtain a tension free fixing.

Put an EPDM joint strip with a width of 100mm on the battens behind a joint, which removes the water getting into the vertical joints between the façade cladding panels. This will prevent moisture from getting trapped between the battens and the panels. Also put an EPDM joint strip on the intermediate battens, in order to obtain perfectly even panels.



3.5.3 Metal subframe – visible fixing with screws (System included in ETA)

The panels are fixated on the profiles with stainless steel screws.

Façade panel screw, self-drilling screw with painted round head \varnothing 12 mm, Torx impact no. 20.

- Application: visible fixing on a metal subframe.
- Material: Quality A2 under normal circumstances, quality A4 in coastal areas or other areas exposed to an aggressive environment. Applicability to be confirmed by screw supplier. Compatibility between the screws and metal subframe to be confirmed prior to installation.
- Minimum dimensions: 4,8 mm (\varnothing) x 25 mm (L).
- Characteristics conform ETA 14/0284.
- Drilling capacity: to be adjusted to the profile thickness.
- Fixing the screws is done with an electric screwdriver with a high quality bit specific for the screw head.



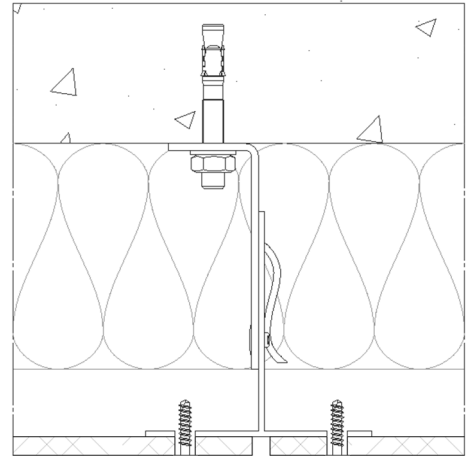
The screw apertures in the panel must be pre-drilled with a 6,5 mm diameter. This is wider than the screw diameter in order to allow the panels to move. The aperture for fixed points reduced to 5mm. Always insert a screw in the middle of an aperture in order not to prevent movement of the panel. The profiles are predrilled with a hole diameter equal to the screw diameter if required.

Also take into account the minimum and maximum distance of the screws to the panel edge. The edge distances of the fasteners and the joint width between the panels (8 mm) must be respected.

Do not over tighten the screws in order to allow the façade cladding panels to work, limit the torque setting of the screwdriver.

Apply the screws perpendicular to the panel surface in order to obtain a tension free fixing.

Use a black adhesive tape behind the panel joint in order to obtain a uniform dark background.

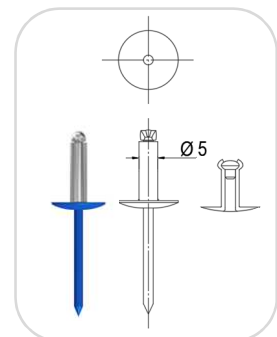


3.5.4 Aluminium battens – visible fixing with rivets (System included in ETA)

Façade panels on metal battens are fixated with rivets.

Rivet with wide lacquered head \varnothing 16 mm.

- Application: visible fixing on an aluminium sub-frame.
- Material: Quality A2 under normal circumstances, quality A4 in coastal areas or other areas exposed to an aggressive environment. Applicability to be confirmed by rivet supplier.
- Minimum dimensions: 4,8 mm (\varnothing) x 16 mm (L).
- Characteristics conform ETA 14/0284
- Always use a blind rivet with appropriate clamp reach adjusted to the thickness of the facade sheet and the profiles.



- The edge distances of the fasteners (see § 3.4.2) and the joint width between the panels (8 mm) must be respected. The screw apertures in the panel must be pre-drilled with a 6,5 mm diameter. The screw aperture for fixed points must be pre-drilled with a 5mm diameter.
- The profiles are pre-drilled with a diameter of 5mm. Do this using a centering drill so that the drill holes in the profile are centered in relation to the drill holes in the panel. Remove all dust caused by drilling.
- Place rivets perfectly perpendicular to the panel surface and centered in the hole so that the movement of the panel is not prevented.
- Use a rivet machine with a nosepiece to protect the panel. Do not press on the panel with the machine.
- To maintain a uniform dark background it is possible to use black coloured profiles or a black adhesive tape.

3.5.5 Aluminium battens – invisible fixing with sheet anchors (System included in ETA)

Invisible mechanical fixing allows the realization of aesthetic facades combined with the highest technical detailing. The façade panels are factory predrilled on the back side, the front side shows no fixing points.

- The panels are installed on a double metal substructure (minimal thickness profiles is 2mm, thickness panel hanger is 3mm) by means of a tension free undercut anchor, socket cap screw and washer.
- **8mm panels:** Ornimat, Decoboard, Puro Plus
Anchor type: Keil KH (hs 5,5 M6), in stainless steel, quality A4.
- **10mm panels:** Colormat
Anchor type: Keil KH (hs 7 M6), in stainless steel, quality A4.
- The characteristics of all the components used during assembling must at least correspond to the materials described in the ETA 14/0284. If not they are outside of the scope of this technical data.
- All components must be of the same manufacturer/supplier.
- The execution is in accordance with the construction drawings made by the design office, by skilled executioners that are trained for this fixing technique.



Design preparation

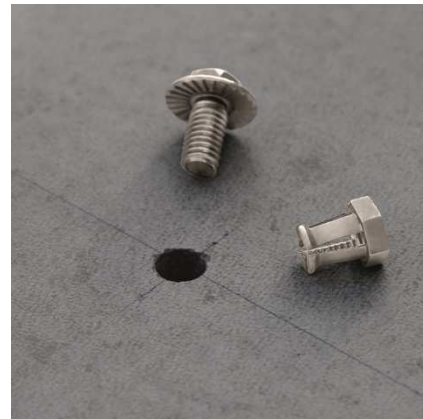
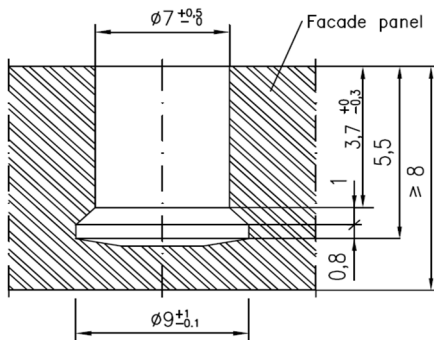
The stability of the substructure, fixings and panels has to be calculated by a calculation bureau based on the applying local regulations. The panels are supported by at least 4 fixing points. The weight of a plate is carried by at least 2 fixings (1 fixed point and at least 1 horizontal sliding point). The location of this fixed point needs to be the same for all the panels. The other attachment points are both horizontal and vertical sliding points. The provided minimal and maximal edge distances and a 8 mm must always be respected.

Drilling of the undercut hole

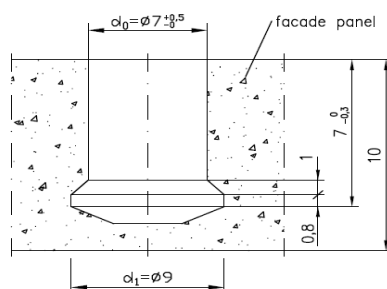
The panels are factory predrilled by SVK or by a SVK approved partner based on the construction drawings approved by the design engineer or the supporting frame supplier.

- Place the panels face down on a clean, smooth, flat surface and support as necessary. Ensure that the panels cannot bend.
- Mark the location for the anchor drilling holes and ensure the correct number of holes is marked.
- Fibre cement panels are always drilled **dry**, do not use water as this can stain the panel surfaces.
- Follow the drilling instructions provided by Keil to achieve the required drilling dimensions.
- After the drilling is done remove immediately the dust of the panels.

Hole geometry hs=5,5



Hole geometry hs=7



Controlling of the undercut hole

The correctness of the undercut holes is checked by the control apparatus.

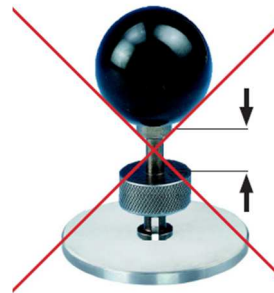
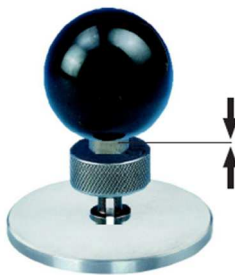
- First test is done by inserting the control gauge base part in the undercut and moving the gauge up to the block. The gauge should be pushed to the base part. If the gauge cannot be pushed to the base part it means that the drilling hole is too deep or that no undercut is provided.
- Second test is done by moving the probe between the panel and the control gauge base part. If the gauge is pushed to the base with the underplayed probe it means that the drilling hole is not deep enough.
- Both tests must result positive for a correct drilled undercut hole.

The correctness of the cylindrical hole is checked by a caliper.

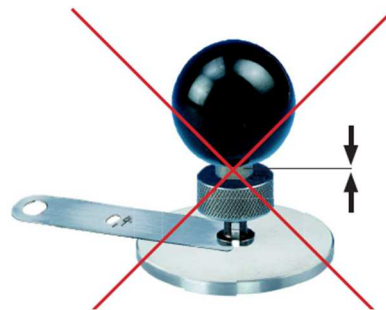
At least 1% of all drilled holes have to be controlled.

- For example if you have 25 panels with 10 holes each (total 250 holes) then at least 3 holes should be controlled.
- During this control, if an incorrect drilled hole is noted then 25% of all drilled holes (equal 63 holes) have to be controlled. No additional incorrect holes should be noted.
- If additional incorrect holes are noted then all the holes (equal 250 holes) should be tested.
- All incorrect holes are to be discarded and new holes should be drilled. Keep a minimal centre distance of 20mm when drilling the new hole and ensure that the edge distances are respected.
- After the drilling is done remove the dust immediately of the panels.

First test



Second test



Installation

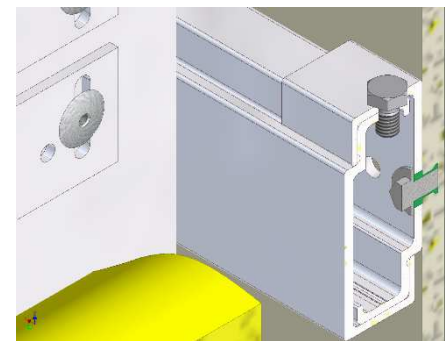
After the panels have reached the construction site the assembly of the system can start. If the panels are stored on site, take into account the storage and handling instructions as mentioned in our technical data.

- Ensure the holes are clean and free from any dust or debris.
- Insert the Keil Anchor in the hole and position the panel hanger on the panel.
- Insert the socket cap screw through the panel hanger in the anchor and tighten up ($2,5 \text{ Nm} \leq T_{\text{inst}} \leq 4,0 \text{ Nm}$). Be careful to not over tighten the screw as this could damage the anchor and reduce the pull-out resistance of the fastening.
- This way a tension free connection between façade panel and substructure is achieved.



Because of the nature of the invisible mechanical fixing it is required to install the panels from bottom to top, it is not practical for an installer to adjust and fixate the panel hangers unless there is sufficient free space above the panel. The panels are supported individually and they do not rest on each other (8mm joint around each panel).

The panels are mounted on the horizontal rails by means of the panel hangers. Each panel is provided on the top with 2 panel hangers with adjustable height, the other panel hangers cannot adjust the height. The adjustable screws on the 2 top panel hangers allow for the levelling of the panels. The horizontal sliding of the panels is restricted by firmly fixating one of the panel hangers on the horizontal rail with a screw. The location of this fixed point needs to be the same for all the panels.



Provide an expansion joint in the vertical battens and horizontal rail at least every 3500 mm (unless the supplier of the sub-frame imposes other distances) to avoid undesired joint distances between the panels due to expansion of the aluminium profiles.

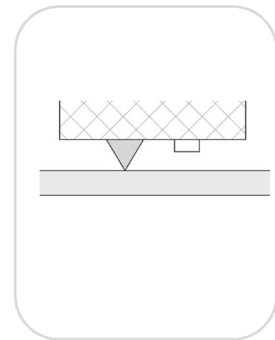
To narrow the risk of damage a work sequence must be established. SVK façade panels are finished products and are usually installed as the last component. If additional work needs to be done after the installation of the panels, precautions need to be taken to avoid pollution or damaging of the panels.

The installer controls the aluminium substructure, the flatness and the fixing points. In case of irregularities, the contractor/architect has to be informed immediately.

3.5.6 Timber or aluminium sub-frame – invisible fixing, bonding (System not included in the ETA)

The panels are fixated on timber or aluminium sub-frames with permanent elastic bonding system. Bonding system consisting of:

- cleaning product, pre-treatment and primer for sheet and subsurface, depending on necessity.
- a double-sided adhesive tape, which is meant to provide initial contact retention of the panels and which determines the adhesive thickness.
- an elastic adhesive, creating a flexible and durable connection between the panels and the framework.

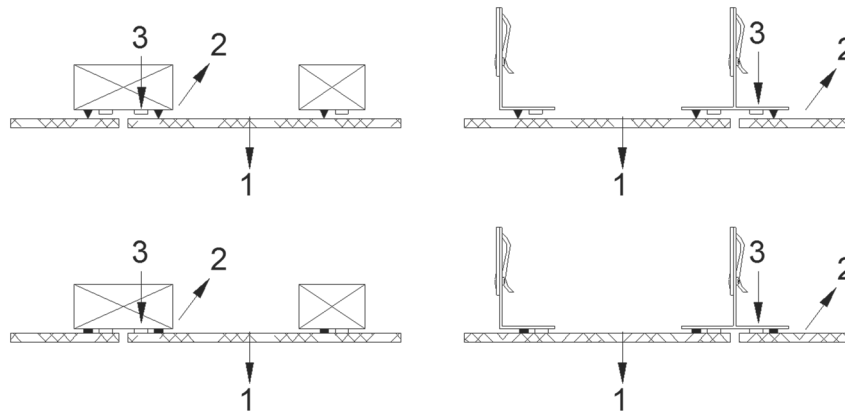


Use a bonding system specifically developed for the installation of façade cladding panels. The bonding system is applied so that it can support the weight of the panel, the hygro-thermal movement of the panels and all external loads in a safe and durable way.

SVK facade panels must only be attached with a bonding system that is compatible both with the sub-frame and the specific facade panel. The suitability of the bonding system needs to be proven sufficiently (certificate of approval by an independent institution or equivalent).

The manufacturer has extensive processing instructions, follow these carefully.

The sub-frame is very important. It could consist of untreated planed timber or aluminium. The battens need to be treated correctly, the timber must be primed to ensure a good adhesion.



- 1 SVK façade cladding panel
- 2 glue strip
- 3 double-sided adhesive tape

The distance of the glue strip to the panel edge (max. 100 mm) and the joint width between the panels (8 mm) must be respected. The appliance of stud cleats is not recommended to avoid staining of the panels.

3.6 NAILS – STAPLES

SVK facade panels may neither be nailed nor stapled.

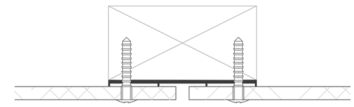
3.7 JOINTS – FINISHING – PROFILES

A joint of 8 mm between the SVK panels is required, this joint allows the hygro-thermal movement of the panels.

3.7.1 Vertical joints

Timber sub-frame – screws:

Provide a good sealing and an easy evacuation of water at the vertical joints. To this end, attach an UV-resistant EPDM joint strip with ribs on the wood. The joint strip could be glued or stapled. The screws are applied between the ribs. Use a joint strip with minimal 100 mm width which covers the entire surface of the batten. In some countries wider joint strips are prescribed, respect the national regulations. Also apply a joint strip at the intermediate battens in order to obtain an even façade surface and to avoid moisture accumulation behind the panel. Moreover, the joint strip provides a regular black background at the level of the panel joints.



Timber sub-frame – bonding:

It is possible with a good wood protection to bond panels on battens without the need of a joint profile. If a profile for the vertical joints is desired, choose a black anodized aluminium V-shaped profile. Follow the instructions of the bonding manufacturer.

If no joint profile is used, a dark-coloured wood protective product will provide an esthetical appearance to the joints



Aluminium sub-frame – screws

No joint strip is required. Apply preferably black coloured profiles otherwise apply a black tape behind the joints in order to obtain an attractive appearance.

Aluminium sub-frame – rivets:

No joint strip is required. Apply preferably black coloured profiles otherwise apply a black tape behind the joints in order to obtain an attractive appearance.

Aluminium sub-frame – bonding:

To assure a good bonding no joint strip or coating on the aluminium profile is applied. Before applying the glue a black primer is applied on the metal structure which also creates a black appearance at the joints.

Aluminium sub-frame – invisible fixing:

A joint strip is not required, all joints are left open.

3.7.2 Horizontal joints

It is highly recommendable to leave horizontal joints open, independent of the type of sub-frame and the fixing method.

Only consider using horizontal joint profiles in the lower 3 meters of the façade in order to prevent undesired objects from getting into the cavity.

When using horizontal joint profiles the edge distance to the horizontal joint must be respected, see § 3.4.2.

3.7.3 Other finishing profiles

A large range of PVC and aluminium profiles are available for finishing façade claddings. In certain cases, an EPDM or flexible joint strip can replace a finishing profile.

- To prevent entry by birds, vermin or insects we strongly advise to protect the ventilation openings wider than 10 mm (air in- and outlet) by a profile. Always use profiles guaranteeing a ventilation section of at least 100 cm²/lm.
- For top edge finishing without overhang, a roof edge profile is applied. Rain water must be guided away and ventilation must be provided here as well.
- See to it that window openings and all other façade apertures are finished according to the same principles as is the case with bottom and top edges.
- With Ornimat façade cladding there are normally no finishing profiles applied. The finished edges make the profiles unnecessary.
- With Decoboard/Puro Plus/Colormat, corners are usually finished with PVC or aluminium façade profiles, distributed by specialized companies.

Do not use finishing profiles of materials that can leach out (zinc/copper/lead/...). Pollution due to sediment on the panels is hardly or not at all removable.

Profiles must be able to expand and shrink independently of the façade cladding panels, this is especially the case with aluminium profiles. Provide a small expansion joint between the adjacent profiles and see to it that the joints between these profiles coincide with the panel joints. Finishing profiles can be ordered from specialized companies.

3.7.4 Saw cuts - connections

At voids or apertures where façade cladding panels connect with another construction, or where another material is going through the panels, the hygro-thermal movement of both materials must remain possible: make the aperture slightly larger and finish, if required, with an elastic remaining neutral kit. Make sure not to close ventilation voids.

3.8 KIT

Panel joints are never filled with sealing kit. Flexible connections to the shell, windows,... are carried out with sealing kit. Only use a neutral sealing kit in order to avoid stains.

3.9 PRODUCT FOR FINISHING THE PANEL EDGES

Ornimat

The Ornimat panels are delivered on size with mechanical finished edges. Only exceptionally, when edges are sawn on site, the edges need to be finished.

On request, Ornimat paint can be delivered, see § 1.1.

Decoboard

The panel edges can be finished with SVK Protector for edges. On request, paint can be delivered, see § 1.1.

Colormat

The edges are finished with the colourless SVK Protector after sawing. This can be delivered on request, see § 1.1.

3.10 EXCEPTIONAL EXPOSURE OF THE PANELS

When the surface of the panels is exposed to exceptional chemical or mechanical loads, the finished surface (Ornimat, Decoboard, Colormat), resp. the surface of the panel (Puro Plus) can rapidly age. Contact our Technical Service in these occasions.

4. EXECUTION CEILING CLADDING

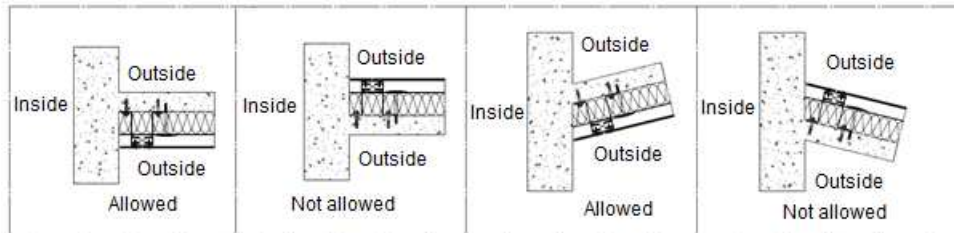
4.1 PRINCIPLE

A ceiling cladding is a self-supporting ceiling finishing system: the panels transmit their own weight and the wind load through the sub-frame to the supporting floor or roof construction. The panels are not able to support any other load, as a consequence, fixing objects on the cladding surface is not allowed.

The guidelines mentioned hereafter are valid for ventilated ceiling claddings with SVK panels. The panels can be installed horizontally or sloped. Ceiling cladding can only be installed if the construction above is watertight.

The panels are installed on a timber or aluminium sub-frame.

Except for the guidelines given hereafter, the general execution of façade panels are applicable.



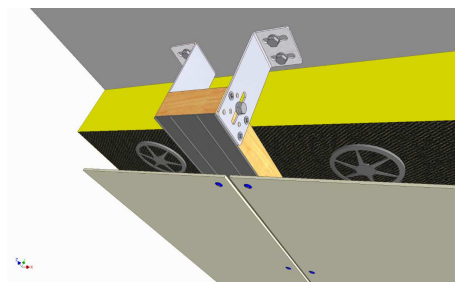
4.2 SUPPORTING FRAME

4.2.1 Sections and intermediate distances

The following maximum support distance values must be considered for ceiling cladding:

Primary battens: see § 3.1.1

- Panel carrying battens: the intermediate distance between the panel carrying battens and between the fixings is determined by calculations. The values in the table below can be used as guidelines.
- The density of the fixings of the insulation panels and the panel carrying battens in the internal skin is increased. The section is determined by calculations.
- Brackets are placed on both sides of the battens.
- The minima applied in these Technical Data are based on tests according to the ETA



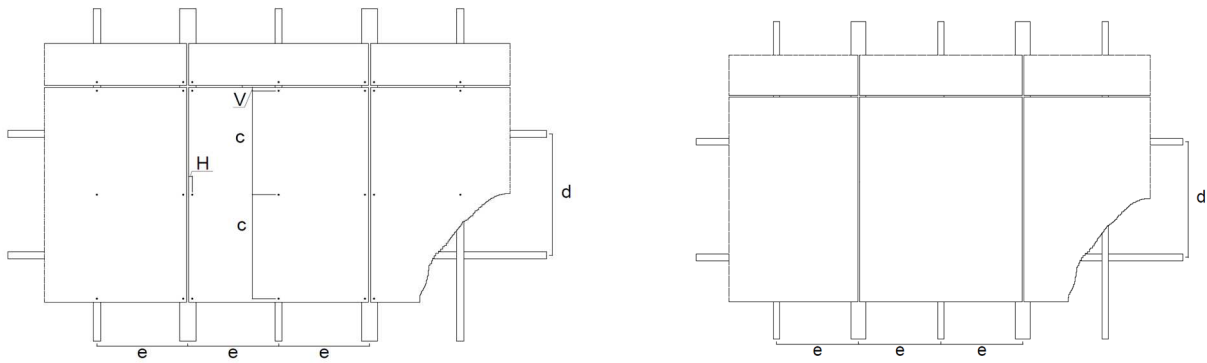
	Panel with intermediate support(s) in the middle of the ceiling	Panel without intermediate support and/or ceiling edge
Intermediate distance sub-frame (e)	450 mm	400 mm
Intermediate distance screws (c)	450 mm	400 mm

Edge distance of the screws	Ornimat – Decoboard – Puro Plus		Colormat	
	Minimum	Maximum	Minimum	Maximum
Vertical distance (V) – with open joint	20 mm	100 mm	70 mm	100 mm
Vertical distance (V) – with joint profile ^(*)	50 mm	100 mm	70 mm	100 mm
Horizontal distance (H)	20 mm	100 mm	25 mm	100 mm

Edge distance of blind rivets				
Vertical distance (V)	70 mm	100 mm	70 mm	100 mm
Horizontal distance (H)	30 mm	100 mm	30 mm	100 mm

Edge distance of invisible fixing		
Vertical distance (V)	50 mm	100 mm
Horizontal distance (H)	50 mm	100 mm

^(*) This is not a standard execution



- V Vertical distance towards horizontal edge
- H Horizontal distance towards vertical edge
- c screw distance
- d intermediate distance horizontal battens
- e intermediate distance panel vertical battens

4.2.2 Installation of a sub-frame

See § 3.1

4.3 INSULATION

See § 3.2

4.4 VENTILATION

SVK façade cladding constructions are ventilated constructions. If you wish to have a durable ceiling cladding, it is very important that the construction is properly ventilated.

Provide sufficient cavity height:

Ceiling length (in the ventilation direction)	Timber sub-frame		Aluminium sub-frame	
	Minimum	Recommended	Minimum	Recommended
0 – 10 m	20 mm	40 mm	30 mm	40 mm
10 – 20 m	25 mm	40 mm	30 mm	40 mm
> 20 m	30 mm	40 mm	30 mm	40 mm

It is important that the cavity is uninterrupted, and that an air inlet and outlet are provided at the ceiling edges and also on both sides of every aperture, in order to guarantee sufficient ventilation of the cavity.

Provide an uninterrupted ventilation void of at least 100 cm² per meter at the edge of the ceiling (effective space, taking into account the section loss due to the ventilation profile).

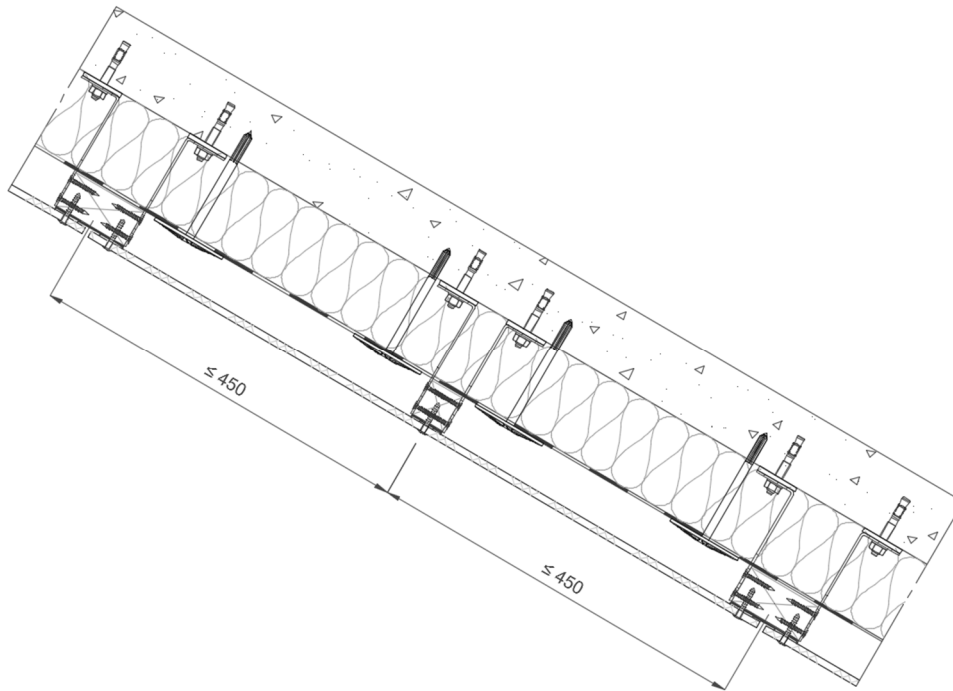
Narrow notches obstruct a good ventilation and must not be included into the section for air inlet and outlet.

Finish all ventilation voids wider than 10 mm by means of a perforated ventilation profile, in order to avoid ingress of vermin. For countries where specific ventilation prescriptions are imposed, the most severe of both prescriptions are to be followed.

4.5 PANEL CLADDING

See § 3.5

When bonding fixing is used to ceiling cladding you can apply stud cleats during the hardening period of the adhesive. Apply stud cleats (10x10 cm) in the intersection of 4 panels. These stud cleats are screwed into the sub-frame. Leave the stud cleats on the façade no longer than required for the glue to harden. Do not over tighten the stud cleats in order to keep a constant adhesive thickness and use a substance that does not affect the panel surface.



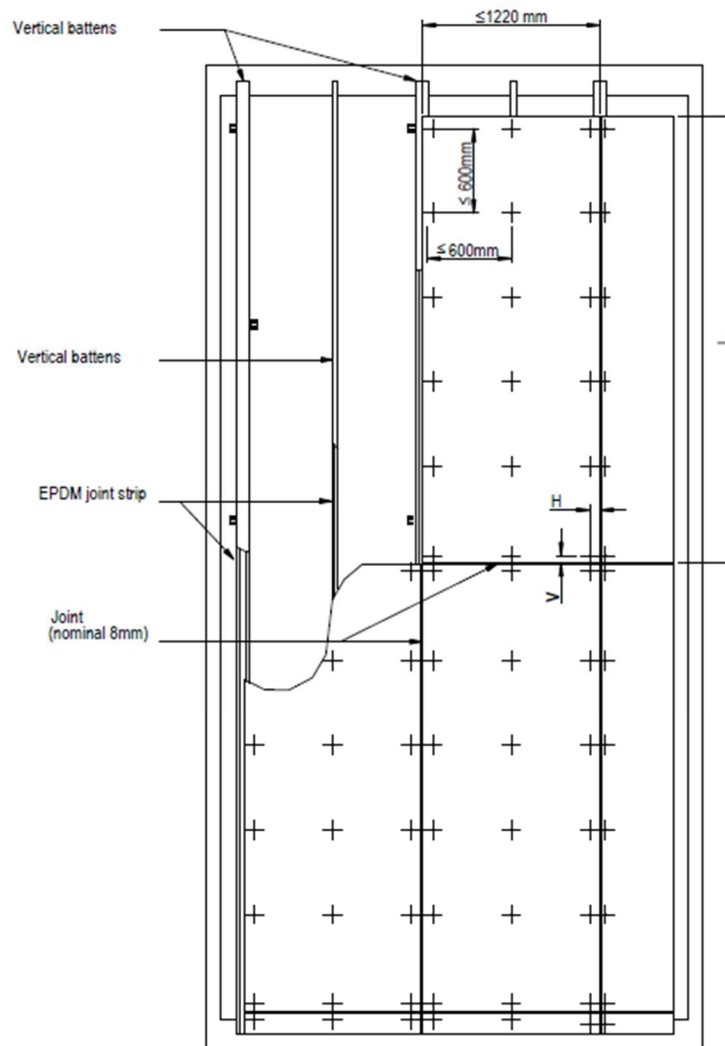
FIGURES

The purpose of these types of details is to only illustrate a correct installation of façade cladding panels. As a consequence, not all construction details have been included in the drawings.

Hereafter you will find the general figures of the different systems for façade cladding.

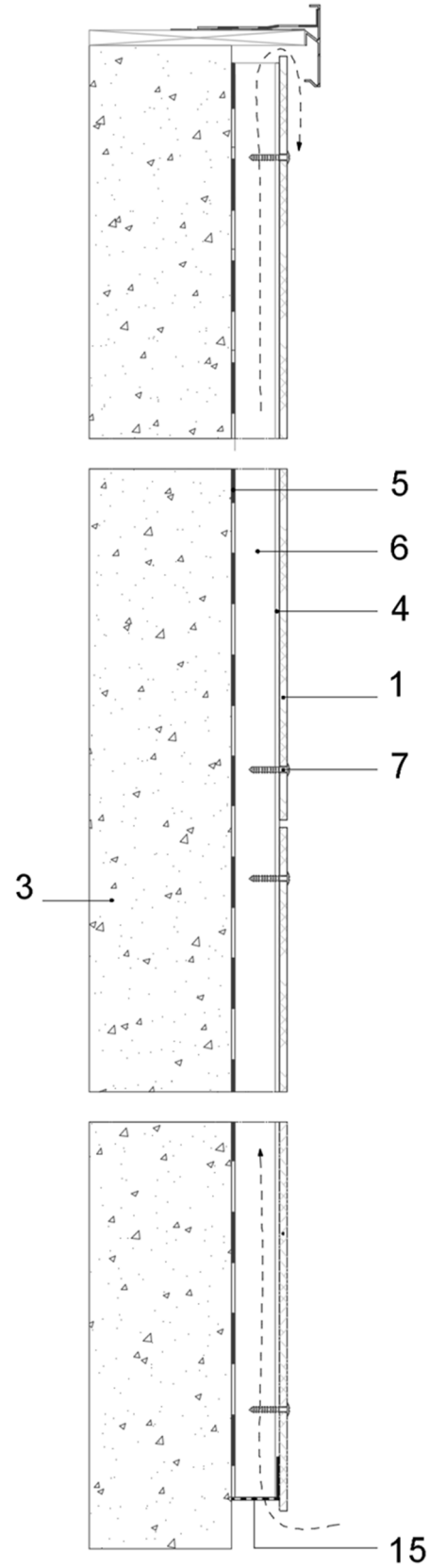
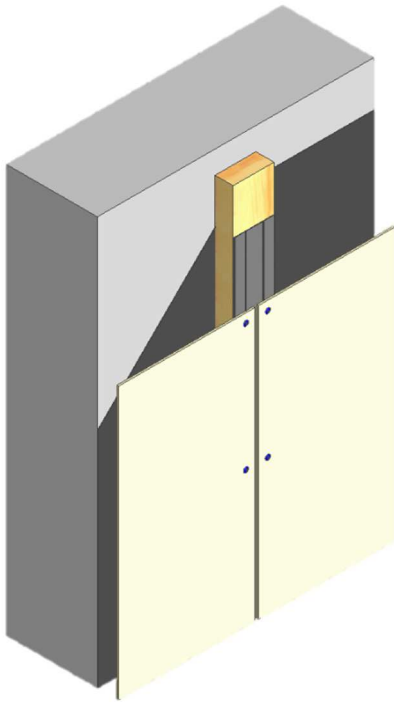
Besides these there are more execution details available, you can request them by email (info@svk.be) or download them on our website (www.svk.be).

1. PRINCIPLE – TIMBER BATTENS



	H min-max	V min-max	L max
Ornimat, Decoboard , Puro Plus	20 - 100 mm	20 - 100 mm	3070 mm
Colormat	25 - 100 mm	70 - 100 mm	3050 mm

1.1 SINGLE VERTICAL SUB-FRAME, BATTENS FIXED DIRECTLY ON INNER CAVITY SKIN

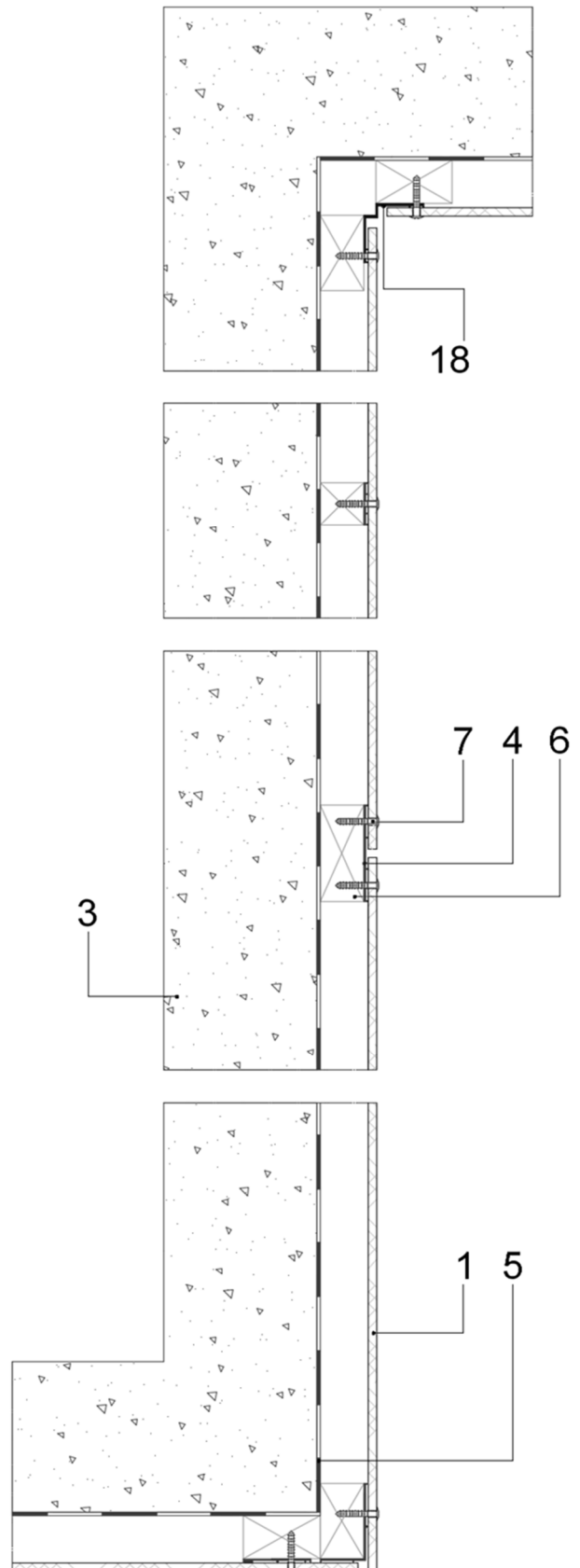


Legend

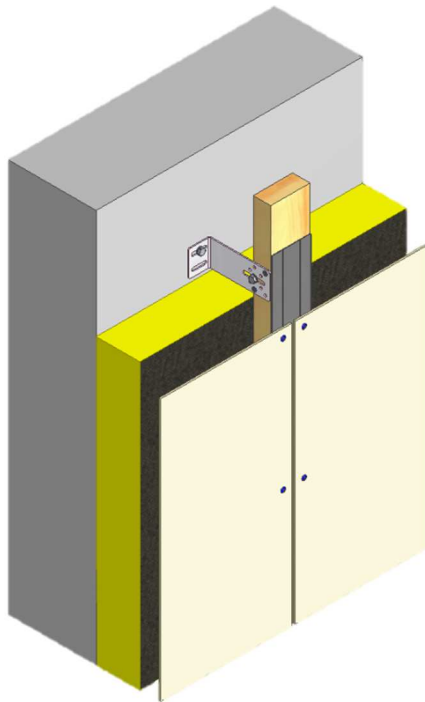
1.	SVK Façade panel
2.	Insulation
3.	Supporting internal skin
4.	EPDM joint strip
5.	Watertight, breather membrane
6.	Wooden sub-frame
7.	Screw
8.	Bracket
9.	Adjustable screw
10.	Metal Sub-frame
11.	Blind rivet
12.	Panel Hanger
13.	Undercut anchor
14.	Horizontal rail
15.	Ventilation profile
16.	Bonding system
17.	Horizontal joint profile
18.	Corner profile
19.	U-profile
20.	Sill flashing
21.	Roof Flashing
22.	Expansion joint
23.	Plywood frame
24.	Interior finish
25.	Kit
26.	Thermal break

Legend

1.	SVK Façade panel
2.	Insulation
3.	Supporting internal skin
4.	EPDM joint strip
5.	Watertight, breather membrane
6.	Wooden sub-frame
7.	Screw
8.	Bracket
9.	Adjustable screw
10.	Metal Sub-frame
11.	Blind rivet
12.	Panel Hanger
13.	Undercut anchor
14.	Horizontal rail
15.	Ventilation profile
16.	Bonding system
17.	Horizontal joint profile
18.	Corner profile
19.	U-profile
20.	Sill flashing
21.	Roof Flashing
22.	Expansion joint
23.	Plywood frame
24.	Interior finish
25.	Kit
26.	Thermal break

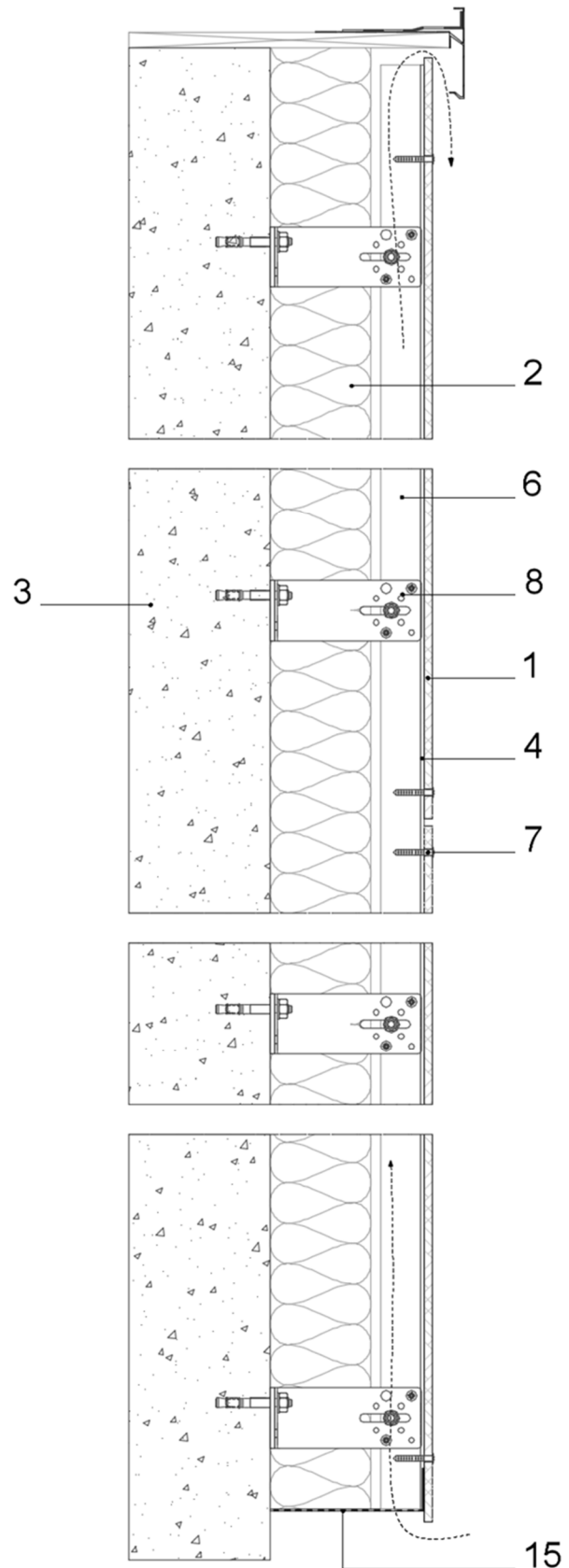


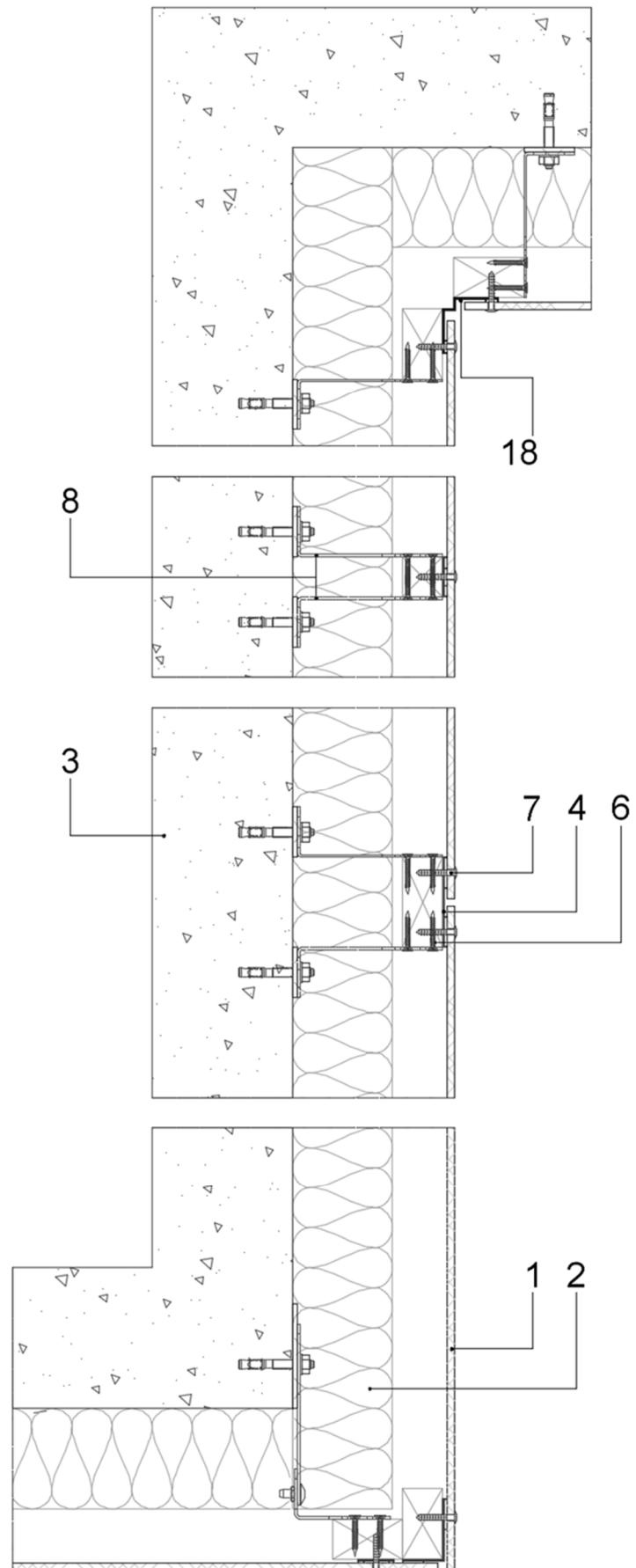
1.2 SINGLE VERTICAL SUB-FRAME, BATTENS MOUNTED ON SUPPORT BRACKETS



Legend

1.	SVK Façade panel
2.	Insulation
3.	Supporting internal skin
4.	EPDM joint strip
5.	Watertight, breather membrane
6.	Wooden sub-frame
7.	Screw
8.	Bracket
9.	Adjustable screw
10.	Metal Sub-frame
11.	Blind rivet
12.	Panel Hanger
13.	Undercut anchor
14.	Horizontal rail
15.	Ventilation profile
16.	Bonding system
17.	Horizontal joint profile
18.	Corner profile
19.	U-profile
20.	Sill flashing
21.	Roof Flashing
22.	Expansion joint
23.	Plywood frame
24.	Interior finish
25.	Kit
26.	Thermal break

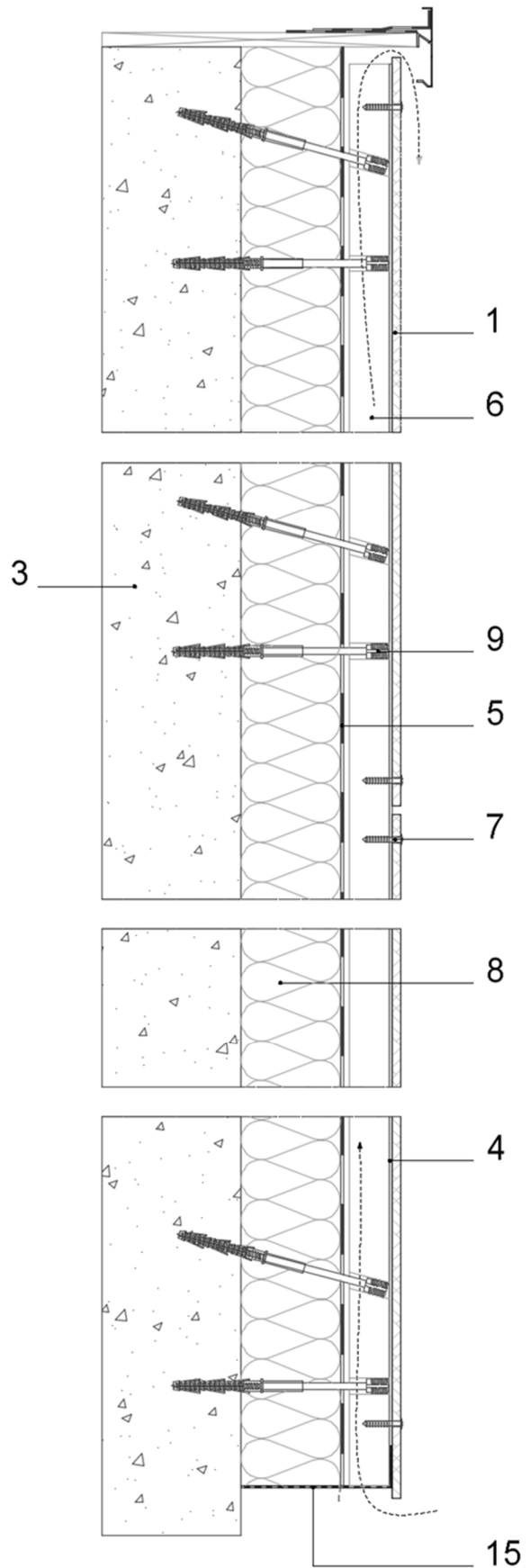
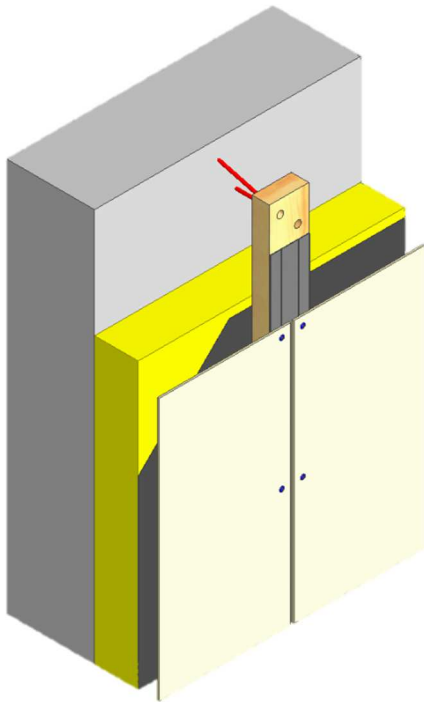




Legend

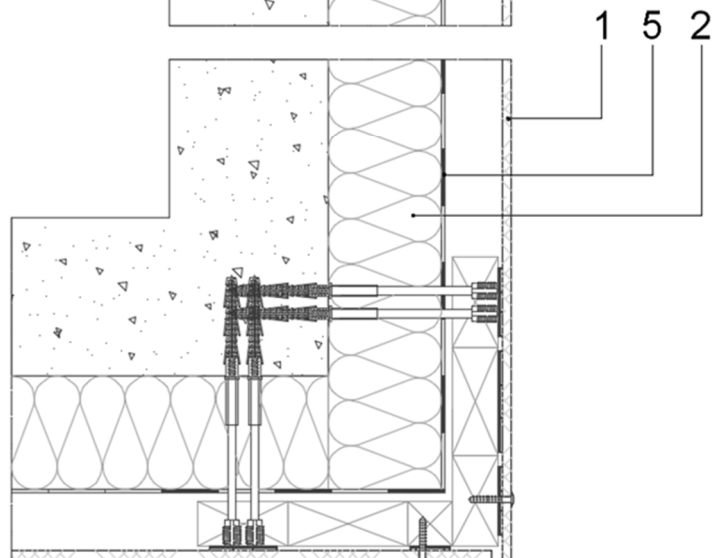
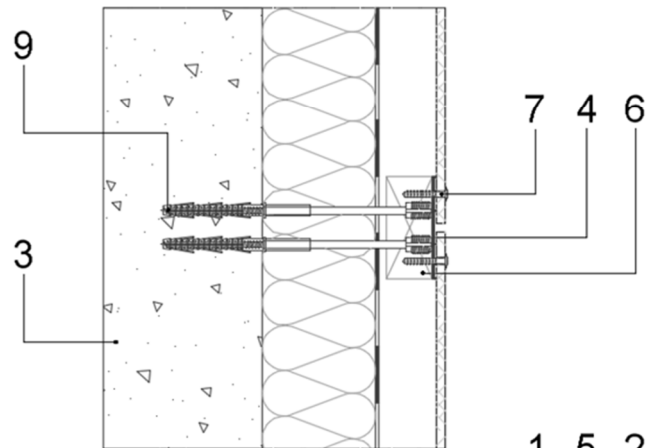
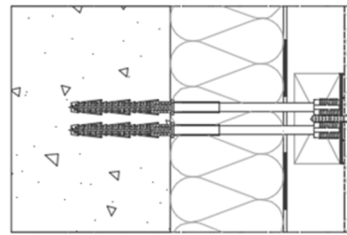
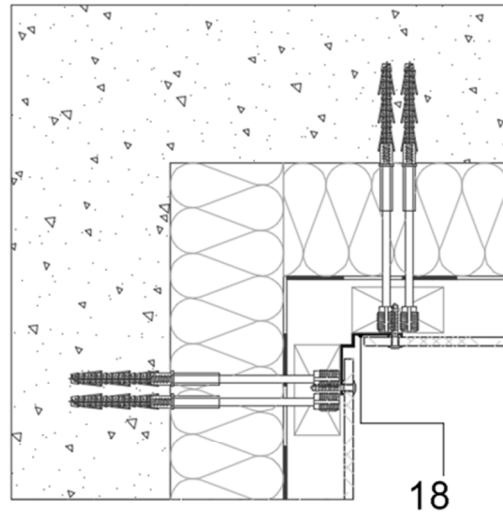
1.	SVK Façade panel
2.	Insulation
3.	Supporting internal skin
4.	EPDM joint strip
5.	Watertight, breather membrane
6.	Wooden sub-frame
7.	Screw
8.	Bracket
9.	Adjustable screw
10.	Metal Sub-frame
11.	Blind rivet
12.	Panel Hanger
13.	Undercut anchor
14.	Horizontal rail
15.	Ventilation profile
16.	Bonding system
17.	Horizontal joint profile
18.	Corner profile
19.	U-profile
20.	Sill flashing
21.	Roof Flashing
22.	Expansion joint
23.	Plywood frame
24.	Interior finish
25.	Kit
26.	Thermal break

1.3 SINGLE VERTICAL SUB-FRAME, BATTENS MOUNTED ON ADJUSTABLE SCREWS



Legend

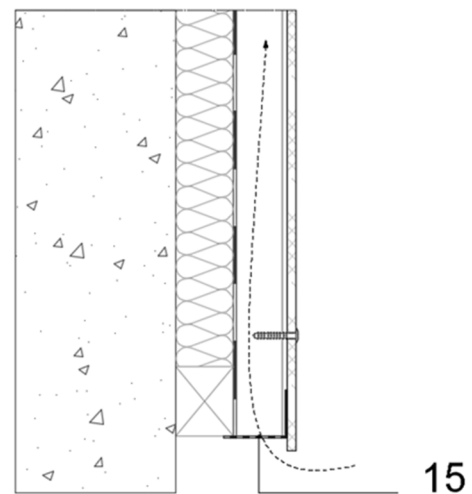
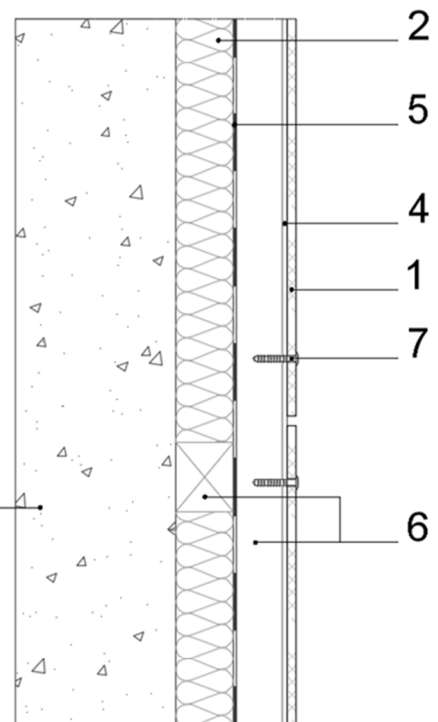
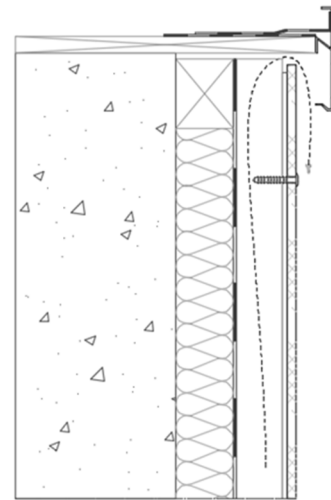
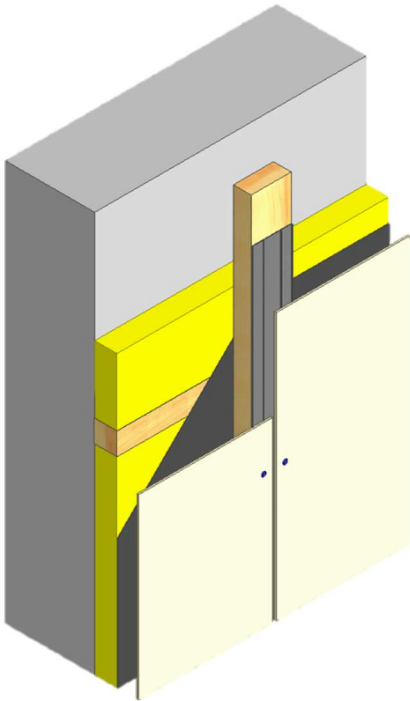
1.	SVK Façade panel
2.	Insulation
3.	Supporting internal skin
4.	EPDM joint strip
5.	Watertight, breather membrane
6.	Wooden sub-frame
7.	Screw
8.	Bracket
9.	Adjustable screw
10.	Metal Sub-frame
11.	Blind rivet
12.	Panel Hanger
13.	Undercut anchor
14.	Horizontal rail
15.	Ventilation profile
16.	Bonding system
17.	Horizontal joint profile
18.	Corner profile
19.	U-profile
20.	Sill flashing
21.	Roof Flashing
22.	Expansion joint
23.	Plywood frame
24.	Interior finish
25.	Kit
26.	Thermal break



Legend

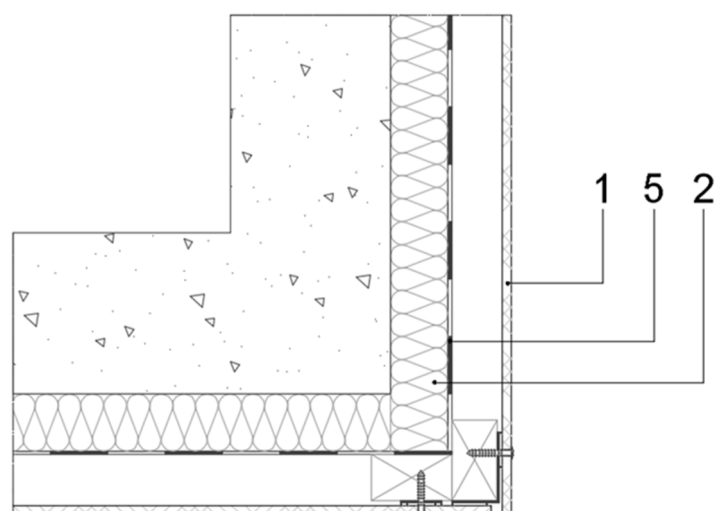
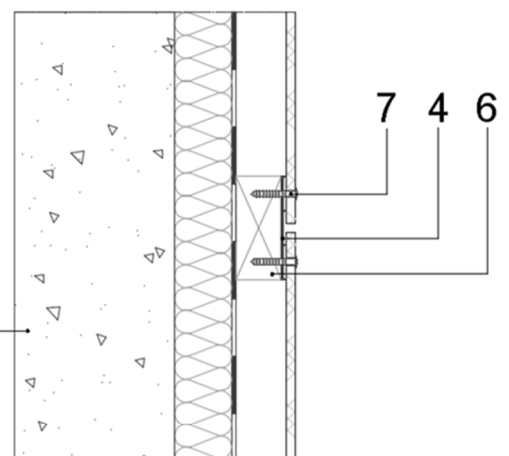
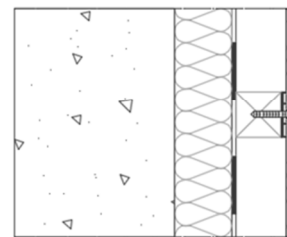
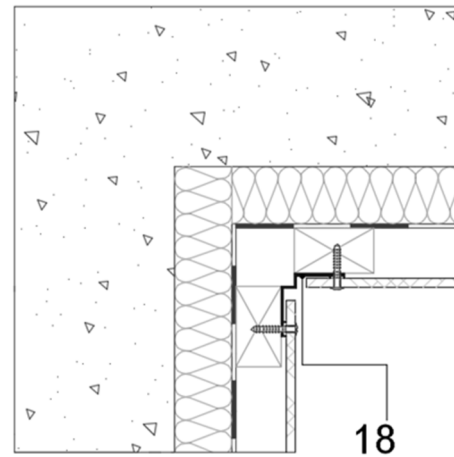
1.	SVK Façade panel
2.	Insulation
3.	Supporting internal skin
4.	EPDM joint strip
5.	Watertight, breather membrane
6.	Wooden sub-frame
7.	Screw
8.	Bracket
9.	Adjustable screw
10.	Metal Sub-frame
11.	Blind rivet
12.	Panel Hanger
13.	Undercut anchor
14.	Horizontal rail
15.	Ventilation profile
16.	Bonding system
17.	Horizontal joint profile
18.	Corner profile
19.	U-profile
20.	Sill flashing
21.	Roof Flashing
22.	Expansion joint
23.	Plywood frame
24.	Interior finish
25.	Kit
26.	Thermal break

1.4 VISIBLE FRAMING - DOUBLE SUB-FRAME, PROFILES AND BATTENS FIXED DIRECTLY ON THE INTERNAL CAVITY SKIN



Legend

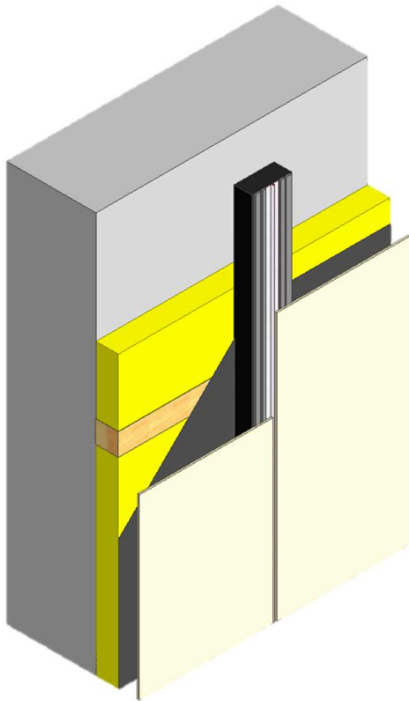
1.	SVK Façade panel
2.	Insulation
3.	Supporting internal skin
4.	EPDM joint strip
5.	Watertight, breather membrane
6.	Wooden sub-frame
7.	Screw
8.	Bracket
9.	Adjustable screw
10.	Metal Sub-frame
11.	Blind rivet
12.	Panel Hanger
13.	Undercut anchor
14.	Horizontal rail
15.	Ventilation profile
16.	Bonding system
17.	Horizontal joint profile
18.	Corner profile
19.	U-profile
20.	Sill flashing
21.	Roof Flashing
22.	Expansion joint
23.	Plywood frame
24.	Interior finish
25.	Kit
26.	Thermal break



Legend

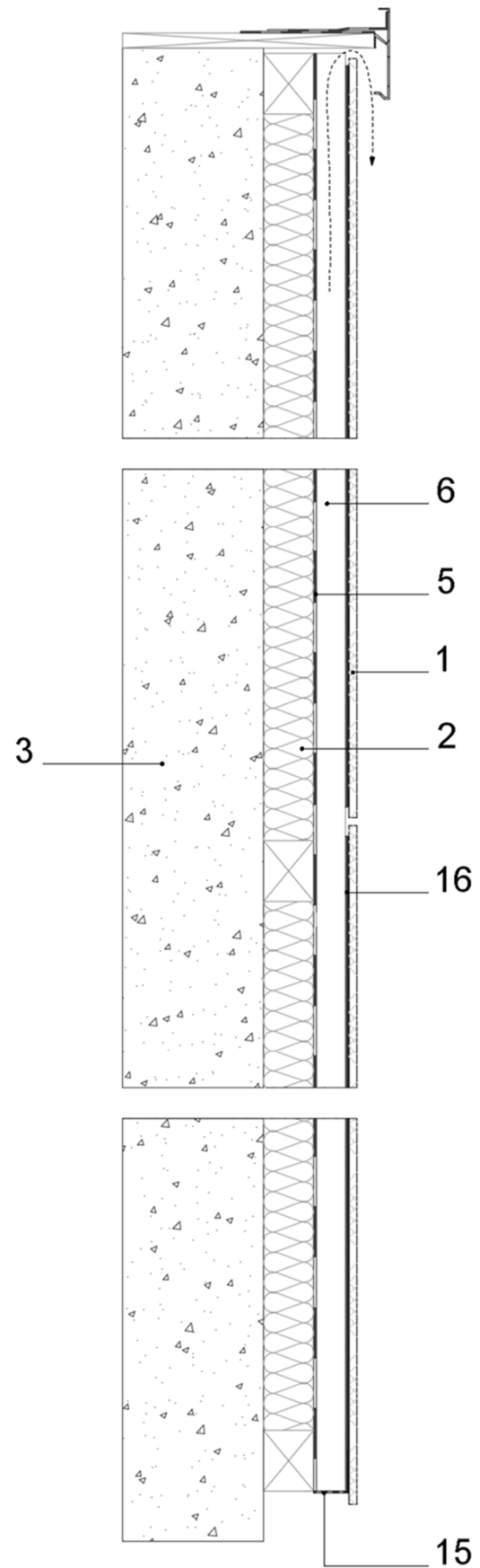
1.	SVK Façade panel
2.	Insulation
3.	Supporting internal skin
4.	EPDM joint strip
5.	Watertight, breather membrane
6.	Wooden sub-frame
7.	Screw
8.	Bracket
9.	Adjustable screw
10.	Metal Sub-frame
11.	Blind rivet
12.	Panel Hanger
13.	Undercut anchor
14.	Horizontal rail
15.	Ventilation profile
16.	Bonding system
17.	Horizontal joint profile
18.	Corner profile
19.	U-profile
20.	Sill flashing
21.	Roof Flashing
22.	Expansion joint
23.	Plywood frame
24.	Interior finish
25.	Kit
26.	Thermal break

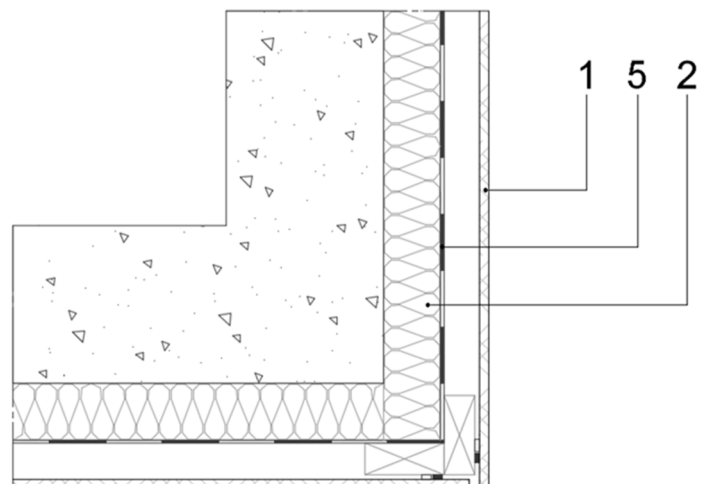
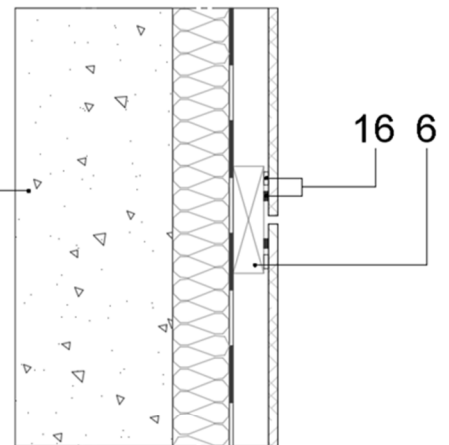
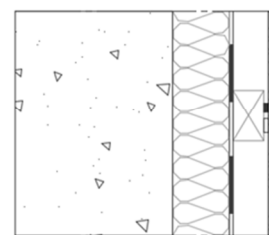
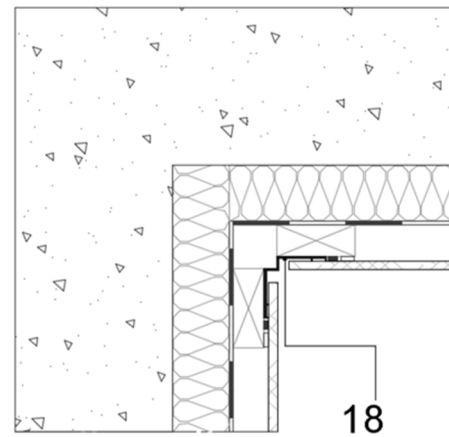
1.5 INVISIBLE FRAMING - DOUBLE SUB-FRAME, PROFILES AND BATTENS FIXED DIRECTLY ON THE INTERNAL CAVITY SKIN



Legend

1.	SVK Façade panel
2.	Insulation
3.	Supporting internal skin
4.	EPDM joint strip
5.	Watertight, breather membrane
6.	Wooden sub-frame
7.	Screw
8.	Bracket
9.	Adjustable screw
10.	Metal Sub-frame
11.	Blind rivet
12.	Panel Hanger
13.	Undercut anchor
14.	Horizontal rail
15.	Ventilation profile
16.	Bonding system
17.	Horizontal joint profile
18.	Corner profile
19.	U-profile
20.	Sill flashing
21.	Roof Flashing
22.	Expansion joint
23.	Plywood frame
24.	Interior finish
25.	Kit
26.	Thermal break

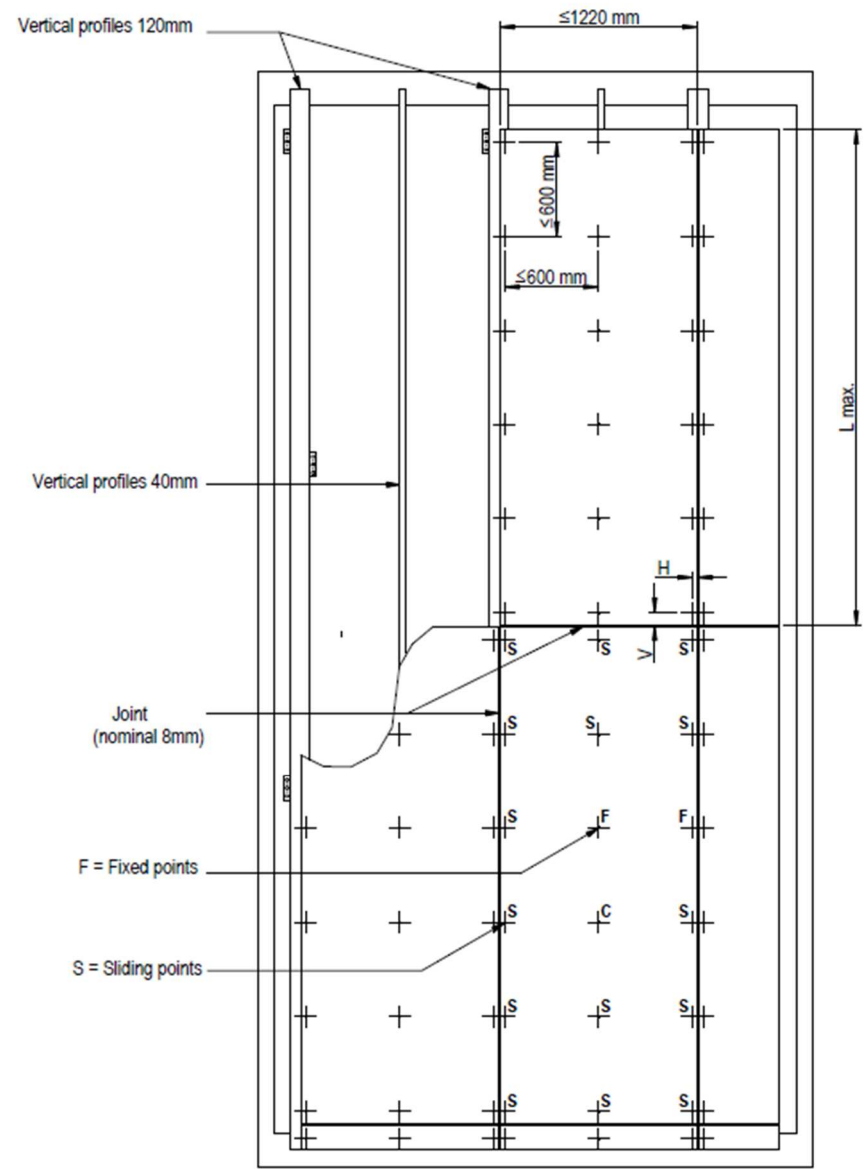




Legend

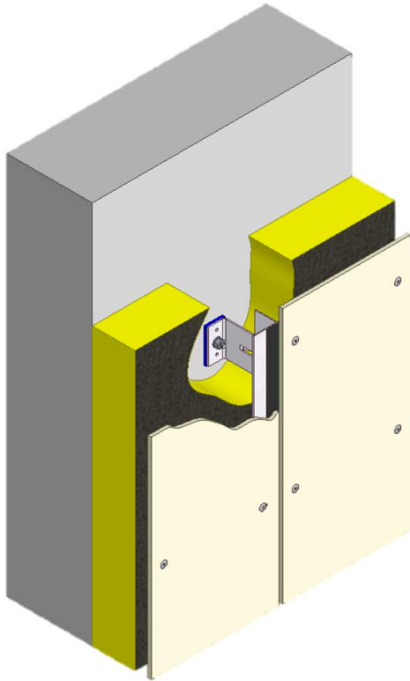
1.	SVK Façade panel
2.	Insulation
3.	Supporting internal skin
4.	EPDM joint strip
5.	Watertight, breather membrane
6.	Wooden sub-frame
7.	Screw
8.	Bracket
9.	Adjustable screw
10.	Metal Sub-frame
11.	Blind rivet
12.	Panel Hanger
13.	Undercut anchor
14.	Horizontal rail
15.	Ventilation profile
16.	Bonding system
17.	Horizontal joint profile
18.	Corner profile
19.	U-profile
20.	Sill flashing
21.	Roof Flashing
22.	Expansion joint
23.	Plywood frame
24.	Interior finish
25.	Kit
26.	Thermal break

2. PRINCIPLE – METAL SUB-FRAME – RIVETS

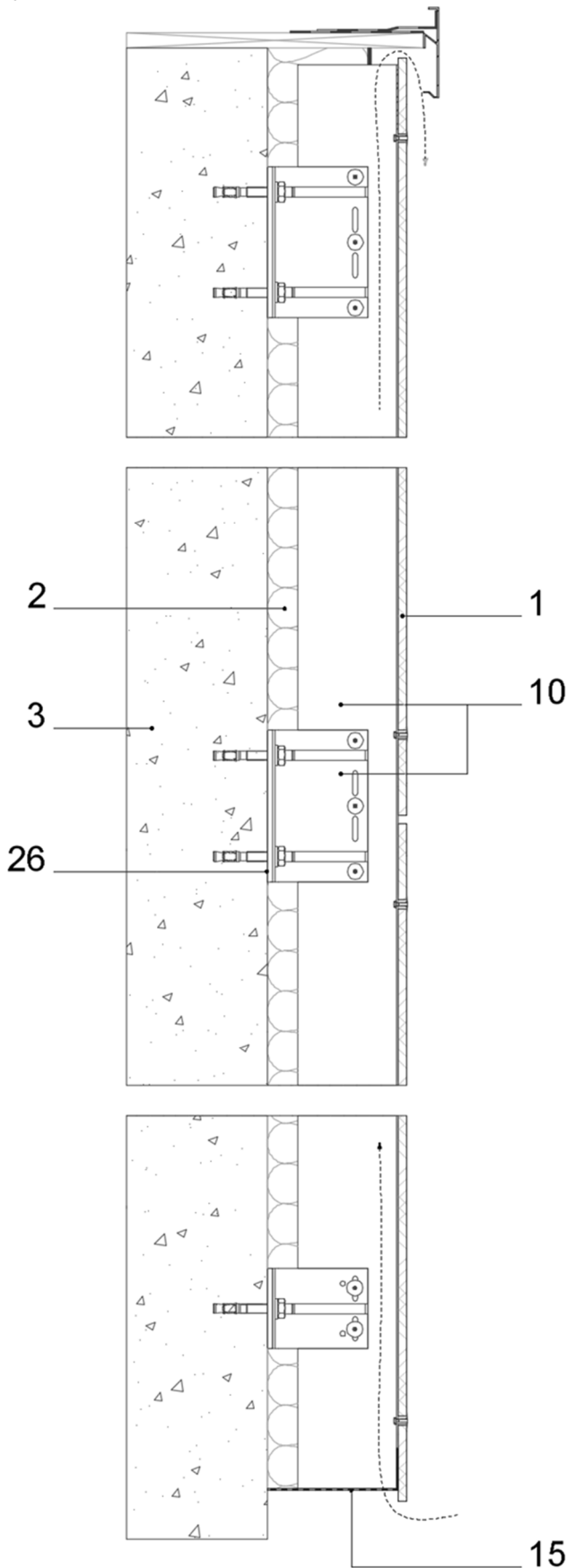


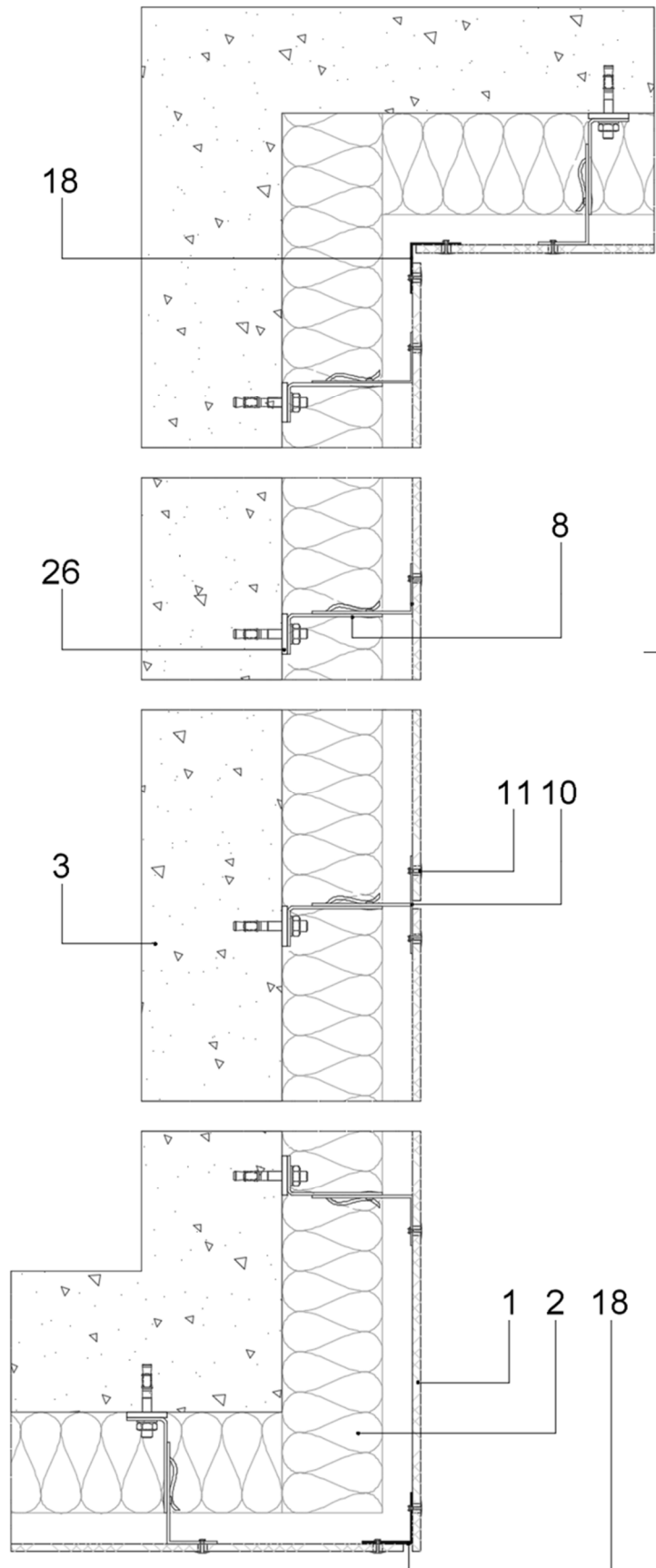
	H min- max	V min- max	F	S	L max
Ornimat, Decoboard, Puro Plus	30 – 100 mm	70 – 100 mm	∅ 5 mm	∅ 6,5 mm	3070 mm
Colormat	30 – 100 mm	70 – 100 mm	∅ 5 mm	∅ 6,5 mm	3050 mm

2.1 SINGLE VERTICAL SUB-FRAME WITH BRACKETS



Legend	
1.	SVK Façade panel
2.	Insulation
3.	Supporting internal skin
4.	EPDM joint strip
5.	Watertight, breather membrane
6.	Wooden sub-frame
7.	Screw
8.	Bracket
9.	Adjustable screw
10.	Metal Sub-frame
11.	Blind rivet
12.	Panel Hanger
13.	Undercut anchor
14.	Horizontal rail
15.	Ventilation profile
16.	Bonding system
17.	Horizontal joint profile
18.	Corner profile
19.	U-profile
20.	Sill flashing
21.	Roof Flashing
22.	Expansion joint
23.	Plywood frame
24.	Interior finish
25.	Kit
26.	Thermal break

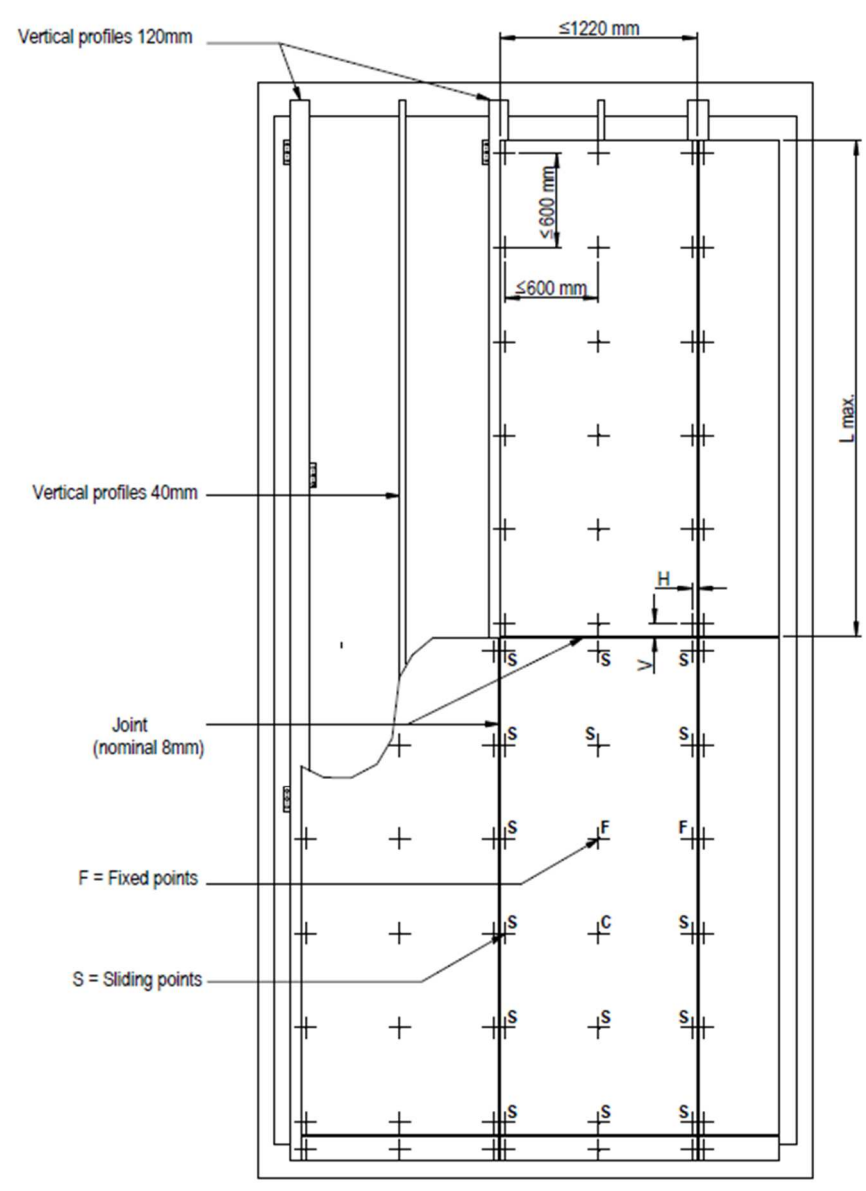




Legend

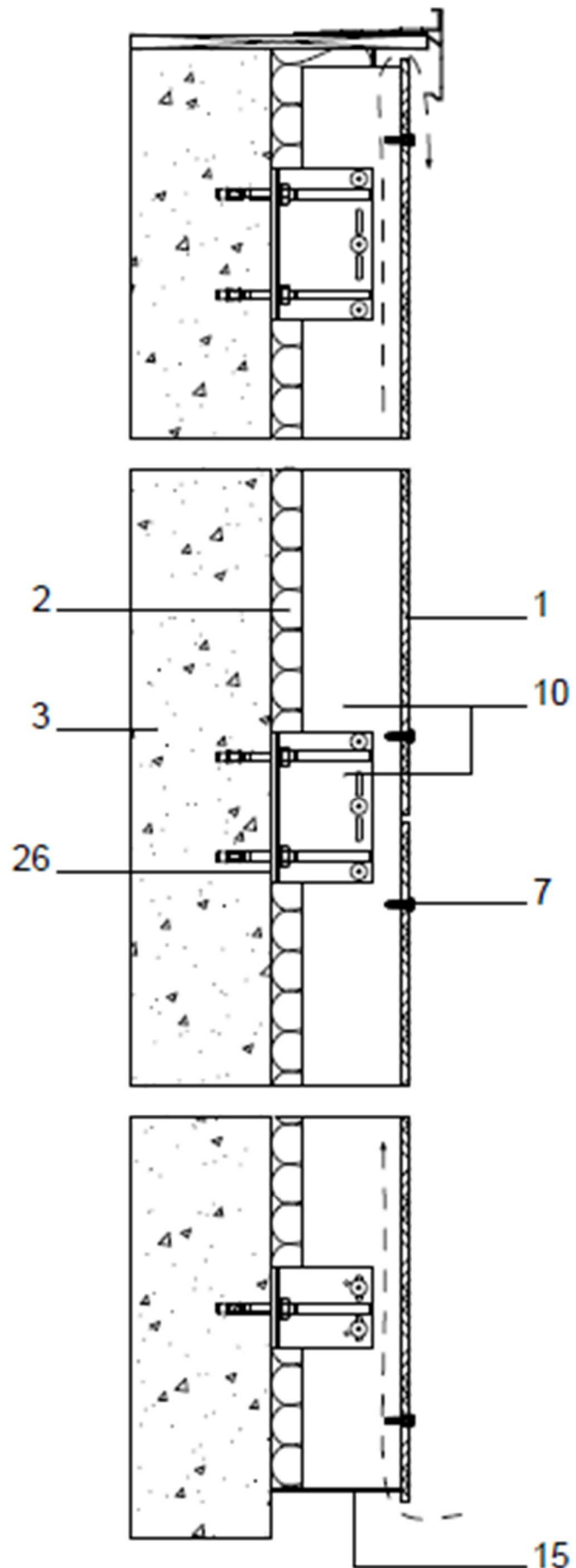
1.	SVK Façade panel
2.	Insulation
3.	Supporting internal skin
4.	EPDM joint strip
5.	Watertight, breather membrane
6.	Wooden sub-frame
7.	Screw
8.	Bracket
9.	Adjustable screw
10.	Metal Sub-frame
11.	Blind rivet
12.	Panel Hanger
13.	Undercut anchor
14.	Horizontal rail
15.	Ventilation profile
16.	Bonding system
17.	Horizontal joint profile
18.	Corner profile
19.	U-profile
20.	Sill flashing
21.	Roof Flashing
22.	Expansion joint
23.	Plywood frame
24.	Interior finish
25.	Kit
26.	Thermal break

3. PRINCIPLE – METAL SUB-FRAME - SCREWS

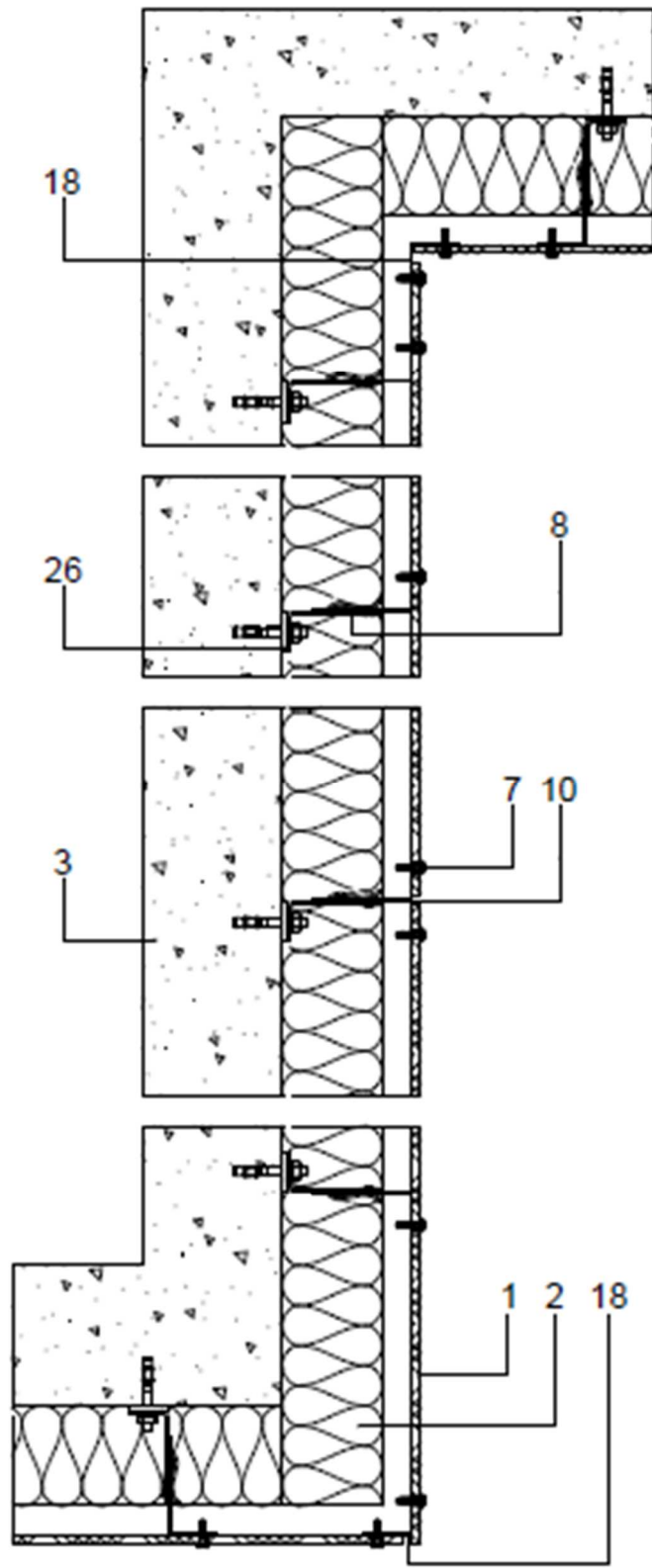


	H min- max	V min- max	F	S	L max
Ornimat, Decoboard, Puro Plus	20 – 100 mm	20 – 100 mm	Ø 5 mm	Ø 6,5 mm	3070 mm
Colormat	25 – 100 mm	70 – 100 mm	Ø 5 mm	Ø 6,5 mm	3050 mm

3.1 SINGLE VERTICAL SUB-FRAME WITH BRACKETS



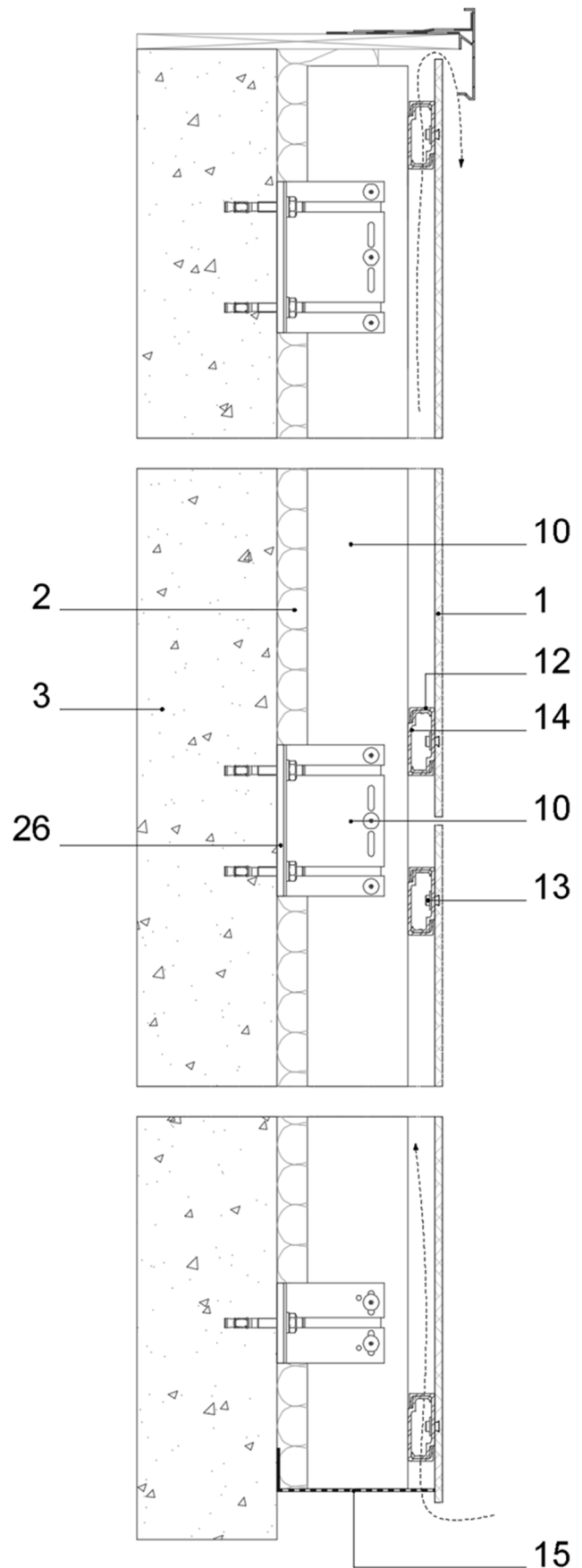
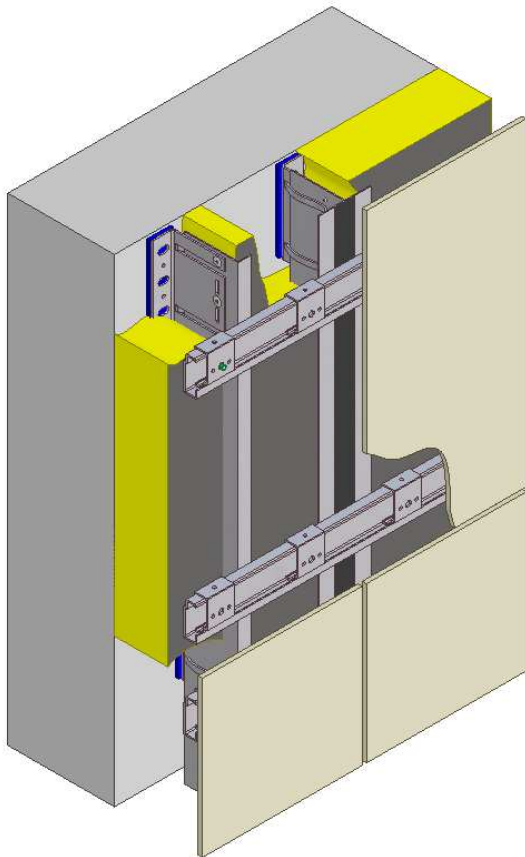
Legend	
1.	SVK Façade panel
2.	Insulation
3.	Supporting internal skin
4.	EPDM joint strip
5.	Watertight, breather membrane
6.	Wooden sub-frame
7.	Screw
8.	Bracket
9.	Adjustable screw
10.	Metal Sub-frame
11.	Blind rivet
12.	Panel Hanger
13.	Undercut anchor
14.	Horizontal rail
15.	Ventilation profile
16.	Bonding system
17.	Horizontal joint profile
18.	Corner profile
19.	U-profile
20.	Sill flashing
21.	Roof Flashing
22.	Expansion joint
23.	Plywood frame
24.	Interior finish
25.	Kit
26.	Thermal break



Legend

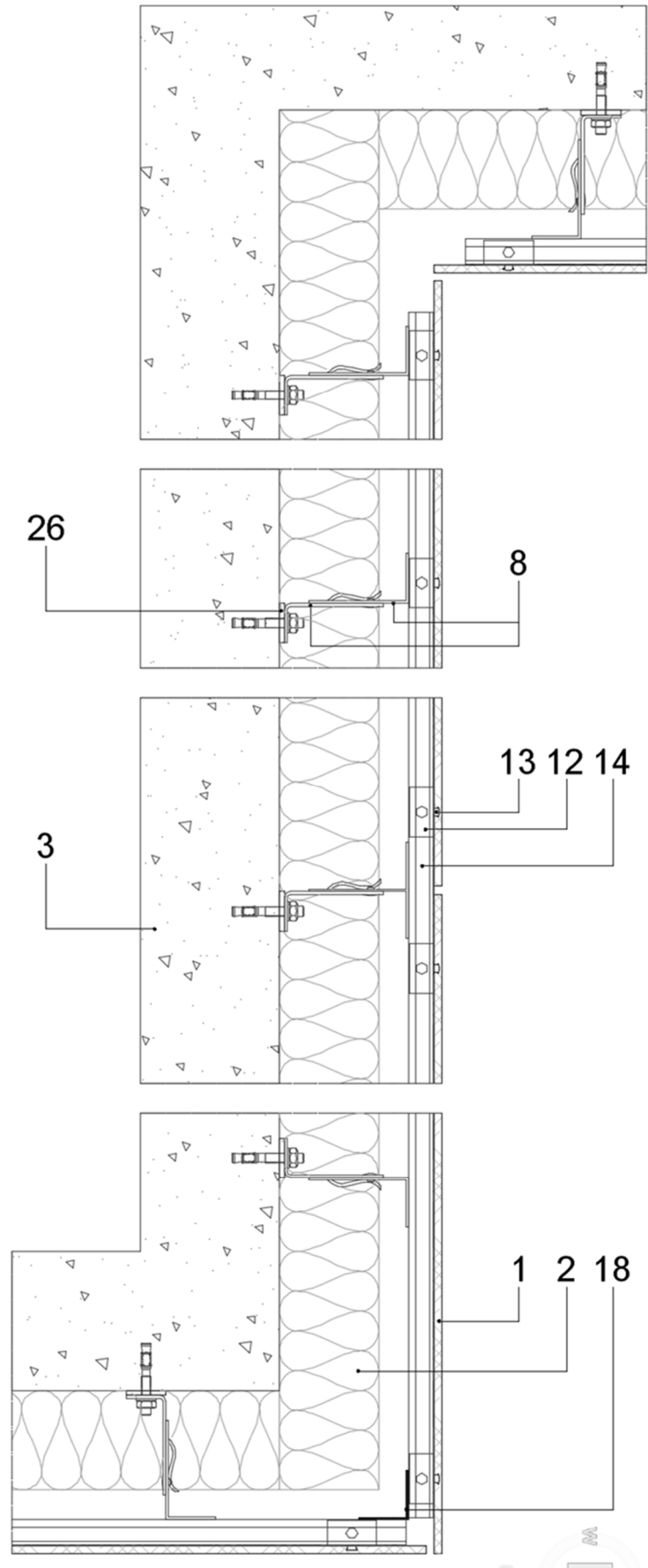
1.	SVK Façade panel
2.	Insulation
3.	Supporting internal skin
4.	EPDM joint strip
5.	Watertight, breather membrane
6.	Wooden sub-frame
7.	Screw
8.	Bracket
9.	Adjustable screw
10.	Metal Sub-frame
11.	Blind rivet
12.	Panel Hanger
13.	Undercut anchor
14.	Horizontal rail
15.	Ventilation profile
16.	Bonding system
17.	Horizontal joint profile
18.	Corner profile
19.	U-profile
20.	Sill flashing
21.	Roof Flashing
22.	Expansion joint
23.	Plywood frame
24.	Interior finish
25.	Kit
26.	Thermal break

4. DOUBLE SUB-FRAME – INVISIBLE MECHANICAL FIXING WITH UNDERCUT ANCHOR



Legend

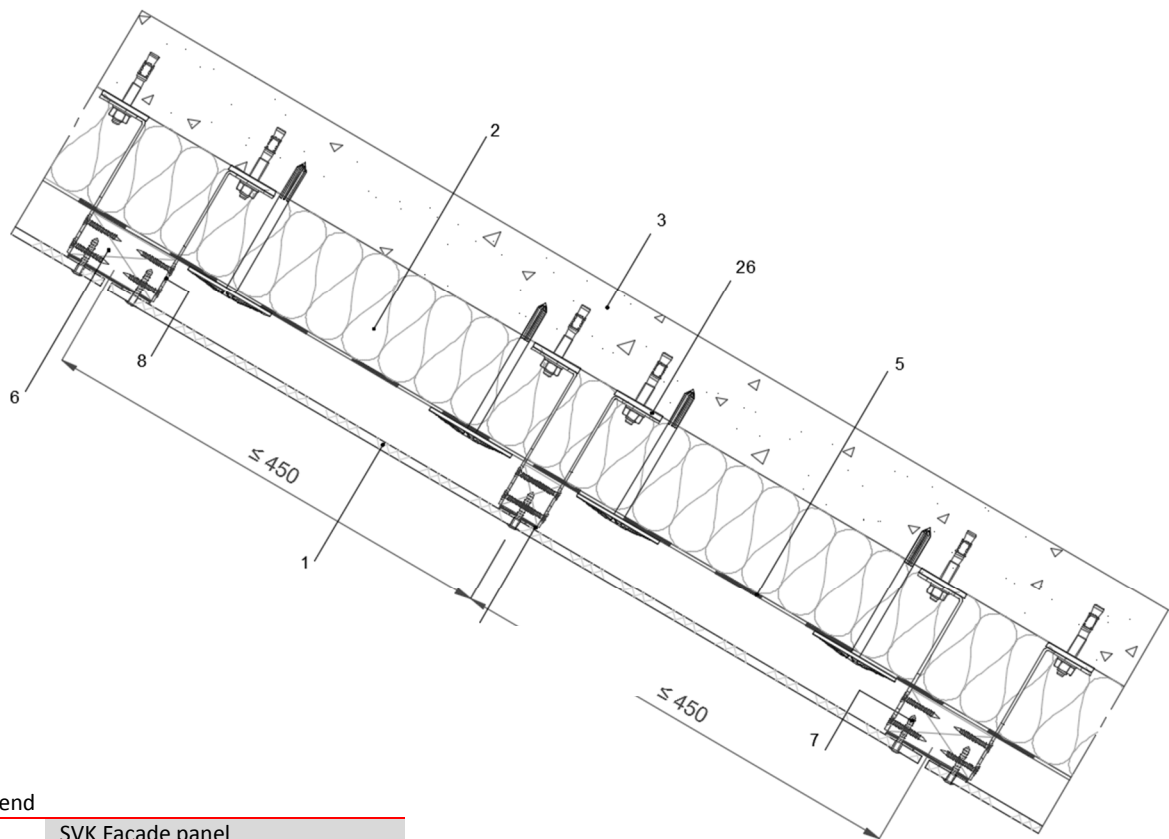
1.	SVK Façade panel
2.	Insulation
3.	Supporting internal skin
4.	EPDM joint strip
5.	Watertight, breather membrane
6.	Wooden sub-frame
7.	Screw
8.	Bracket
9.	Adjustable screw
10.	Metal Sub-frame
11.	Blind rivet
12.	Panel Hanger
13.	Undercut anchor
14.	Horizontal rail
15.	Ventilation profile
16.	Bonding system
17.	Horizontal joint profile
18.	Corner profile
19.	U-profile
20.	Sill flashing
21.	Roof Flashing
22.	Expansion joint
23.	Plywood frame
24.	Interior finish
25.	Kit
26.	Thermal break



Legend

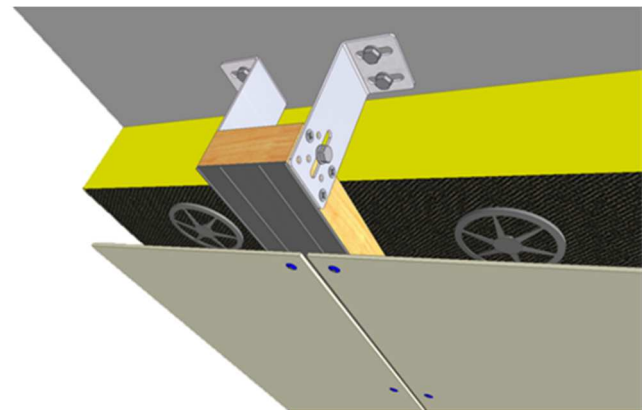
1.	SVK Façade panel
2.	Insulation
3.	Supporting internal skin
4.	EPDM joint strip
5.	Watertight, breather membrane
6.	Wooden sub-frame
7.	Screw
8.	Bracket
9.	Adjustable screw
10.	Metal Sub-frame
11.	Blind rivet
12.	Panel Hanger
13.	Undercut anchor
14.	Horizontal rail
15.	Ventilation profile
16.	Bonding system
17.	Horizontal joint profile
18.	Corner profile
19.	U-profile
20.	Sill flashing
21.	Roof Flashing
22.	Expansion joint
23.	Plywood frame
24.	Interior finish
25.	Kit
26.	Thermal break

5. CEILING CLADDING – SINGLE TIMBER SUB-FRAME WITH SUPPORT BRACKETS



Legend

1.	SVK Façade panel
2.	Insulation
3.	Supporting internal skin
4.	EPDM joint strip
5.	Watertight, breather membrane
6.	Wooden sub-frame
7.	Screw
8.	Bracket
9.	Adjustable screw
10.	Metal Sub-frame
11.	Blind rivet
12.	Panel Hanger
13.	Undercut anchor
14.	Horizontal rail
15.	Ventilation profile
16.	Bonding system
17.	Horizontal joint profile
18.	Corner profile
19.	U-profile
20.	Sill flashing
21.	Roof Flashing
22.	Expansion joint
23.	Plywood frame
24.	Interior finish
25.	Kit
26.	Thermal break



ANNEX I – GUIDE VALUES FOR SUPPORT AND FIXING DISTANCES

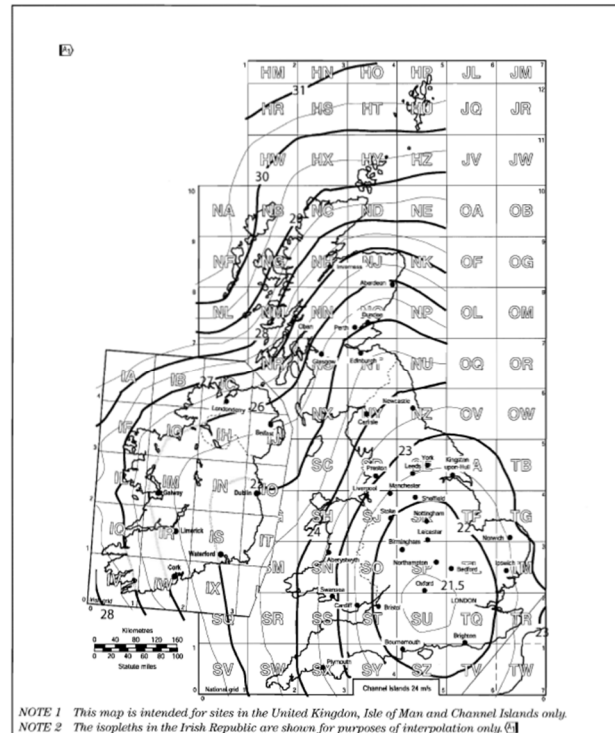
1. UNITED KINGDOM

The support- and fixing distances depend on the windload and terrain categories. Also the panel format (2 or more supports, 2 or more fixing rows) and the building height are of importance. As every specific situation its own specific measures requires, the support distances must be calculated for each project.

The windzones and terrain categories for United Kingdom are defined in BS EN 1991-1-4 and the national annex.

Windzone	
I	$v_{b,map} < 21 \text{ m/s}$
II	$v_{b,map} = 21 \text{ to } 23 \text{ m/s}$
III	$v_{b,map} = 23 \text{ to } 25 \text{ m/s}$
IV	$v_{b,map} = 25 \text{ to } 27 \text{ m/s}$
V	$v_{b,map} > 27 \text{ m/s}$

Terrain category	
Sea	Terrain category 0 is referred to as Sea
Country	Terrain I and II have been considered together
Town	Terrain II and IV have been considered together



For the determination of the support- and fixing distances the height of the building and altitude of the site must be taken into account. The maximum support- and fixing distances are determined based on the strength and bending requirements.

The calculation of the support and fixing distances should be done by a calculation bureau. The below given table shows only the maxima that should always be respected for screw and rivet fixing and for the conditions as stated below. These values are not applicable for invisible mechanical fixing with undercut anchor or bending.

If higher values are determined by calculation, these should still be reduced to the maxima shown below. The table is compiled for 2 fixing configurations with edge distances of max. 25 mm. Terrain height is kept at 0 m, distance to shoreline equals 10 km and the distance inside town equals 1 km.



Configuration: 2 x 2



Configuration: 3 x 3

Wind zone	Terrain		Building height H					
			H ≤ 10m			10m < H ≤ 40m		
			Intermediate distance between screws/rivets					
			600	500	400	600	500	400
I [v _{b,map} = 21 m/s]	Sea	2x2	-	600	600	-	498	600
		3x3	600	600	600	600	600	600
	Country	2x2	-	600	600	-	543	600
		3x3	600	600	600	600	600	600
	Town	2x2	-	600	600	-	541	600
		3x3	600	600	600	600	600	600
II [v _{b,map} = 23 m/s]	Sea	2x2	-	514	600	-	-	519
		3x3	600	600	600	570	600	600
	Country	2x2	-	600	600	-	-	566
		3x3	600	600	600	600	600	600
	Town	2x2	-	600	600	-	-	564
		3x3	600	600	600	600	600	600
III [v _{b,map} = 25,0 m/s]	Sea	2x2	-	-	544	-	-	439
		3x3	598	600	600	483	579	600
	Country	2x2	-	508	600	-	-	479
		3x3	600	600	600	526	600	600
	Town	2x2	-	555	600	-	-	477
		3x3	600	600	600	524	600	600
IV [v _{b,map} = 27 m/s]	Sea	2x2	-	-	466	-	-	377
		3x3	512	600	600	-	497	600
	Country	2x2	-	-	544	-	-	410
		3x3	598	600	600	-	541	600
	Town	2x2	-	-	594	-	-	409
		3x3	600	600	600	-	539	600

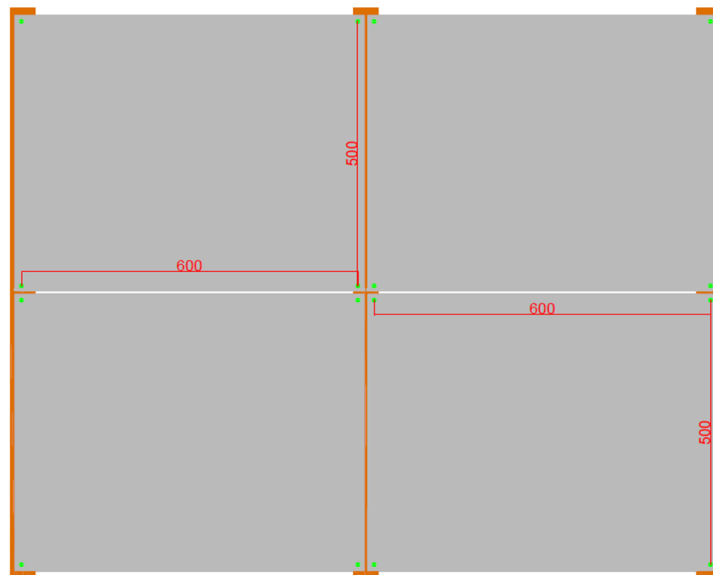
Example:

Windzone I [$v_{b,map} = 21$ m/s]; Terrain "Town"; Building height ≤ 10 m

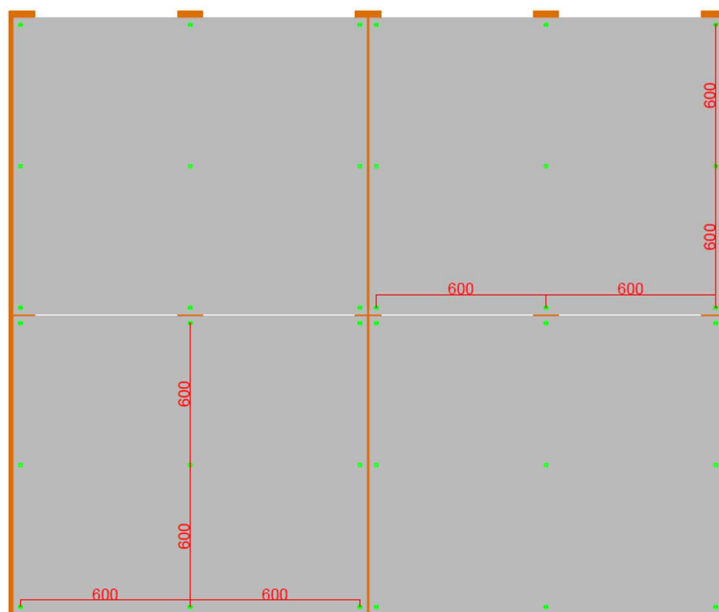
- Choosing the right dimensions

Wind zone	Terrain		Building height H					
			H ≤ 10 m			10m $<$ H ≤ 40 m		
			Intermediate distance between screws/rivets					
			600	500	400	600	500	400
I [$v_{b,map} = 21$ m/s]	Sea	2x2	-	600	600	-	498	600
		3x3	600	600	600	600	600	600
	Country	2x2	-	600	600	-	543	600
		3x3	600	600	600	600	600	600
	Town	2x2	-	600	600	-	541	600
		3x3	600	600	600	600	600	600

- 2x2 Configuration: It is possible to fixate the panels with 4 fasteners, the maximal intermediate distance between the fixing points is then 600x500mm. Lower intermediate distances are also possible but these require more profiles and reduce the panel sizes.



- 3x3 Configuration or more: If the panels are fixated with 9 or more fasteners then it is possible to have a maximal intermediate distance of 600x600mm. Lower intermediate distances are also possible but these require more profiles.



2. IRELAND

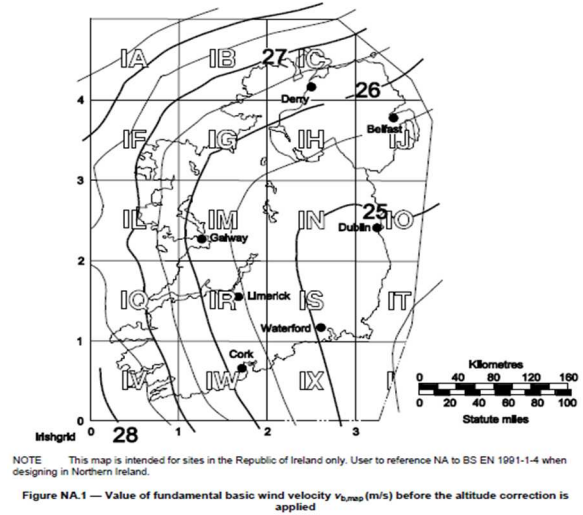
The support and fixing distances depend on the windload and terrain categories. Also the panel format (2 or more supports, 2 or more fixing rows) and the building height are of importance.

As every specific situation its own specific measures requires, the support distances must be calculated for each project.

The windzones and terrain categories for Ireland are defined in I.S. EN 1991-1-4 and the national annex.

Windzone	
I	$v_{b,map} = 25 \text{ m/s}$
II	$v_{b,map} = 26 \text{ m/s}$
III	$v_{b,map} = 27 \text{ m/s}$

Terrain category	
Sea	Terrain category 0 is referred to as Sea
Country	Terrain I and II have been considered together
Town	Terrain II and IV have been considered together



For the determination of the support- and fixing distances the height of the building and altitude of the site must be taken into account. The maximum support- and fixing distances are determined based on the strength and bending requirements.

The calculation of the support and fixing distances should be done by a calculation bureau.

The below given table shows only the maxima that should always be respected for screw and rivet fixing and for the conditions as stated below. These values are not applicable for invisible mechanical fixing with undercut anchor or bending.

If higher values are determined by calculation, these should still be reduced to the maxima shown below.

The table is compiled for 2 fixing configurations with edge distances of max. 25 mm.

Terrain height is kept at 0 m, distance to shoreline equals 10 km and the distance inside town equals 1 km.



Configuration: 2 x 2



Configuration: 3 x 3

Wind zone	Terrain		Building height H					
			H ≤ 10m			10m < H ≤ 40m		
			Intermediate distance between screws/rivets					
			600	500	400	600	500	400
I [v _{b,map} = 25,0 m/s]	Sea	2x2	-	-	544	-	-	439
		3x3	598	600	600	483	579	600
	Country	2x2	-	508	600	-	-	479
		3x3	600	600	600	526	600	600
	Town	2x2	-	555	600	-	-	477
		3x3	600	600	600	524	600	600
I [v _{b,map} = 26,0 m/s]	Sea	2x2	-	-	503	-	-	477
		3x3	600	600	600	526	600	600
	Country	2x2	-	-	587	-	-	443
		3x3	600	600	600	487	584	600
	Town	2x2	-	513	600	-	-	441
		3x3	600	600	600	485	582	600
III [v _{b,map} = 27 m/s]	Sea	2x2	-	-	466	-	-	377
		3x3	512	600	600	-	497	600
	Country	2x2	-	-	544	-	-	410
		3x3	598	600	600	-	541	600
	Town	2x2	-	-	594	-	-	409
		3x3	600	600	600	-	539	600

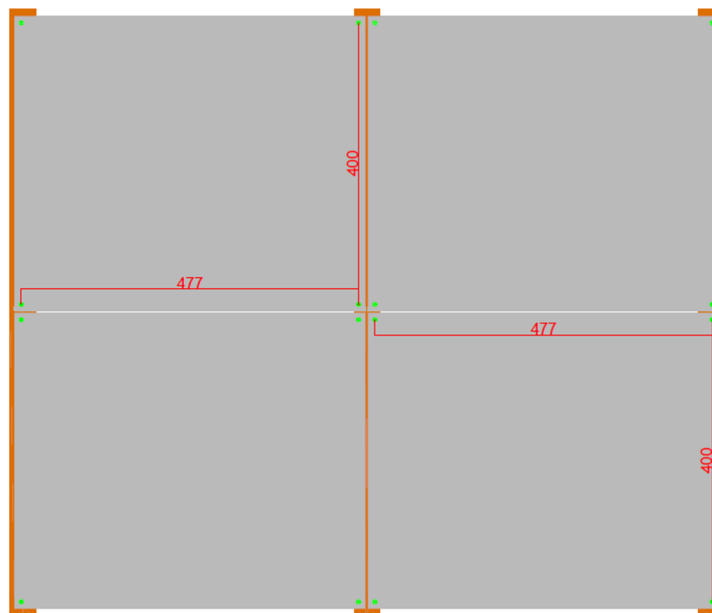
Example:

Windzone I [$v_{b,map} = 25 \text{ m/s}$]; Terrain "Town"; Building height > 10m

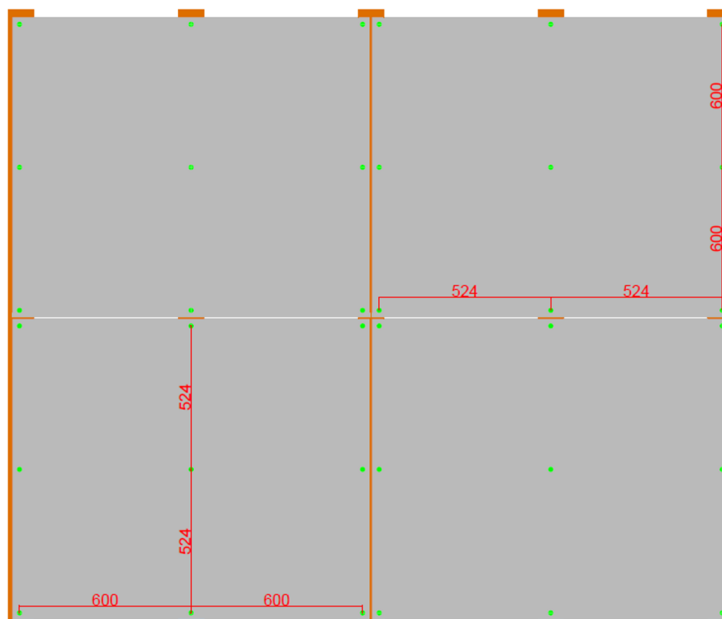
- Choosing the right dimensions

Wind zone	Terrain		Building height H					
			H ≤ 10m		10m < H ≤ 40m			
			Intermediate distance between screws/rivets					
		2x2	600	500	400	600	500	400
	Sea	3x3	-	-	544	-	-	439
			598	600	600	483	579	600
	Country	2x2	-	508	600	-	-	479
		3x3	600	600	600	526	600	600
	Town	2x2	-	555	600	-	-	477
		3x3	600	600	600	524	600	600

- 2x2 Configuration: It is possible to fixate the panels with 4 fasteners, the maximal intermediate distance between the fixing points is then 477x400mm. Lower intermediate distances are also possible but these require more profiles and reduce the panel sizes.



- 3x3 Configuration or more: If the panels are fixated with 9 or more fasteners then it is possible to have a maximal intermediate distance of 600x524mm. Lower intermediate distances are also possible but these require more profiles.



ANNEX II – Impact resistance

SVK facade panels Ornimat, Decoboard and Puro Plus resist an impact with a hard body up to 3 J and an impact with a soft body up to 130 J. SVK Colormat 8mm resist an impact with a soft body up to 100 J (tested according ISO 7892). If SVK panels are installed in areas where abnormal impact loads are expected then necessary precautions should be taken.

Where higher resistance is required a supporting panel should be placed behind the façade panel. Contact our Technical Department in this occasion.

It must be assumed that SVK façade panels are not vandalism resistant.

Table 1 – application category (according de ETAG 034-1)

Application category	Description
I	Ground floor, accessible to the public and fragile for impact with a hard body but no abnormal heavy usage
II	Zone exposed to impacts of thrown or shot objects, in public domain where the height of the kit limits the impact, or low level where the access is limited to maintenance work only.
III	Zone that does not get damaged by normal impact or impact by thrown or shot objects.
IV	Zone outside the reach of the ground floor

Table 2 - Impact category

Impact hard	Category			
	IV	III	II	I
1 joule	Façade element not torn ⁽²⁾	-	-	-
3 joule	-	Façade element not torn ⁽²⁾	No degradation ⁽¹⁾	No degradation ⁽¹⁾
10 joule	-	-	Façade element not torn ⁽²⁾	No degradation ⁽¹⁾
soft				
10 joule	No degradation ⁽¹⁾	No degradation ⁽¹⁾	-	-
60 joule	-	-	No degradation ⁽¹⁾	No degradation ⁽¹⁾
300 joule	-	-	No degradation ⁽¹⁾	-
400 joule	-	-	-	No degradation ⁽¹⁾

⁽¹⁾ Superficial damage, as long as there are no cracks it is not considered as “no degradation”

⁽²⁾ The results are considered as “torn” if a circle shaped penetration is noted.