

KOMO®
Product certificate with attestation
K77712-6



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Page 1 of 24

Gentaş Exterior Compact laminates for façade cladding

Gentaş A.Ş.

STATEMENT BY KIWA

This product certificate with attestation is based on Guideline 4101-01 "façade cladding, general requirements" dated January 1st 2024 including Guideline 4101-04 "façade cladding, additional requirements for decorative high-pressure laminate (HPL)", issued according to the Kiwa-Regulation for Certification.

The quality system and the product characteristics are checked periodically. The performance of the product in façades as façade cladding is assessed is checked in relation to the Structures (Living Environment) Decree and the principles of the check are re-checked periodically. Based on this, **Kiwa declares that** there is legitimate confidence that:

- Upon delivery, the products meet the requirements:
 - Of the technical specifications laid down in this product certificate with attestation;
 - The product requirements laid down in the Guideling, provided the product/packaging are accompanied by the KOMO® quality mark in a manner set out in this product certificate with attestation.
- The façades composed with this product, perform as specified in this product certificate with attestation.
- With due observance of the above façades comply with the requirements of the Structures (Living Environment) Decree specified in this product certificate with attestation, provided:
 - The technical specification and the conditions of application laid down in this product certificate with attestation are fulfilled;
 - The manufacture of the façades takes place in accordance with the regulations and/or processing methods laid down in this product certificate with attestation.

The essential characteristics, as laid down in the applicable harmonised European product standard, and the corresponding checks on the quality system of these characteristics do not form part of this declaration.

Ron Scheepers
Kiwa

This product certificate with attestation is also included on the KOMO foundation websites: www.komo.nl and www.komo-online.nl.

Users of this product certificate with attestation is advised to check whether it is still valid. For this purpose consult the website of Kiwa: www.kiwa.nl.

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Structures (living environment) decree

Assessed is:
• Quality system
• Product
• Single performance in the application
Periodic control

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1. TECHNICAL SPECIFICATION

This product certificate with attestation relates to:

- Gentaş Exterior decorative panels for decorative high-pressure laminate (HPL).
- The product characteristics of Gentaş Exterior decorative panels that can be used as façade cladding.
- The performance of the system, composed with the product for use as façade cladding.

1.1.1 Form and composition

Gentaş Exterior decorative panels are Decorative High Pressure Laminates (HPL) consisting of layers of fibrous material (paper) impregnated with thermosetting resins. Gentaş Exterior decorative panels have an integrated decorative pigment layer (colour).

The following types are available:

- Gentaş Exterior decorative panels EDS: standard grade panels;
- Gentaş Exterior decorative panels EDF: fire retardant grade panels.

1.1.2 Dimensions and tolerances

Gentaş Exterior decorative panels are available in the following standard dimensions:

- 1300 x 2800 mm – 1300 x 3050 mm.

Gentaş Exterior decorative panels are available from 4 - 20 mm thickness as where the standard thicknesses are 6, 8 and 10 mm. The dimensional tolerances are in accordance with table 2.

1.1.3 Color and surface structure

Gentaş Exterior decorative panels have a light surface structure and are available in colours as mentioned in table 1.

Table 1: Available colors

Color code	Description	Color code	Description	Color code	Description
3096	Alphina white	3155	Antrasit Gri	3263	Aqua (light blue)
3099	Dirty White	3158	New Burgundy	3294	Dark brown
3103	Ultra white	3159	Mocha (very light brown)	3307	Granite Grey
3104	Fildişi	3164	Coffe Mocha (dark brown)	3308	Emerald
3106	Bej	3167	Foreshore	4390	Red Bubinga
3107	Manolya	3168	Blade Grey	4513	Elm Tree
3108	Vanilya	3169	Navy Blue	4565	Swiss Elm
3127	Sunshine (yellow)	3190	Siyah	4572	New Wenge
3129	Rosso Evil (red)	3238	Darker Green	4584	Brown Swiss
3131	Lacivert (indigo blue)	3243	Ivory	4585	Chocolate Swiss Elm
3136	Azul Blue (light blue)	3246	Turquaz light	4601	Marmara Maple
3139	Orange	3253	Sandy	5544	Alumini
3140	Yeşil (green)	3254	Verde Limone (lighter green)	5628	Metallic Oxid
3143	Açık Yeşil	3255	Azurro	5629	Metallic Oxid
3144	Fıstık Yeşil (green)	3256	Cobalt	5630	Metallic Oxid
3146	Green	3257	Smoke Grey	5648	Copperfield
3153	Ofis Gri	3258	Arsenic		

2. QUALITY MARK AND INDICATIONS PLACED ON THE PRODUCTS / PACKAGING

On the documents related to the certified products the indication KOMO® or the KOMO® quality mark followed by the certificate number shall be given.

The product and/or packaging are marked with:

- The designation KOMO® or the KOMO® mark followed by the certificate number **K77712**. The designation of the mark is as follows:



- Name of certificate holder,
- Brand name,
- Production code or production date.

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3. PERFORMANCE IN THE APPLICATION

3.1 PERFORMANCE BASED ON THE STRUCTURES (LIVING ENVIRONMENT) DECREE

Structures (Living Environment) Decree – EXISTING CONSTRUCTION						
Paragraph of Structures (Living Environment) Decree	Article	Paragraphs	Description	Determination method	Limit value	Performance
3.2.1	3.8 3.9 3.10	1, 2 1	Structural safety	NEN 8700, NEN-EN 1990	No collapse	To be determined per project whereby the maximum span distances must be observed. Connections and fastenings must be made in accordance with § 5.2.2.
3.2.7	3.30 3.32 3.34 3.35	1, 2 1 1, 2	Limiting the development of fire and smoke	NEN 6065, NEN 6066	Fire class ≥ 4 or ≥ 2 (protected route).	G-ext EDS, ≥ 10 mm: B-s1, d0 G-ext EDF, ≥ 6 mm: B-s1, d0
3.3.1 ^{f)}	3.63 3.64	1, 2 1, 2	Moisture resistance	NEN 2778	Watertight	The panels are watertight, the seams water-resistant. The water-tightness must be ensured by a water-resistant substructure.
3.3.5	3.79 3.80	1, 2 1, 2	Protection against rats and mice		No openings > 0,01 m	The plates and seams do not contain any openings wider than 0.01 m. Additional provisions are made at the location of unclosable openings wider than 0.01 m from seams.

f) = optional

Structures (Living Environment) Decree – NEW CONSTRUCTION						
Paragraph of Structures (Living Environment) Decree	Article	Paragraphs	Description	Determination method	Limit value	Performance
4.2.1	4.11 4.12 4.14 4.15	1, 2 1, 2 1, 2	Structural safety	NEN-EN 1990 NEN-EN 1991-1-1 (gewicht) NEN-EN 1991-1-4 (wind) NEN-EN 1991-1-5 (thermisch) NEN-EN 1991-1-7 (stoot) NEN-EN 1993-1-1 (staal) NEN-EN 1995-1-1 (hout) NEN-EN 1999-1-1 (aluminium)	No collapse	To be determined per project whereby the maximum span distances must be observed. Connections and fastenings must be made in accordance with § 5.2.2.
4.2.7	4.42 4.44 4.46 4.48	1, 2 1, 2, 3 1, 2, 3	Limiting the development of fire and smoke	NEN-EN 13501-1	Fire class ≥ D	G-ext EDS, ≥ 10 mm: B-s1, d0 G-ext EDF, ≥ 6 mm: B-s1, d0
4.3.5 ^{f)}	4.117 4.118 4.119	1, 2 1, 2, 4	Moisture resistance	NEN 2778	Watertight	The panels are watertight, the seams water-resistant. The water-tightness must be ensured by a water-resistant substructure.
4.3.9	4.143 4.144 4.145	1, 2 1, 2 1	Protection against rats and mice		No openings > 0,01 m	The plates and seams do not contain any openings wider than 0.01 m. Additional provisions are made at the location of unclosable openings wider than 0.01 m from seams.
4.4.2 ^{f)}	4.158 4.159	1, 2 1 to 4	Environmental performance	Method for determining the environmental performance of buildings and civil engineering works	Milieuprestatie ≤ 1	Not determined.
4.5.5 ^{f)}	4.171 4.173	1, 2	Outdoor storage	NEN 2778	Rain-resistant	The panels are watertight, the seams water-resistant. The water-tightness must be ensured by a water-resistant substructure.

f) = Optional

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Structures (Living Environment) Decree – RENOVATION, RELOCATION OF BUILDING, CHANGE OF USE						
Paragraph of Structures (Living Environment) Decree	Article	Paragraphs	Description	Determination method	Limit value	Performance
	5.4	1 to 4	Renovation	See chapter 4, clause 4.4.2 excepted	Meets legally obtained level	
	5.6	1	Relocation	See chapter 3	Meets requirements chapter 3	
	5.7	1 to 3	Change of use	See chapter 3	Meets requirements chapter 3	
	5.9	1, 2	Structural safety	NEN 8700	No collapse	To be determined per project whereby the maximum span distances must be observed. Connections and fastenings must be made in accordance with § 5.2.2.
	5.12		Limiting the development of fire and smoke	NEN-EN 13501-1	Fire class B	G-ext EDS, ≥ 10 mm: B-s1, d0 G-ext EDF, ≥ 6 mm: B-s1, d0

3.1.1 Safety**3.1.1.1 Structural safety, SD paragraph 3.2.1, 4.2.1 and chapter 5**

The strength and stability of the Gentaş Exterior decorative panels and of the certified substructure are sufficient to withstand the occurring fundamental load combinations according to NEN-EN 1990 without collapsing during a reference period of 50 years. Tables 4 and 5 show the maximum real wind load for different fixing distances and fixing means for Gentaş Exterior decorative panels. These tables are based on Gentaş Exterior decorative panels with strength properties, dimensional stability and durability in accordance with the values from table 2 of this KOMO quality declaration.

Application conditions

- The application conditions stated in this KOMO quality declaration must be observed.
- Static calculations of the facade cladding system must be carried out in accordance with NEN-EN 1990 in the case of a composite construction, NEN-EN 1999-1-1 if the construction is made of aluminium and NEN-EN 1995-1-1 if the construction is made of wood, taking into account the following points:
 - The strength calculations of the facade panels are carried out by or on behalf of the manufacturer, or in accordance with his written instructions.
 - The loads that apply to the fire load case do not have to be taken into account.
- Connections, fixings and anchors must be carried out in accordance with a method as described in section 5.2.2.
- The fixing distance must be determined on a case-by-case basis in accordance with the chosen fixing system (see the instructions in section 5.2.2).
- For hanging heavy objects and when used in places subject to extra mechanical loads, additional provisions must be made in consultation with the manufacturer.
- Imposed deformation is not determined in the context of this attest-with-product certificate. The panels may only be used in flat facades.

3.1.1.2 Limiting the development of fire and smoke, SD paragraph 3.2.7, 4.2.7 and chapter 5

Gentaş Exterior decorative panels, type EDS and EDF with a minimum panel thickness of 10 mm are suitable for use in situations where a fire class of at least B-s1, d0 is required.

Gentaş Exterior decorative panels, type EDF with a minimum panel thickness of 6 mm are suitable for use in situations where a fire class of at least B-s1, d0 is required.

Explanations

- Instead of fire class 4, determined according to NEN 6065, fire class D can be used, determined according to NEN-EN 13501-1.
- Instead of smoke density $\leq 10 \text{ m}^{-1}$ or 5.4 m^{-1} , determined according to NEN 6066, smoke class s2 can be used, determined according to NEN-EN 13501-1.
- A façade of a building must consist, on the outside up to a height of 13 m, of building material combinations which at least comply with class D of the flame spread index, on the understanding that the side facing the escape route must belong to at least class C.
- The outside of a façade of residential buildings of more than two stories must consist, up to 2.5 m above the adjoining land, of building material combinations which at least comply with class B of the flame spread index.
- The outside of a building façade which is not intended for residential purposes must consist, as from a height of 13 m above the adjoining land, of building material combinations which at least comply with class B of the flame spread index.
- Material (combinations) of parapet lower than 1.5 m from the floor area must belong to at least to class C of the flame spread index.
- If the wall cladding is in contact with the indoor air (for example, an atrium or screened off gallery), smoke class s2 is required.
- Wherever requirements are imposed in terms of incombustibility, such as near hearths and flues, uncoated and/or coated profiled fibre cement sheets may not be used as such.
- The fire safety of (wooden) base constructions and any insulation material must be assessed on a case-by-case basis.

3.1.2 Health**3.1.2.1 Resistance to moisture, SD paragraph 3.3.1, 4.3.5 and chapter 5**

The Gentaş Exterior decorative panels are waterproof. The joint and connection details shown in § 5.2.4 are water-resistant. It must be taken into account that rain (and drifting snow) can penetrate into the cavity behind the facade panels at the location of panel joints, frame connections and occasionally via the ventilation facilities. The extent to which water enters the cavity depends largely on the chosen detailing. The watertightness must be determined by the finish of the inner leaf. For wooden or sand-lime brick inner cavity leaves, a WDO membrane must be used in accordance with NPR 2652 and frame connections must be watertight. For a concrete inner leaf, any seams in the inner leaf and the frame connections must be made watertight.



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On the inside of facade structures that have been constructed in accordance with the processing instructions, no inadmissible moisture accumulation occurs as a result of condensation.

Application conditions

- The materials used must comply with the system specification laid down in this quality declaration.
- Behind the façade panels, there must be a ventilated air cavity of at least 20 mm wide (see also paragraph 5.2.3).
- The temperature factor of the inner surface of the external dividing structure, determined in accordance with NEN 2778 or NPR 2878, is at least 0.65 for homes and residential buildings and at least 0.50 for buildings not intended for residential use.
- The design value of the thermal conductivity coefficient (λ) of the materials used must be determined in accordance with NEN 1068.

3.1.2.2 Protection against rats and mice, SD paragraph 3.3.5, 4.3.9 and chapter 5

The Gentaş Exterior decorative panels and joint connections according to § 5.2.4 have no openings wider than 0.01 m.

Application conditions

When using Gentaş Exterior decorative panels, gratings with openings no wider than 0.01 m must be used at seams/openings wider than 0.01 m.

3.1.3 Sustainability

3.1.3.1 Environmental performance Bbl section 4.4.2

The contribution of Gentaş Exterior decorative panels to the environmental performance has not been assessed.

3.1.4 Usability

3.1.4.1 Outdoor storage, Bbl paragraph 4.5 and H5

Gentaş Exterior decorative panels itself are watertight. The joint and connection details, shown in § 5.2.4 are water-resistant.

3.2 UNDETERMINED PERFORMANCE BASED ON THE DECISION ON CONSTRUCTION WORKS AND THE LIVING ENVIRONMENT

In addition to the performance requirements mentioned in § 3.1, several performance requirements apply to facades. However, the performance depends on the structure and design of the entire facade construction on which the facade cladding is applied. This includes the performance with regard to:

- Section 3.2.8 / 4.2.8: Limiting the spread of fire,
- Section 3.2.9 / 4.2.9: Further limiting the spread of fire and limiting the spread of smoke,
- Section 4.3.1: Protection against external noise,
- Section 4.4.1: Energy efficiency,

Whether the total facade construction with the application of Gentaş Exterior decorative panels complies with the stated requirement(s) has not been determined in the context of this attest-with-product certificate and must be determined by the specifier of the product during the design.

4. PRODUCT CHARACTERISTICS

Table 2 lists the product characteristics that form part of this product certificate with attestation. These meet the requirements specified in the table and, if stated, the stated performances.

Table 2: Product characteristics

Characteristic	Determination method	Requirement BRL / Attest	Performance
Thickness – $5,0 \leq t < 8,0$ mm – $8,0 \leq t < 12,0$ mm – $12,0 \leq t < 16,0$ mm – $16,0 \leq t < 20,0$ mm – $20,0 \leq t < 25,0$ mm – $25,0 \leq t$	EN 438-2, method 5	$\pm 0,40$ mm $\pm 0,50$ mm $\pm 0,60$ mm $\pm 0,70$ mm $\pm 0,80$ mm as specified by the manufacturer	Meets requirements
Length and width	EN 438-2, method 6	+ 10,0 / - 0,0 mm	Meets requirements
Straightness of edges	EN 438-2, method 7	$\leq 1,5$ mm/m ¹	Meets requirements
Squareness	EN 438-2, method 8	$\leq 1,5$ mm/m ¹	Meets requirements
Flatness $6,0 \leq t < 10,0$ mm $10,0 \leq t$ mm	EN 438-2, method 9	5,0 mm/m ¹ 3,0 mm/m ¹	Meets requirements
Dimensional stability: – Change dimensions parallel – Change dimensions perpendicular	EN 438-2, method 17	0,30 % 0,60 %	$\leq 0,20$ % $\leq 0,40$ %
Resistance to impact by large ball	EN 438-2, method 21	Drop height 1800 mm	Meets requirements
Flexural modulus	EN-ISO 178	≥ 9000 MPa	Meets requirements
Flexural strength	EN-ISO 178	≥ 80 MPa	Meets requirements

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Characteristic	Determination method	Requirement BRL / Attest	Performance
Resistance to climatic shock – Flexural strength index, D_s – Flexural modulus Index, D_m	EN 438-2, method 19	$\geq 0,80$ and Δ appearance ≥ 4 $\geq 0,80$ and Δ appearance ≥ 4	Meets requirements
Technical durability: – Increase in density – Classification surface – Classification corners – Density	EN 438-2, method 15 EN-ISO 1183-1	$\leq 5\%$ (EGS/EDS), $\leq 8\%$ (EGF/EDF) ≥ 4 ≥ 3 $\geq 1350 \text{ kg/m}^3$	Meets requirements $\geq 1350 \text{ kg/m}^3$
Resistance to artificial ageing	EN 438-2, method 15 / BRL 4101-04, § 5.1.8 EN-ISO 2813	No blisters or cracks, Gray scale ≥ 3 , Change in gloss $\leq 50\%$	Meets requirements
Resistance to SO ₂	DIN 50018 / ISO 105-A02	Δ colour ≥ 3	Meets requirements
Resistance to shocks from outside	BRL 4101-1, § 4.4.1	$\geq 0,4 \text{ kNm}$	$\geq 0,4 \text{ kNm}$

For this product NEN- EN 438-7 is applicable. The product characteristics for which no performance is given in the table above the European "Construction Product Regulation" (CPR) applies. Of the relevant product characteristics it is determined that the relevant product characteristic as mentioned comply to the given limit values.

5. PROCESSING INSTRUCTIONS

5.1 GENERAL

5.1.1 Transport

During transport of the Gentaş Exterior decorative panels, sturdy and flat pallets shall be used of a size that is at least the same as panels. To prevent scratching, panels must be lifted and not slid across underlying ones. During manual handling like loading and unloading, panels shall be lifted one by one.

5.1.2 Storage

Gentaş Exterior decorative panels shall be stored on flat surfaces to avoid warping of the panels.

During storage, panels shall be protected against moist, strong changes in temperature, pollution and damaging.

Panels should be stocked indoor in normal conditions between 45 and 70% ambient humidity and regular temperatures.

At the building site the panels shall be protected against moist rising from the ground. Panels preferably shall be stored horizontally, supported on the entire surface.

In case horizontal storage is not possible, than panels can be stored 'vertically' at an angle of 60-70° whereat the total surface will be supported.

In all cases the supporting surface shall be completely flat.

The top panel shall be stored with a protective sheet or board.

5.1.3 Processing instructions

Gentaş Exterior decorative panels shall be cut before use.

- Gentaş Exterior decorative panels can be machined in any shape of form with regular cutting equipment.
- It is recommended to use saws and chisels with carbide cutting edges.
- Panels must be cut with visible side facing upwards when using circular saws, downward with portable tools.
- When cutting panels to size, longer side of piece should coincide with the panel machine direction to ensure better panel stability.
- Preferably use machinery with fixed blades and moving tables.
- Use spacing papers or boards and make sure these do not contain splinters with reuse.
- Inside corners of, for example, openings shall have rounded edges with a minimum of 5 mm radius.

5.2 MOUNTING INSTRUCTIONS

5.2.1 General

The mounting system refers to panels which are screwed to a timber or aluminium sub frame by means of screws. Several mounting methods (visible and invisible) are possible.

Instructions for detailing

- The use of small fitting pieces must be avoided.
- Special provisions must be made in places where mechanical influences can be expected (for example, the local use of thicker panels or the application of special profiles for sunshades, ladders, etc.).

5.2.2 Supporting structure

5.2.2.1 General

The constructor shall determine the amount of anchoring and fixing points, the dimension of the supporting structure and the following order of mounting. The mounting and fixing points shall be calculated on loads as mentioned in paragraph 6.1.

For determination of the fixing points of the panels, tables 4 and 5 may be used.



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Adequate information on the used fasteners shall be available. Especially on allowable stress, the accompanying deformations and the behaviour in time as a result of physical and chemical circumstances. In all cases, fasteners shall be corrosion proof

The fasteners for façade cladding shall be of stainless steel, type 1.4301 (AISI 304 = A2). Changes in dimensions due to thermal changes shall be taken into account. For this reason a panel shall be fixed with one fixed point, preferably in the middle. Other fixing points shall be expansion points. The fasteners for the fixed and expansion points will have to be pre-drilled with a drill conductor to realise the required expansion space. In case of aluminium the holes in the panels and the supporting structure shall be pre-drilled at the same time by 'graduated' shaped drills. In case of mounting with rivets a special rivet washer shall be used which makes sure that rivets are mounted sliding.

Thermal changes in sizes shall be adequately taken into account. See also table 2, dimensional stability at elevated temperature (changes in measurements at 70 °C and 90% relative humidity. The panels shall be mounted free of stress as much as possible. To avoid deformation of the panels, over tightening of the screws shall be prevented.

5.2.2.2 Screwed fixing points on timber members

RVS Torx-screw (see figure 1):

- Panel thickness: 6 up till 10 mm;
- Shaft diameter: 4,8 mm;
- Hole diameter: 8 mm in panel.

RVS mounting screw with nylon washer and covering cap (see figure 2):

- Panel thickness: 6 tot 10 mm;
- Shaft diameter: 4,8 mm;
- Hole diameter: 8 mm in panel.

Countersunk screws are not allowed.

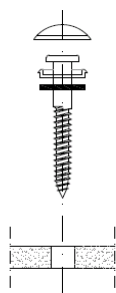


Figure 1.



Figure 2.

Table 3: Required hole diameters

Screw type	Hole diameter
Self centering RVS Torx—of mounting screw	8 mm
Pan head screw Ø 4 mm or Ø 5 mm, length at least 35 mm, head diameter 11 mm maximal	1,5x diameter screw

5.2.2.3 Mounting distances

Mounting distances shall be determined on basis of maximum deflection of the panels and the minimum pull out resistance of the screw as used. The pull out resistance of a screw in an aluminium member is better. Additionally the strength of a rivet is higher.

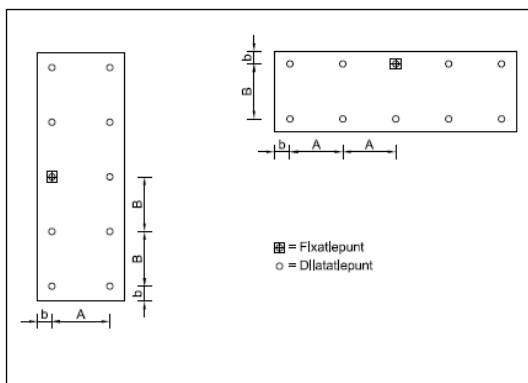


Figure 3: 2-point fixation

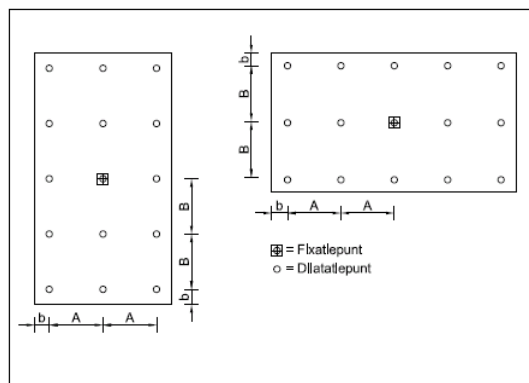


Figure 4: 3 or more point fixation

For a 6 mm panel, in tables 4 and 5 the maximum distances of fixation A and B in relation to the application area are given (building height per wind fastness area and terrain category). These distances are based on a timber supporting frame in accordance with paragraph 6.1.2.

Gentaş Exterior Compact laminates for façade cladding

Table 4: Maximum mounting distances 2-point fixation (A, B in mm) in relation to areas of application (building height in m)

2-point fixation according figure 3									
Mounting distance ¹⁾		Wind area I			Wind area II			Wind area III	
A [mm]	B [mm]	coast [m]	unbuild [m]	build [m]	coast [m]	unbuild [m]	build [m]	unbuild [m]	build [m]
480	360	2	10	20	3	20	20	20	20
420	360	3	20						
360	360	6							
300	360	15							

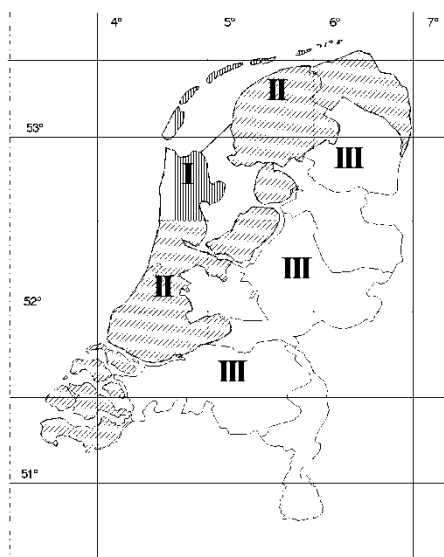
Table 5: Maximum mounting distances 3 or more point fixation (A, B in mm) in relation to areas of application (building height in m)

3 or more point fixation according figure 4									
Mounting distance ¹⁾		Wind area I			Wind area II			Wind area III	
A [mm]	B [mm]	coast [m]	unbuild [m]	A [mm]	B [mm]	coast [m]	unbuild [m]	A [mm]	B [mm]
420	360	2	10	20	5	10	20	10	20
360	360	4	20		10	20		20	
360	300	10							
300	300								

1) The mounting distances mentioned above are based on a timber substructure with a minimum density of the timber of 400 kg/m³.

Remarks

- As material factor Y_m of the screw 1,5 is held.
- For buildings higher than 20 m¹ an anchoring by means of screws shall be calculated. It is however advised not to use a timber substructure at buildings higher than 20 m¹.
- Besides strength also mounting distances depend on requirements on flatness. For this reason, the following conversion factors may be applied:
 - 8 mm panel thickness: increase mounting distances A and B with a maximum of 1/3;
 - 10 mm panel thickness: increase mounting distances A and B with a maximum of 2/3;
- For grouping in wind areas and the determination of the areas a reference is made to Figure 5.



Wind area I:

Markermeer, de Waddeneilanden en Noord-Holland ten noorden van de gemeenten Heemskerk, Uitgeest, Wormerland, Purmerend en Edam-Volendam.

Wind area II:

Groningen, Friesland, Flevoland, de overige Noord-Hollandse gemeenten, Zuid-Holland en Zeeland.

Wind area III:

Drenthe, Overijssel, Gelderland, Utrecht, Noord-Brabant en Limburg

Figure 5: Grouping of the Netherlands in wind areas in accordance with NEN-EN 1991-1-4+NB.

5.2.3 Ventilation

For a proper application of panels a good ventilation behind the panels is indispensable. In order to remove any water by evaporation and drainage behind panels and the underlying wall / insulation layer:

- An uninterrupted cavity with a depth of at least 20 mm behind the panels.
- Ventilation openings at the top and bottom of façade with area:
 - ≥ 20 cm² /linear meter for height up to 1 m;
 - ≥ 50 cm² /linear meter above 1 m;
- Nesting of rats and mice behind the façade must be prevented. Openings wider than 1 cm for joints, where the panels meet other structures or for ventilation shall be fitted with closable screens.

Gentaş Exterior Compact laminates for façade cladding

5.2.4 Instructions on joints

5.2.4.1 Open Joints

When using horizontal or vertical open joints, high demands on the quality of the insulation material are set. In case of mineral wool a heavier coating shall be applied. This shall have a prolonged resistance to moist, high wind loads and UV radiation.

In case battens are used, a WBO-membrane can be applied. In this case the insulation does not have to have a coating unless required by the open time of the insulation.

Also additional demands shall be set on durability of the supporting structure. In case a timber supporting structure is used it shall be classified under durability class 1 or 2, according to NEN-EN 350-1: 1994 (Durability of timber and timber based products – durability of solid timber – Part 1).

5.2.4.2 Closed joints

A closed joint can be achieved by using various horizontal and vertical plastic or aluminium sealing profiles. Application of these profiles may not hinder the hygrothermal working of the panels.

Use of elastic kit for joints is not recommended since the may hinder the hygrothermal working of the panels. Furthermore the working life of the kit is limited and it may attract dirt more.

The type of seal used depends on how the panels are mounted.

6. APPLICATION AND USAGE CONDITIONS

6.1 FORM AND COMPOSITION

6.1.1 Substructure, general

The structure consists of vertical posts with a ventilation column of at least 20 mm deep between the panel and the underlying structure. In order to obtain a flat façade a proper alignment of the support structure is necessary. The center-to-center distance of the posts ranges from 400 to 800 mm. This depends on the thickness of the panel and the number of horizontal fixing points.

The substructure of the façade cladding system should be sufficiently durable and sufficiently strong and stiff, and are to be connected with the building structure in such a way, that the stability of the cladding system is ensured and the loads acting thereon can be transferred to the building structure.

Static calculations for the determination of the dimensioning and fixings of the panel and the sub-structure, shall be executed in accordance with EN 1991, based on the notional value of the:

- dead weight of the panels;
- wind load;
- loads due to differences in temperature;
- loads due to imposed deformations;
- impact loads.

In the determination of the deflection the wind load may be multiplied by 0.7.

Deflection of the panels may not exceed $1/200 \times \text{span} / \text{mounting distance}$.

Edge distances and the number of fixing points are stated in paragraph 5.2.2.3, tables 4 and 5.

General details are given in chapter 6 of this KOMO quality statement.

6.1.2 Substructure, timber

6.1.2.1 General

Constructions have to be made of rectangular timber (not plywood) which at least meets the following specifications:

- The timber for the support structure shall have a minimum density of 400 kg/m³.
- The timber shall be classified under durability class 1 or 2, according to NEN-EN 350-1: 1994 (Durability of timber and timber based products – durability of solid timber – Part 1). The required durability can be obtained by thermal or chemical modification of the timber up till the core of the timber. Any timber preservation methods and / or fire retardant treatments must meet the requirements as stated in BRL 0601 (Timber preservation), 0605 (Modified timber) and BRL 0602 (Fire retardant treatment of wood and wood products using the vacuum and pressure method).
- The modified timber may not cause any damage to other parts of the supporting structure. With application of timber, modified according to the vacuum/pressure method, additional measures shall be taken to avoid water form entering the core of the timber.

Remark

Processing of modified timber may cause a reduction in durability.

- The timber can be classified in a strength class in accordance with NEN-EN 338.
- The moisture content of the timber shall not exceed 18 %, determined according to NEN 5461. To prevent rotting of timber, necessary measures must be taken to prevent a permanent moisture load.
- The timber may not have any active degradation caused by larvae, insects and/or fungi.
- Soft wood shall at least satisfy quality class C in accordance with NEN 5466.

6.1.2.2 Dimensions timber support structure

The timber support structure should be detailed in a way, that no ultimate limit state and serviceability limit state is exceeded during the reference period as a result of changes in the geometry.

Remark

In the determination of the size of the timber cross-section(s), the presence of a necessary ventilation column with a depth of at least 20 mm and thickness of the insulating layer if present, must be taken into account. Especially with thermally modified wood a reduced pull-out resistance of the screws must be taken into account. In that case it therefor may be necessary to apply thicker members.

Gentaş Exterior Compact laminates for façade cladding

6.1.2.3 Fasteners timber support structures

The timber support structure must be assembled with fixings that at least meet the requirements of the permissible deviations and basic requirements for class I according to NEN-EN 14592. The fasteners for timber substructures must be made in stainless steel, type 1.4401 (AISI 316 = A4). The fasteners for aluminium substructures must be made in stainless steel, type 1.4301 (AISI 304 = A2).

6.1.3 Mounting structure, aluminium

6.1.3.1 General

The aluminium mounting structure must be detailed in a way that the ultimate limit state and serviceability limit state is not exceeded during the reference period.

Remark

The strength and stiffness of the mounting structure of aluminium to be mathematically and / or by dynamic wind resistance tests are demonstrated.

6.1.3.2 Fasteners aluminium mounting structure

The manufacturer must determine the number of anchoring and fixing points, sizing and order of assembly. The attachments should be calculated and / or tested for wind forces (pull). The confirmation must be taken sufficient account of the material bound thermal length changes. The panels should as far as possible free of tension to be confirmed.

6.1.4 Blind fixing

6.1.4.1 Blind fixing with clamps

With this system the Gentaş Exterior decorative panels are mounted on aluminium mounting structure using hidden connecting clamps. The aluminium mounting structure must be detailed in a way that the ultimate limit state and serviceability limit state is not exceeded during the reference period. In order to reduce the risk of screws undoing, aluminium profiles shall have a thickness of at least 2.5 mm.

Remark

The strength and stiffness of the aluminium mounting structure shall be demonstrated mathematically and / or by dynamic wind resistance tests.

The dowel to be used for this mounting system will have a blind rivet from itself and conic shaped double split mounting space. The dowel and other parts must be made of stainless steel material.

The dowel is carefully placed on the mounting space on the inside of the wall siding panel.

The recommended panel thickness is between 8 mm and 10 mm. The aluminium structure must be prepared so that no pressure must be applied to the Gentaş Exterior panel by the infrastructure. While performing the connections (drilling the hole, placing the rivet head) personnel which has been educated by the manufacturer must supervise the process.

This type of wall siding materials must be mounted by only educated expert personnel. It is required to cover the supporting profile connections of the structure with panels. Bottom holes must be drilled in the factory or under workshop conditions with special drilling equipment.

The number of dowels to be used must be determined according to the engineering requirements of the building. The dust in the hole left after drilling must be removed completely.

The nominal hole diameters drilled must be in accordance with hole diameters of the plugs used.

The depth of the dowel:

- Panels with 8 mm thickness 4 mm;
- Panels with 10 mm thickness 6 mm.

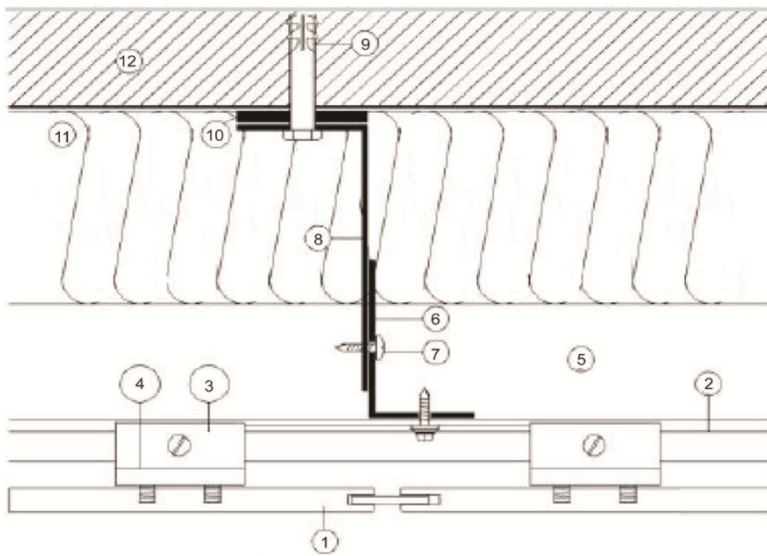
Plugs must be mounted in place using an instrument which is appropriate for this system. Random checks must be carried out on the holes which are chosen randomly. The following measurements must be carried out according to the information supplied by the manufacturer of the plugs and those measurements must be kept in recorded reports and documented accordingly:

- Cylindrical drill hole diameter;
- The diameter of the dowel which is cut from the bottom part;
- The examination of the upper part of the drill hole and the depth of the hole.

Eye examination is required to understand whether the Plug has entered the drilled hole in an appropriate manner or not. The side of the hole must sit on the clamp and must support itself strongly.

The construction manager or his representative must collect and keep the evidences showing whether the mounting operation carried out correctly or not.

Gentaş Exterior Compact laminates for façade cladding



1. Gentaş Exterior Panel
2. U Profile
3. Secret Joint Element
4. Compact Joint Screw
5. Ventilation Area
6. Aluminium T or P Profiles
7. Screw
8. Aluminium Anchorage
9. Steel Wall Plug
10. Insulator
11. Insulation
12. Wall

6.1.4.2 Blind fixing with rivets

It is the most widely used method for Ventilated Exterior Cladding systems in the world. It is a method of fixing Gentaş Exterior Cladding Panels on aluminium structure by means of appropriate rivets. While establishing the aluminium structure profile, national and international regulations must be taken into account. The aluminium support structure shall be detailed in a way that outermost limits or condition of use during the reference period will not be exceeded. To reduce the risk of unscrewing of fasteners, aluminium profiles shall have a thickness of at least 2.5 mm.

Remark

The strength and stiffness of the aluminium support structure has to be demonstrated by means of calculations and /or tests.

This aluminium structure is composed of support profiles basically mounted vertically to the wall. Due to the material characteristics of Gentaş Exterior panels, panels are affected by weather conditions especially from changes in temperature and humidity. As a result of these effects, minimal size changes can be observed. See also table 2, dimensional stability at elevated temperature (changes in size at 70 °C and under 90% humidity). Values stated in Gentaş Exterior Technical Data Page must be taken into account by the users. Smoothly cut sides provide the balanced and smooth vision of a structure to which cladding is carefully applied. This cut may be carried out with Professional diamond cutters. When mounting panels it is required to leave at least an 8 mm gap taking size changes into account. In aluminium structures, you can use rivets with colours of panel colours.

Rivet shell: Al Mg 5

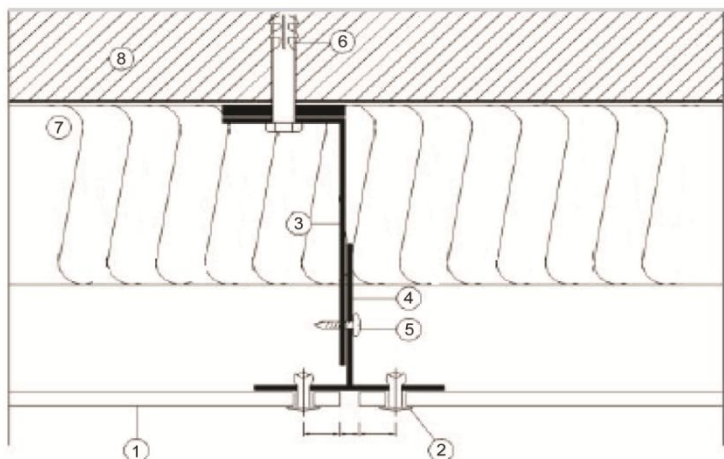
The resistance of rivet spindle against tension: 5,2 KN.

Diameters of holes to be drilled in Gentaş Exterior panels: 5,1 mm - 8 mm or required diameter.

The diameter of the hole to be drilled in aluminium infrastructures: 5,1mm.

The distance between rivets must be calculated in accordance with the engineering requirements of the construction. Unless recommended otherwise, in applicable regulations the following range can be recommended:

- For 6 mm: 45 cm – 60 cm;
- For 8 mm: 60 cm – 80 cm;
- For 10 mm: 70 cm – 90 cm.



1. Gentaş Exterior Panel
2. Rivet
3. Aluminium Anchor
4. Aluminium T or P Profiles
5. Screw
6. Steel Wall Plug
7. Insulation
8. Wall

Gentaş Exterior Compact laminates for façade cladding

6.1.5 Thermal insulation

Insulation in the shape of panels or blankets, whether or not featuring a coating, shall be processed in accordance with the manufacturers instructions or valid quality declaration granted by an Institute accredited by the Board of Accreditation (RVA). The type of insulation and thickness shall be tuned to the requirements by the Dutch Building Decree.

Remark

The insulation shall be sufficiently watertight. It is advised to use a mineral wool with a waterproof coating. When using open joints higher demands shall be set on the water tightness of the insulation. With mineral wool a heavier coating shall be applied with a prolonged resistance to UV radiation.

In case battens are used, a WBO-membrane can be applied. In this case the insulation does not have to have a coating unless required by the open time of the insulation.

6.1.6 Accessories

Sealing profiles of aluminium, plastic or EPDM-rubber for sealing joints between panels shall be mounted tight and in the correct place. Sealing profiles may not be stapled but must be attached by means of glue for example.

Bars, drip rails water and so on must be provided with recesses.

7. MAINTENANCE INSTRUCTIONS

Areas of light dirt contamination can be cleaned with a towel, hot water or standard, non-abrasive cleaning agents. Areas of heavier dirt contamination may be cleaned with standard solvents. Always start by cleaning a small area first whilst observing any changes in appearance.

8. TIPS FOR THE USER

Check on delivery of the products listed under the "technical specification" whether:

- The product(s) and material(s) ordered are delivered in accordance with the agreement you made.
- The brand and the method of marking is correct
- No defects or damage is visible (for example, resulting from the transportation).

In the context of this product certificate with attestation, no checks take place on the accuracy of the performance of the essential characteristics.

The statements in this product certificate with attestation may not be used to replace the CE marking and/or the corresponding mandatory Declaration of Performance.

If on the basis of the foregoing you decide to proceed to rejection, please contact:

- GENTAŞ A.Ş.

And if necessary,

- Kiwa Nederland B.V.

Carry out the storage, transport and processing in accordance with the provisions included in this product certificate with attestation and/or documents of the certificate holder.

Follow the application conditions and processing instructions included in this product certificate with attestation and belonging attestation and/or documents of the certificate holder.

Check whether this product certificate with attestation is still valid, consult the website www.kiwa.nl.

9. DOCUMENT LIST

Structures (living environment) decree:2018 Stbl. 2018, 291, laatst gewijzigd stbl, 2022, 360.

NEN 1068	Thermische isolatie van gebouwen – Rekenmethoden
NEN 2778	Vochttering in gebouwen – Bepalingsmethoden
NEN 5461	Kwaliteitseisen voor hout (KVH 2000) - Gezaagd hout en rondhout - Algemeen gedeelte
NEN 5466	Kwaliteitseisen voor hout (KVH 2010) - Op uiterlijke kenmerken gesorteerd Europees naaldhout
NEN 6762	Stalen stiftvormige verbindingsmiddelen voor dragende houtconstructies
NEN 6065	Bepaling van de bijdrage tot brandvoortplanting van bouw materiaal (combinaties)
NEN 6066	Bepaling van de rookproductie bij brand van bouw materiaal (combinaties)
NEN 8700	Beoordeling van de constructieve veiligheid van een bestaand bouwwerk bij verbouw en afkeuren - Grondslagen
NEN-EN 338	Hout voor constructieve toepassingen - Sterkteklassen
NEN-EN 350-1	Duurzaamheid van hout en op hout gebaseerde producten - Natuurlijke duurzaamheid van massief hout - Deel 1: Richtlijn voor de principes van het beproeven en het classificeren van de natuurlijke duurzaamheid van hout
EN 438-2	Decoratieve hoge-druk gelamineerde plaat (HPL) - Platen gebaseerd op thermohardende harsen (vaak laminaat genoemd) - Deel 2: Bepaling van de eigenschappen
EN 438-7	Decoratief hoge-druk laminaat (HPL) - Platen gebaseerd op thermohardende harsen (gewoonlijk Laminaat genoemd) - Deel 7: Compact laminaat en samengestelde panelen van HPL voor wand- en plafondafwerking binnen en buiten
EN 1990	Eurocode – Grondslagen van het constructief ontwerp, inclusief nationale bijlage



Gentaş Exterior Compact laminates for façade cladding

EN 1991-1-1	Eurocode 1: Belastingen op constructies – Deel 1-1: Algemene belastingen – Volumieke gewichten, eigengewicht en opgelegde belastingen voor gebouwen, inclusief nationale bijlage
EN 1991-1-4	Eurocode 1: Belastingen op constructies – Deel 1-4: Algemene belastingen – Windbelasting, inclusief nationale bijlage
EN 1991-1-5	Eurocode 1: Belastingen op constructies – Deel 1-5: Algemene belastingen – Thermische belasting, inclusief nationale bijlage
NEN-EN 1991-1-7	Eurocode 1: Belastingen op constructies – Deel 1-7: Algemene belastingen – Buitengewone belastingen: stootbelastingen en ontploffingen, inclusief nationale bijlage
NEN-EN 1993-1-1	Eurocode 3: Ontwerp en berekening van staalconstructies - Deel 1-10: Materiaaltaaiheid en eigenschappen in de dikterichting, inclusief nationale bijlage
NEN-EN 1995-1-1	Eurocode 5: Ontwerp en berekening van houtconstructies - Deel 1-1: Algemeen - Gemeenschappelijke regels en regels voor gebouwen, inclusief nationale bijlage
NEN-EN 1999-1-1	Eurocode 9: Ontwerp en berekening van aluminiumconstructies - Deel 1-1: Algemene regels, inclusief nationale bijlage
NEN-EN 13501-1	Brandclassificatie van bouwproducten en bouwdelen – Deel 1: Classificatie op grond van resultaten van beproeving van het brandgedrag
EN 14592	Houtconstructies - Stiftvormige verbindingsmiddelen - Eisen
NEN-ISO 105-A02	Textiel - Beproeving van de kleurechtheid - Deel A02:Grijsschaal voor de bepaling van de kleurverandering
NEN-EN-ISO 178	Kunststoffen - Bepaling van de buigeigenschappen
NEN-EN-ISO 1183-1	Kunststoffen - Methoden voor het bepalen van de dichtheid van niet-geschuimde kunststoffen - Deel 1: Dompelmethode, vloeistof pyknometermethode en titratiemethode
DIN 50018	Prüfung im Kondenswasser-Wechselklima mit schwefeldioxidhaltiger Atmosphäre
NPR 2652	Vochtwering in gebouwen - Wering van vocht van buiten en wering van vocht van binnen - Voorbeelden van bouwkundige details
NPR 2878	Uitwendige scheidingsconstructies van gebouwen - Vereenvoudigde berekeningsmethode voor de binnenoppervlaktetemperatuurfactor

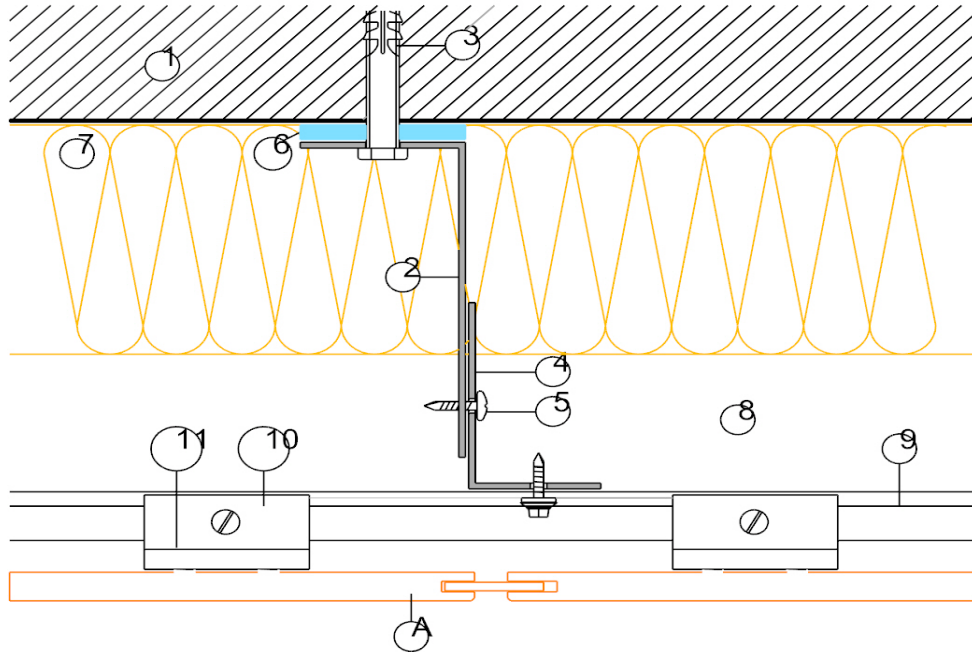
Gentaş Exterior Compact laminates for façade cladding

10. DRAWINGS

10.1 HORIZONTAL SECTIONS 8 MM SLIDE SYSTEM

10.1.1 Detail 1 - Vertical joint

Façade Details of Compact Laminate, 8 mm Slide System



HORIZONTAL SECTION

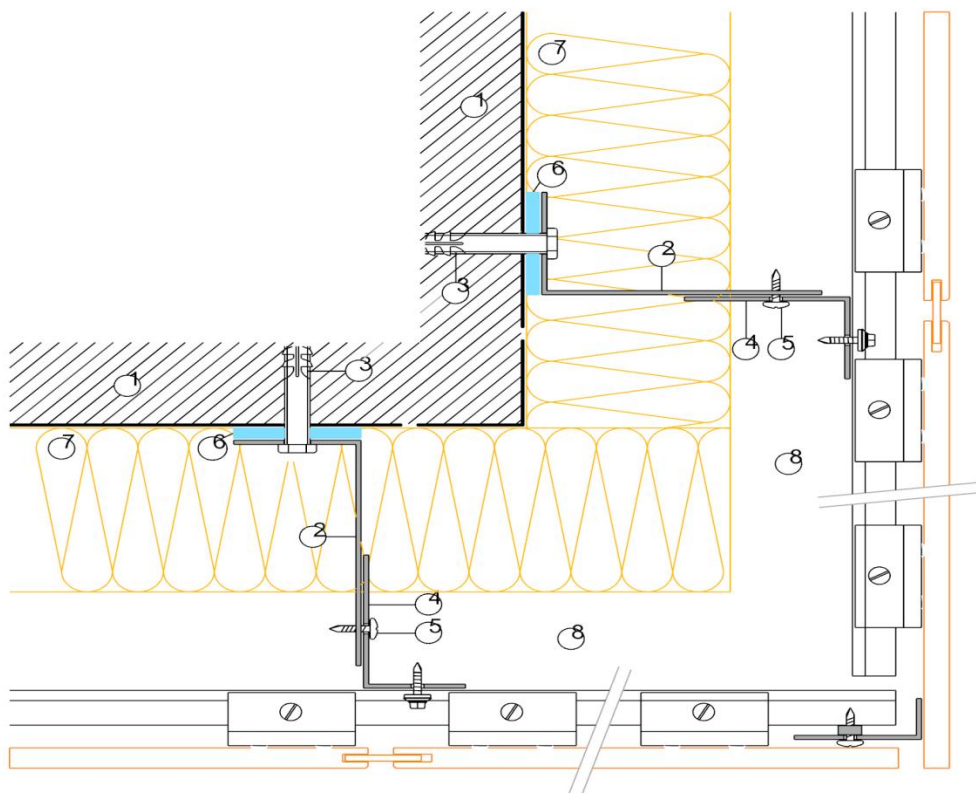
VERTICAL JOINT M = 1:2

- A. Compact Laminate Panel, thickness : 8 mm
- 1. Floor
- 2. Aluminium anchor, thickness : 3 mm
- 3. Chemical Wall Plug (In accordance with the type of wall)
- 4. Aluminium Shape T&L, thickness : 2 mm
- 5. 4.8 x 19 AKB MUV
- 6. Insulator
- 7. Insulator Material
- 8. Air gap of silicon
- 9. Horizontal U profile
- 10. Hidden Finish Connection Hanger
- 11. Compact connection screw

Gentaş Exterior Compact laminates for façade cladding

10.1.2 Detail 3 – External corner

Façade Details of Compact Laminate, 8 mm Slide System

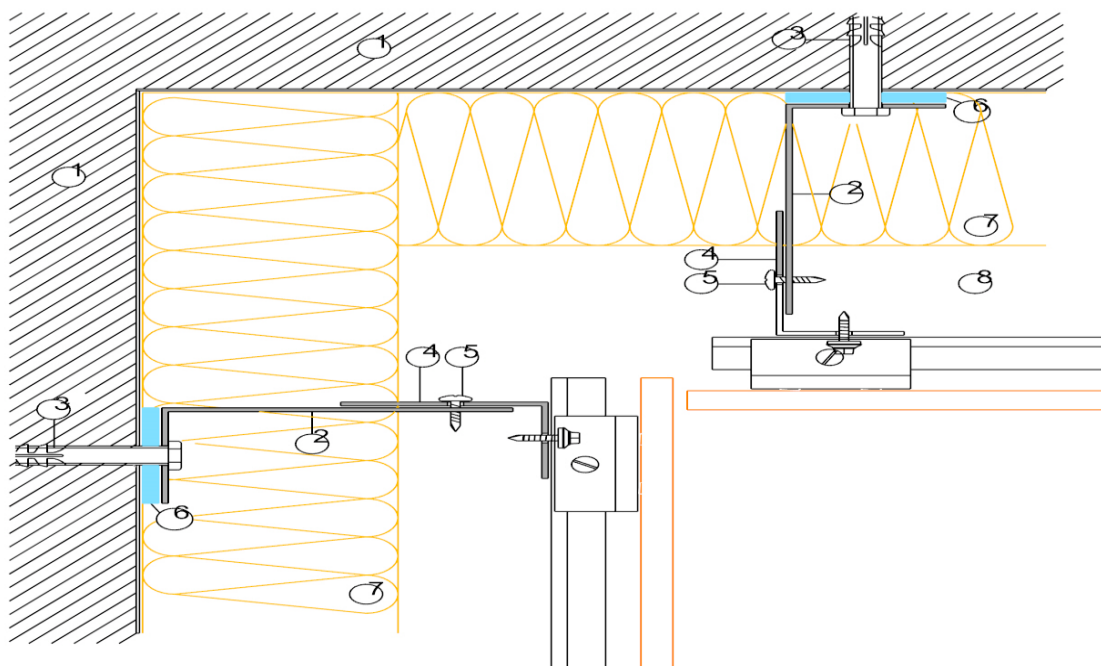


HORIZONTAL SECTION

EXTERNAL CORNER M = 1:2

10.1.3 Detail 5 – Internal corner

Façade Details of Compact Laminate, 8 mm Slide System



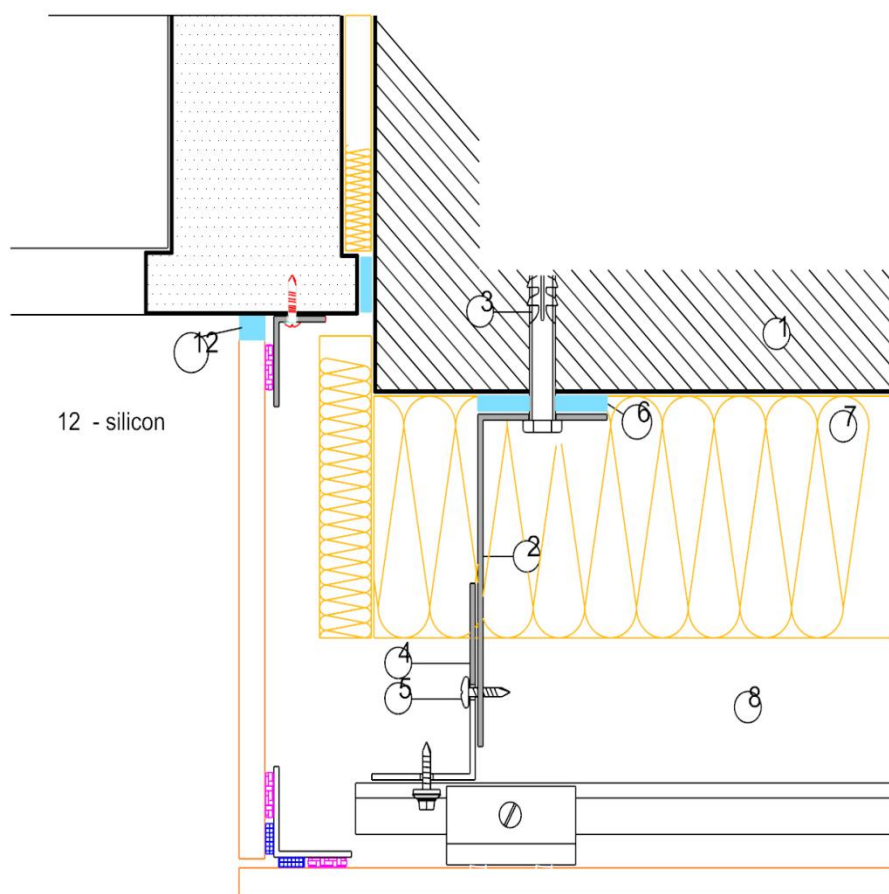
HORIZONTAL SECTION

INTERNAL CORNER M = 1:2

Gentaş Exterior Compact laminates for façade cladding

10.1.4 Detail 6 - Window Detail

Façade Details of Compact Laminate 8 mm Slide System



HORIZONTAL SECTION

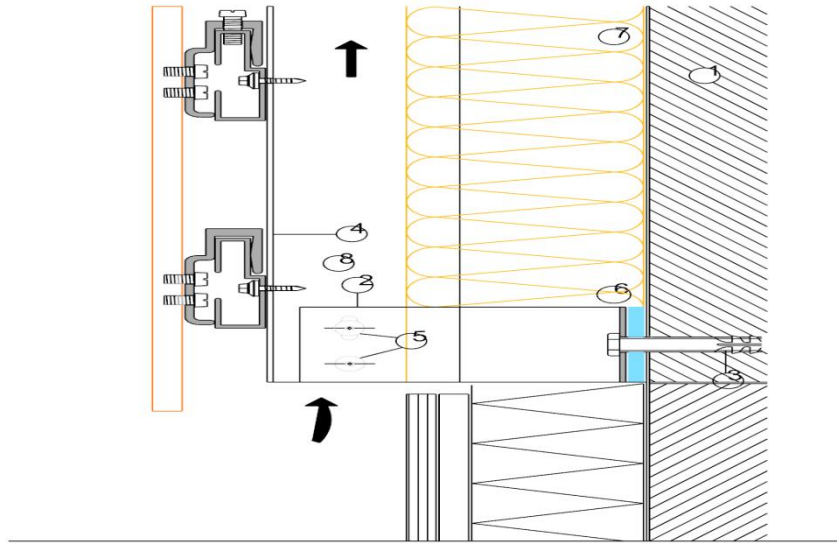
WINDOW DETAIL M = 1:2

Gentaş Exterior Compact laminates for façade cladding

10.2 VERTICAL SECTIONS 8 MM SLIDE SYSTEM

10.2.1 Detail 2 – Bottom detail

Façade Details of Compact Laminate, 8 mm Slide System

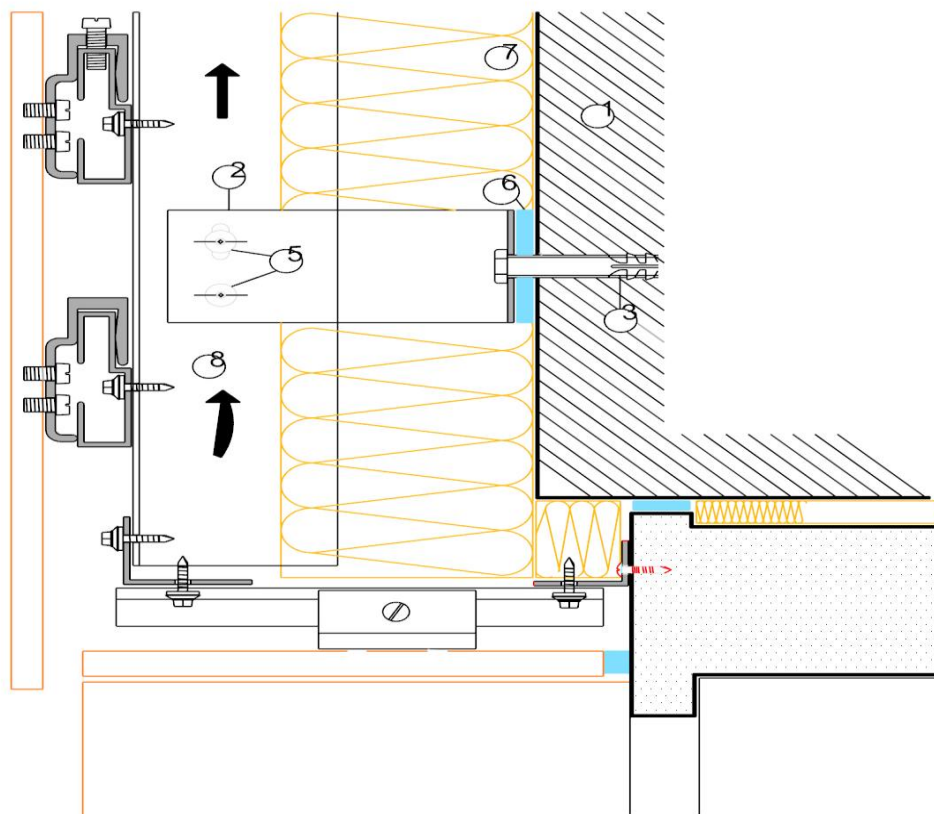


VERTICAL SECTION

BOTTOM DETAIL M = 1:2

10.2.2 Detail 7 - Window Details

Façade Details of Compact Laminate, 8 mm Slide System



VERTICAL SECTION

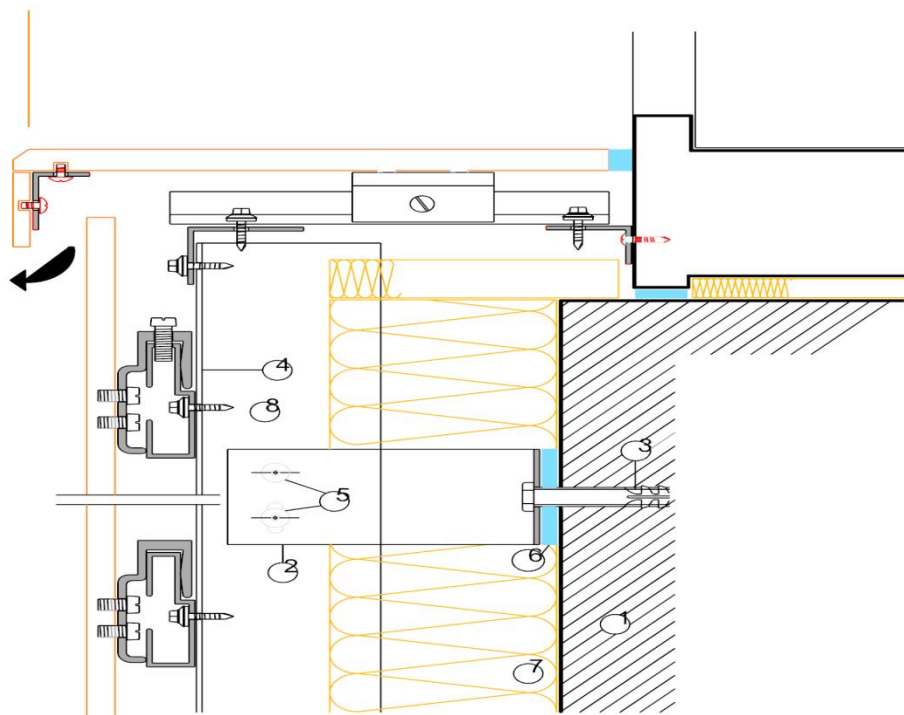
WINDOW DETAIL – HEAD M = 1:2

10.2.3 Detail 8 - Window Sill Details

Façade Details of Compact Laminate, 8 mm Slide System



Gentaş Exterior Compact laminates for façade cladding



VERTICAL SECTION

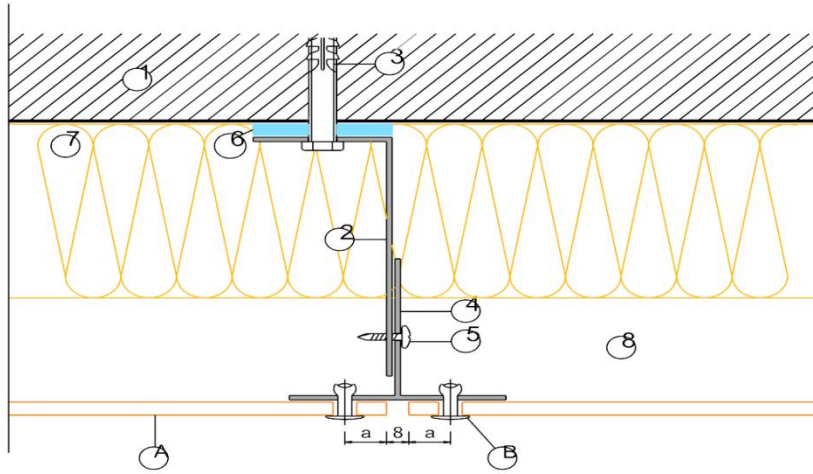
WINDOW DETAIL – SILL M = 1:2

Gentaş Exterior Compact laminates for façade cladding

10.3 HORIZONTAL SECTIONS RIVET SYSTEM

10.3.1 Detail 1 – Vertical joint

Ventilated HPL Façade Fixed with colour rivets



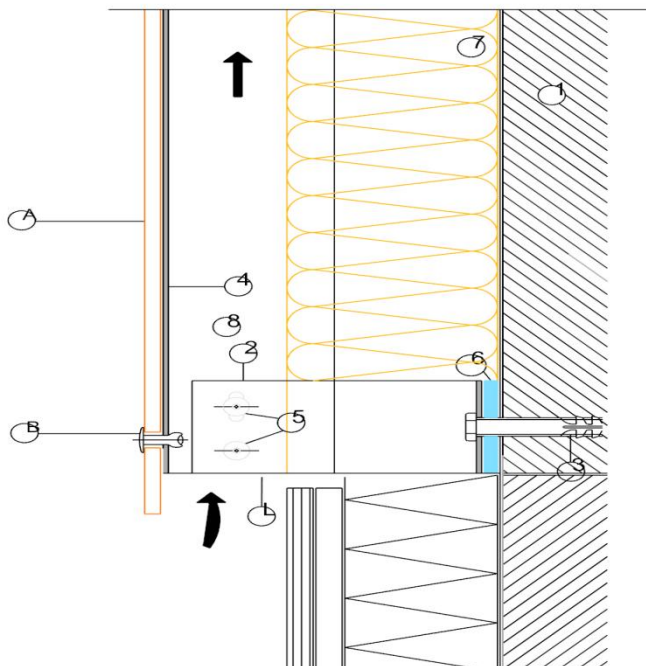
HORIZONTAL SECTION

VERTICAL JOINT M = 1:2

- A. PANEL. Thickness : 6 or 8 mm
- B. RIVET,
- C. ADHESIVE
- 1. Wall
- 2. Aluminium Shape, thickness : 3 mm
- 3. Expanding Fixing, (in accordance with the type of wall)
- 4. Aluminium T or L Profile
- 5. 4,5 x 19 AKB MUV
- 6. Insulator
- 7. Thermal Insulation
- 8. Ventilation

10.3.2 Detail 2 – Bottom detail

Ventilated HPL Façade Fixed with colour rivets



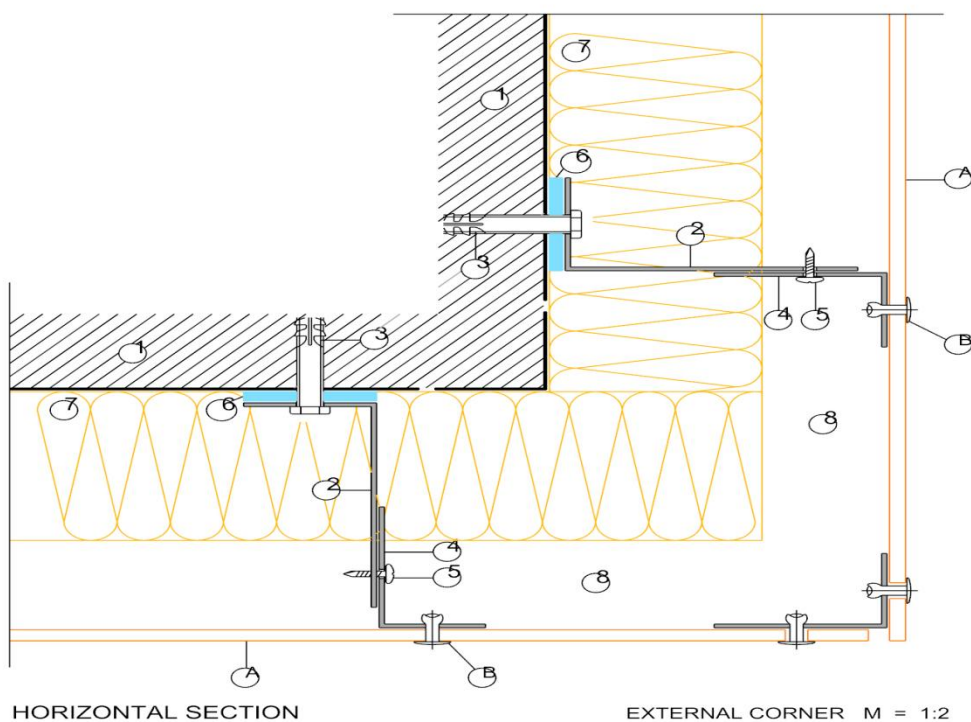
VERTICAL SECTION

BOTTOM DETAIL M = 1:2

Gentaş Exterior Compact laminates for façade cladding

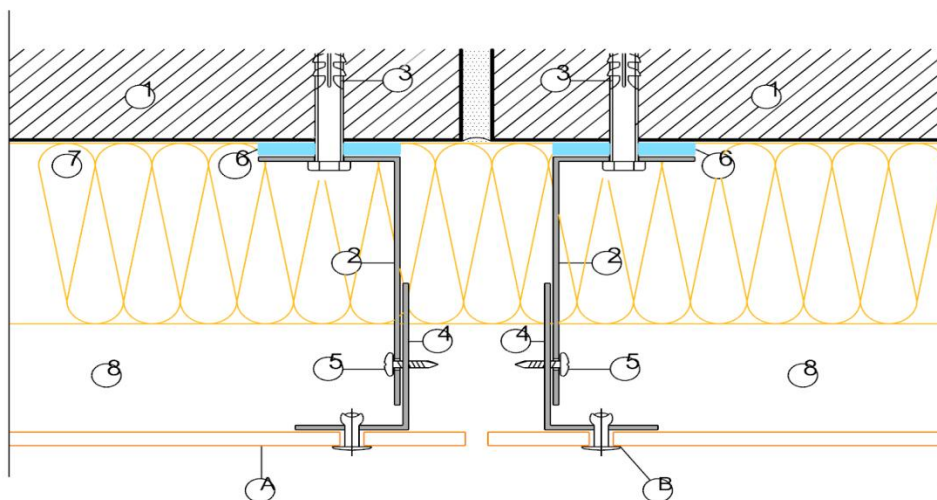
10.3.3 Detail 3 - External Corner

Ventilated HPL Façade Fixed with colour rivets



10.3.4 Detail 4 – Expansion point

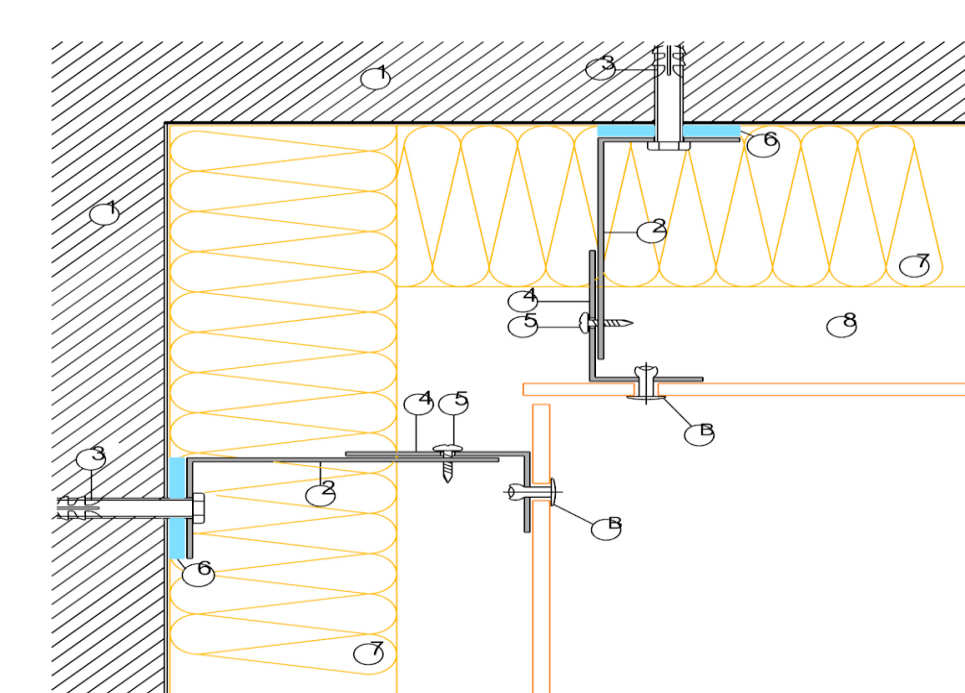
Ventilated HPL Façade Fixed with colour rivets



Gentaş Exterior Compact laminates for façade cladding

10.3.5 Detail 5 - Internal Corner

Ventilated HPL Façade Fixed with colour rivets

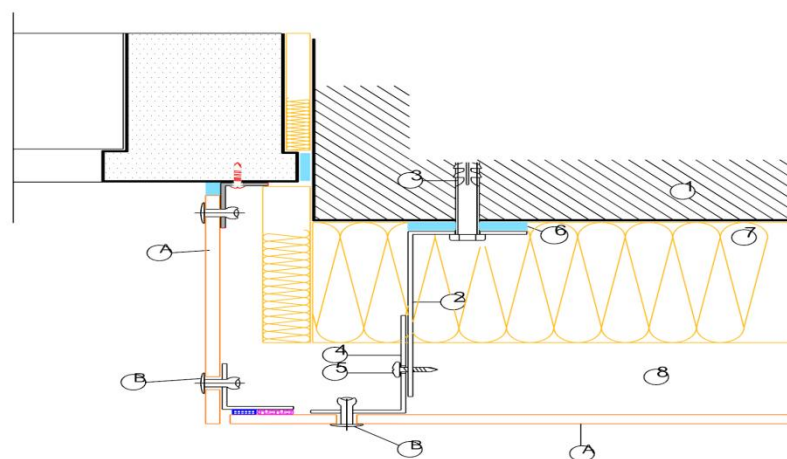


HORIZONTAL SECTION

INTERNAL CORNER M = 1:2

10.3.6 Detail 6 - Window Detail

Ventilated HPL Façade Fixed with colour rivets



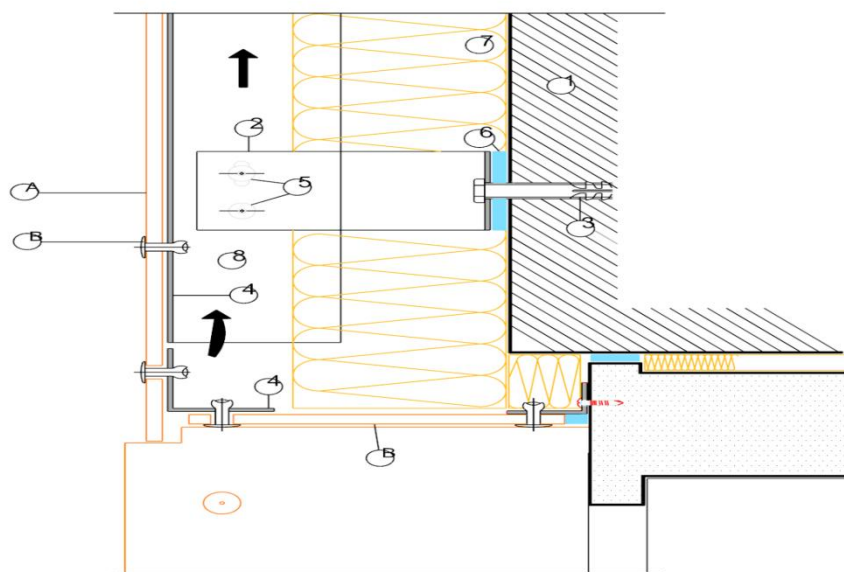
HORIZONTAL SECTION

WINDOW DETAIL M = 1:2

Gentaş Exterior Compact laminates for façade cladding

10.3.7 Detail 7 - Window Head Detail

Ventilated HPL Façade Fixed with colour rivets

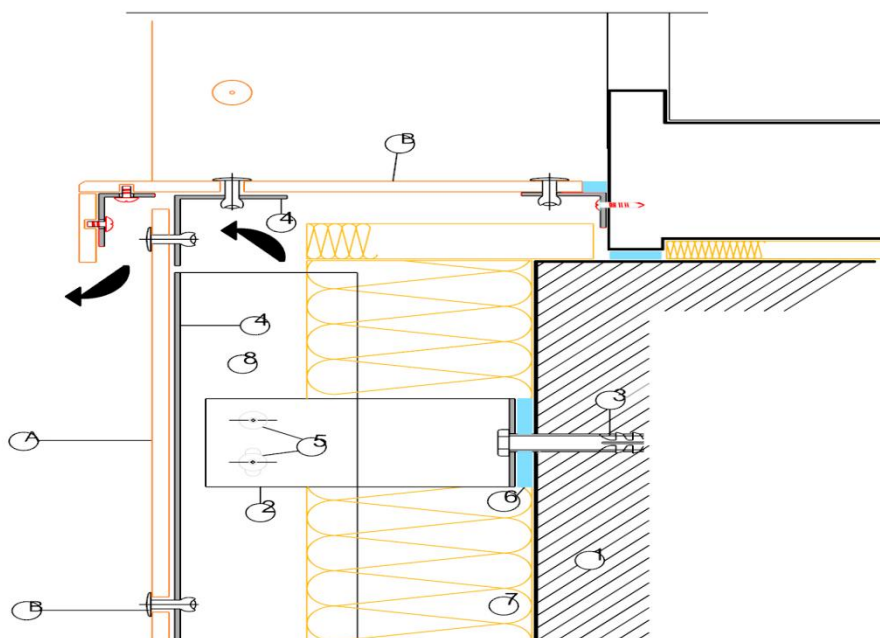


VERTICAL SECTION

WINDOW DETAIL - HEAD M = 1:2

10.3.8 Detail 8 - Window Sill Detail

Ventilated HPL Façade Fixed with colour rivets



VERTICAL SECTION

WINDOW DETAIL - SILL M = 1:2