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EUROPEAN TECHNICAL ASSESSMENT

ETA – 20/1334
of 12.06.2021.

I GENERAL PART

Technical Assessment Body issuing the ETA	ÉMI Építésügyi Minőségellenőrző Innovációs Nonprofit Kft.
Trade name of the construction product	Aluivent Designium® cladding system
Product family to which the construction product belongs	Kits for external wall claddings mechanically fixed
Manufacturer	Aluivent Zrt. 3561 Felsőzsolca, Szeles u. 2.
Manufacturing plant(s)	Aluivent Zrt. 3561 Felsőzsolca, Szeles u. 2.
This European Technical Assessment contains	19 pages including 5 Annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of	European Assessment Document 090062-00-0404, edition July 2018

The original official language of this European Technical Assessment is Hungarian. Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full (except the confidential Annex(es) referred to above).

Project number: E1-M274X-19871-2020

Bizonylat azonosító: KBiA-XX-05.1-20160808_ETA új_EN

II SPECIFIC PARTS

1 TECHNICAL DESCRIPTION OF THE PRODUCT

The Aluivent Designium® cladding system is a family „A” ventilated cladding system in accordance with EAD 090062-00-0404 made from Aluivent Designium® façade cladding panels fixed by means of wired mechanical fastening or screwing to a subframe. The subframe can be aluminium or steel profiles or sections fixed to the substrate.

Only the cladding panels and their fixings are part of the kit, the subframe is not part of the kit. The components of the kit is listed in Annex A.3.

The Aluivent Designium® cladding panels are made of modified EN AW 6061 aluminium alloy (containing aluminium oxide ceramics grains) in accordance with standard EN 573-3 and have an individual foamed structure.

Typical size of the cladding panels is 1000 mm x 2000 mm, the nominal thickness is 15 ± 3 mm. The cladding panels have a wavy surface due to their cellular structure, which can result in a minimum of 8 mm to a maximum of 21 mm thickness locally in the cross-section of the panels. Within the cladding panel family, the size of the bubbles on the surface of the product varies from 10 to 30 mm. The surface of the panels can be open on one side (LO) or on two sides (LO2). For products with open surfaces on two sides (LO2), the panels also have a partially light transmission capacity. The panels are 100% recyclable.

The aluminium foam panels are provided with natural untreated surface or post-electrostatic powder coating, i.e. sintering. The thickness of the coating applied to the aluminium foam panels is typically 30-100 μm . The amount of material required for painting depends on the surface structure (cell openings on one or two sides), the type of the paint, but it does not exceed 200 g/m^2 .

Product types and data of the Aluivent Designium® cladding panels are given in Annex A.1.

The Aluivent Designium® cladding panels are fixed to the subframe by means of wired mechanical fastening or screwing.

Mechanical fastening with wire is used primarily for aluminium foam panels open on two sides (LO2). In this case a self-drilling screw is fastened to the subframe through a bubble of the aluminium foam panel, which is previously inserted into the preformed end of a bent aluminium wire with a diameter of 3 mm and quality of EN AW 1050 (Al99.5) to EN 754-2. After fastening the screw, the wire is bent back through the foam cells by using a suitable plier tool to make it tightly fit into the foam surface.

This type of fastening can also be applied for aluminium foam panels open on one side (LO). In this case the self-drilling screw seats on the thin back plate of the aluminium foam panel.

The type of the screws are the same as used for screw connections.

Fastening by *screw connection* can be made with or without a conical steel washer for aluminium foam panels open on one side (LO).

The applied screws are SW7 type galvanized steel screws with drill bit in sizes of 4.2x32 or 4.2x13.

Distribution of screws, conical washers and wire fixing points: the panels must be secured at the corner points, additional fixing points shall be distributed proportionally over the panel surface so that the distance between the fixing points is not more than 600 mm in the longitudinal and transverse directions.

Technical characteristics and details of the applied fixings, fixing methods and typical subframes are shown in Annex A.2.

2 SPECIFICATION OF THE INTENDED USE(S) IN ACCORDANCE WITH THE APPLICABLE EUROPEAN ASSESSMENT DOCUMENT (HEREINAFTER EAD)

The Aluivent Designium® façade cladding system is intended to use for cladding external wall surfaces with a ventilated air gap between the cladding elements and the thermal insulation layer or the external wall.

The Aluivent Designium® façade cladding system is a non load-bearing construction element. It does not contribute the stability of the wall structure on which it is installed. The cladding system contributes to the durability of works by providing enhanced protection from effect of weathering. The cladding system is not intended to ensure airtightness of the building envelope.

Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product as he considers necessary.

The ETA is issued under the assumption that the product will be installed in accordance with the manufacturer's technical instruction.

The provisions made in this European Technical Assessment are based on an assumed intended working life of the cladding kit for the intended use of 25 years.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or the Technical Assessment Body, but are to be regarded only as a means for choosing the appropriate product in relation to the expected, economically reasonable working life of the works.

3 PERFORMANCE OF THE PRODUCT AND REFERENCES TO THE METHODS USED FOR ITS ASSESSMENT

3.1 Mechanical resistance and stability (BWR 1)

Not relevant.

3.2 Safety in case of fire (BWR 2)

3.2.1 Reaction to fire

Reaction to fire classifications of the components and materials comprises the kit in accordance with EN 13501-1 are given in Annex A.3. Those materials which are deemed to satisfy all requirements for the performance characteristic and those materials which can be

classified without the need for further testing in accordance with Commission Decisions are listed in Annex A.3 with reference to the related decision.

The whole kit is classified with the following reaction to fire classes considering the worst reaction to fire classes of components (cladding element, cladding fixings) comprises the kit:

Essential characteristics	Performance	Assessment method
Product code: Aluivent Designium® cladding system		
Reaction to fire class of the kit with - natural aluminium panel without coating - Interpon D1036 Gloss PE-base powder-coated panel * - Alesta AP PE-base powder-coated panel **	A1 A2-s1,d0 D-s1,d0	EAD 090062-00-0404, 2.2.1

* in case of the amount of Interpon D1036 Gloss PE-base powder used for painting does not exceed a surface area of 170 g/m²

** in case of the amount of Alesta AP PE-base powder used for painting does not exceed a surface area of 200 g/m²

3.2.2 Façade fire performance

In accordance with section 2.2.2 of EAD 090062-00-0404, the façade fire performance of the kit was assessed to assessment method MSZ 14800-6:2009 “Fire resistance tests. Part 6: Fire propagation tests for building facades” listed in Annex O of EAD 090062-00-0404.

For the Aluivent Designium® cladding system, a $T_h \geq 45$ minute fire propagation limit can be justified according to MSZ 14800-6:2009 standard if the following conditions are provided:

- the façade cladding system is made on non-combustible (A1 and A2 reaction to fire class) wall structure,
- the height of the solid wall section (reaction to fire A1 and A2) between the openings located above each other is 1,30 m at least,
- windows are installed inside the solid wall section (between the external and internal vertical plane of the solid substrate wall),
- glass wool or stone wool thermal insulation to EN 13162 without any thickness restriction, with a density of min. 21 kg/m³, A1 reaction to fire class and with or without glass fleece is fixed to the substrate with at least 6 pieces of steel dowel with punch nail per board,
- the thickness of the thermal insulation will be increased/decreased under complying with the requirements concerning the ventilated air gap,
- for assembling the „L” or „T” subframe profiles to the loadbearing substrate homogeneous aluminium or steel brackets of min. 3 mm material thickness are used (with or without thermal bridge breaking washer) which are anchored to substrate with plastic or steel dowels based on structural design,
- the „L” or „T” shaped subframe profiles are secured to the brackets with galvanized, zinc-coated or stainless steel self-drilling or self-tapping screws depending on corrosion protection requirements,
- the subframe structure consisting of hat-profile lathing as well as rectangular hollow section profiles is to be mounted on the substrate with steel fixing elements based on structural design,

- the vertically positioned aluminium or steel subframe elements of 2 mm material thickness at least („L”, „T” frame profiles, hat-profile lathing as well as rectangular hollow section profiles) are placed by structural design, but in 600 mm axle spacing at the most from each other,
- a ventilated air gap with a width of 20 mm±5 mm at the most will be provided behind the cladding panels,
- above and below the openings, directly behind the cladding an “L” shaped fire protective lintel and sill closure made of min. 3 mm thick galvanized steel sheet is provided, which overhangs by min. 150 mm on both sides of the window opening; the width of the closure is the same as the depth of the whole structure, and made in the cross section of the air gap without perforation; the fire protective lintel closures are anchored to the substrate on their internal side by dowels,
- on both sides of the openings, directly behind the cladding a “Z”-shaped fire protective reveal closure made of min. 3 mm thick galvanized steel sheet is provided, which shall be secured in four corners of the opening to the fire protective lintel and sill closure, as described above, with elements made of 2 mm thick hot-dip galvanized sheets, bent to “L” shape, in size of 150x120 mm,
- the “Z”-shaped sheets located on the side of openings and providing fire protective closure are also secured by means of riveting to the first subframe profile next to the opening, on their surface bent to the façade plane,
- the nominal thickness of the façade cladding panel is maximum 15 mm,
- the certain façade cladding panels are secured to the subframe profile with steel screws; the fixing points are distributed on the basis of structural design, but the vertical distance of the fixing points is 400 mm at most from each other in case of the cladding panels below, above and directly next to the opening.

3.2.3 Propensity to undergo continuous smouldering

Not relevant.

3.3 Hygiene, health and the environment (BWR 3)

Essential characteristics	Performance	Assessment method
Product code: Aluivent Designium® cladding system		
Watertightness of joints	NPA*	EAD 090062-00-0404, 2.2.4
Water absorption	Not relevant for ventilated facades	EAD 090062-00-0404, 2.2.5
Water vapour permeability	Not relevant for ventilated facades	EAD 090062-00-0404, 2.2.6
Drainability	NPA*	EAD 090062-00-0404, 2.2.7
Content, emission and/or release of dangerous substances	NPA*	EAD 090062-00-0404, 2.2.8

*NPA - No Performance Assessed

3.4 Safety and accessibility in use (BWR 4)

Essential characteristics	Performance	Assessment method
Product code: Aluivent Designium® cladding system		
Wind load resistance [Pa]	3000**	EAD 090062-00-0404, 2.2.9
Resistance to horizontal point loads	NPA*	EAD 090062-00-0404, 2.2.10
Impact resistance	NPA*	EAD 090062-00-0404, 2.2.11
Mechanical resistance		
- Bending strength of Designium LO cladding element [N/mm ²]	1,24	EAD 090062-00-0404, 2.2.12.1
- Bending strength of Designium LO2 cladding element [N/mm ²]	0,47	EAD 090062-00-0404, 2.2.12.1
- Pull-through resistance of cladding element	See Annex A.4	EAD 090062-00-0404, 2.2.12.4
- Pull-through resistance of cladding element under shear load	See Annex A.4.	EAD 090062-00-0404, 2.2.12.5

* NPA - No Performance Assessed

** At negative pressure (at wind suction) in case of panels sized 1000x2000 mm fixed on L40.40.4 steel profile subframe structure by means of SW7 4.2 screws with conical shaped washer. The fixing points of certain panels are located in a distance of 35 mm from each edge. The fixing points are located horizontally in a distance of 465 mm at the most and vertically in a distance of 482 mm at the most from each other.

3.5 Protection against noise (BWR 5)

No performance assessed

3.6 Energy economy and heat retention (BWR 6)

Not relevant

3.7 Sustainable use of natural resources (BWR 7)

Not relevant

3.8 Durability

Essential characteristics	Performance	Assessment method
Product code: Aluivent Designium® cladding system		
Coating thickness [µm] - PE-base powder-coated panel	30-100*	EAD 090062-00-0404, 2.2.15.8. EN ISO 2808:2007
Resistance of metal elements to corrosion - aluminium alloy – panels - aluminium wire - galvanised carbon steel screws	EN AW 6061 EN AW 1050 (Al99.5) see ETA-10/0184	EAD 090062-00-0404, 2.2.15.8. EN 573-3:2009

* The material consumption for painting depends on the surface structure (open cells, on one or two sides), but it does not exceed the quantity of 200 g/m².

4 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE (HEREINAFTER AVCP) SYSTEM APPLIED, WITH REFERENCE TO ITS LEGAL BASE

According to the decision 2003/640/EC of the European Commission (Official Journal of the European Communities N° L226, 10.09.2003.), AVCP system of 2+ (see Annex V to Regulation (EU) 305/2011) applies.

5 TECHNICAL DETAILS NECESSARY FOR THE IMPLEMENTATION OF THE AVCP SYSTEM, AS PROVIDED FOR IN THE APPLICABLE EAD

5.1 Tasks for the manufacturer

5.1.1 Assessment of the performance of the construction product

Regarding the construction product in question this European Technical Assessment is the assessment of the products performance for the manufacturer, hence the manufacturer does not have to perform the tasks given in point 1.3.(a)(i), Annex V of Regulation (EU) 305/2011.

5.1.2 Factory production control

The manufacturer shall exercise permanent factory production control. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures. The factory production control system must provide the product is in conformity with this European Technical Assessment.

The manufacturer may only use raw material stated in the technical documentation¹ of this European Technical Assessment.

¹Technical documentation of this European Technical Assessment is deposited at ÉMI Nonprofit Kft. and it will be provided for the notified certification body involved in the procedure regarding the assessment and verification of constancy of performance of the product.

In the frame of the factory production control the manufacturer shall perform controls according to the Control plan² which belongs to this European Technical Assessment.

Content, type and frequency of the factory production control performed by the manufacturer are included in the Control plan which is the part of technical documentation of this European Technical Assessment.

Results of the factory production control shall be recorded and assessed on controlling sheets.

Controlling sheets shall be signed by responsible persons. Sheets shall be provided for the notified certification body involved in the continuous surveillance.

5.2 Tasks for the notified certification body

5.2.1 Initial inspection of the manufacturing plant and of the production control

The notified certification body has to prove that the manufacturing plant and the factory production control according to the Control plan, especially regarding the staff and the tools, are applicable for the continuous and regular manufacturing of the product according to the requirements laid down in clause 3 of the European Technical Assessment and its Annexes.

5.2.2 Continuous surveillance, assessment and evaluation of factory production control

The notified certification body shall perform an inspection for surveillance of the manufacturing plant once a year.

It is necessary to prove that the factory production control system and specified manufacturing process are in accordance with the Control plan.

Continuous surveillance and assessment of the factory production control shall be performed according to the Control plan.

Issued in Szentendre on 12.06.2021.

by

ÉMI Építésügyi Minőségellenőrző Innovációs Nonprofit Kft.

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ANNEXES

- ANNEX A.1 Aluivent Designium® product types and data of cladding panels
- ANNEX A.2 Aluivent Designium® cladding system – fixing methods
- ANNEX A.3 Aluivent Designium® cladding system – components
- ANNEX A.4 Aluivent Designium® cladding system – loadbearing capacity of fastening systems
- ANNEX A.5 Aluivent Designium® cladding system – installation details

² Control plan is deposited at ÉMI Nonprofit Kft. and it will be provided for the notified certification body involved in the procedure regarding the assessment and verification of constancy of performance of the product.

Product types and data of the Aluivent Designium® cladding panels:

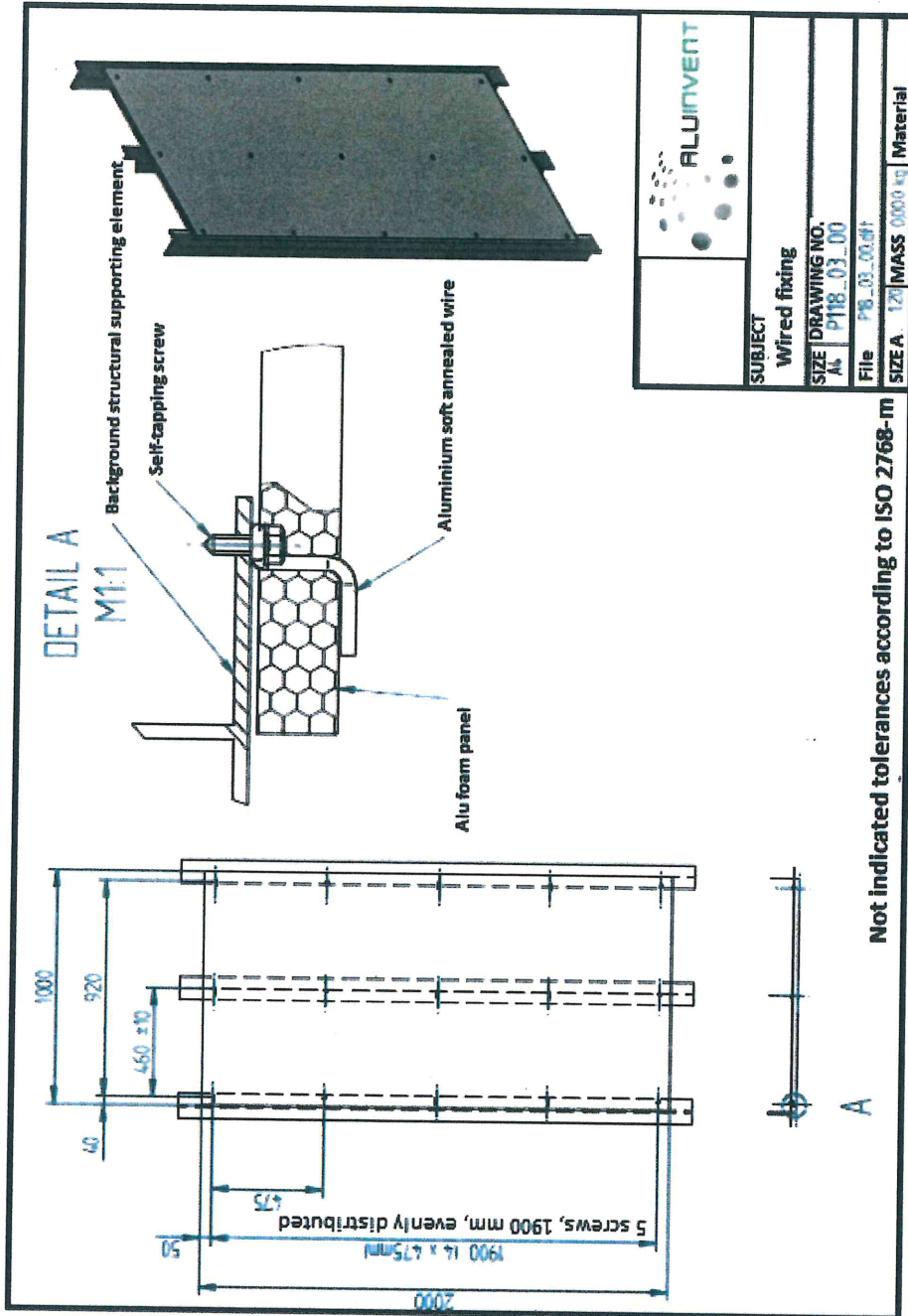
Product type	Designium LO	Designium LO2
	Continuously cast aluminium foam panel (Alufoam panel)	
Raw material	Modified aluminium foam, EN AW 6061 alloy	
Surface	Panel open on one side, with large bubble structure Front surface: naturally wavy surface with open cells Rear side: plane, closed surface	Panel open on two sides, with large bubble structure (transparent) Front surface: naturally wavy surface with open cells Rear side: plane, open
Colour of uncoated panels	Aluminium grey*	
Standard length	2000 +/- 3 mm	2000 +/- 3 mm
Standard width	1000 +/- 3 mm	1000 +/- 3 mm
Nominal thickness	15 mm +/- 3 mm	15 mm +/- 3 mm
Local thickness	minimum 8 mm, maximum: 22 mm	minimum 8 mm, maximum: 22 mm
Bubble size	10-30 mm	
Surface weight	3,0 kg/m ² +/-0,5 kg/m ²	2,0 kg/m ² +/-0,4 kg/m ²

*Due to the unique surface structure of the products, the reflecting capacity of each panel may vary, which can visually produce a shade difference between the panels, providing a homogeneous structure and using the same raw material. The slight variation that occurs in natural surfaces is not a defect in the product.

Product types and data of the Aluivent Designium® cladding panels

Annex A.1

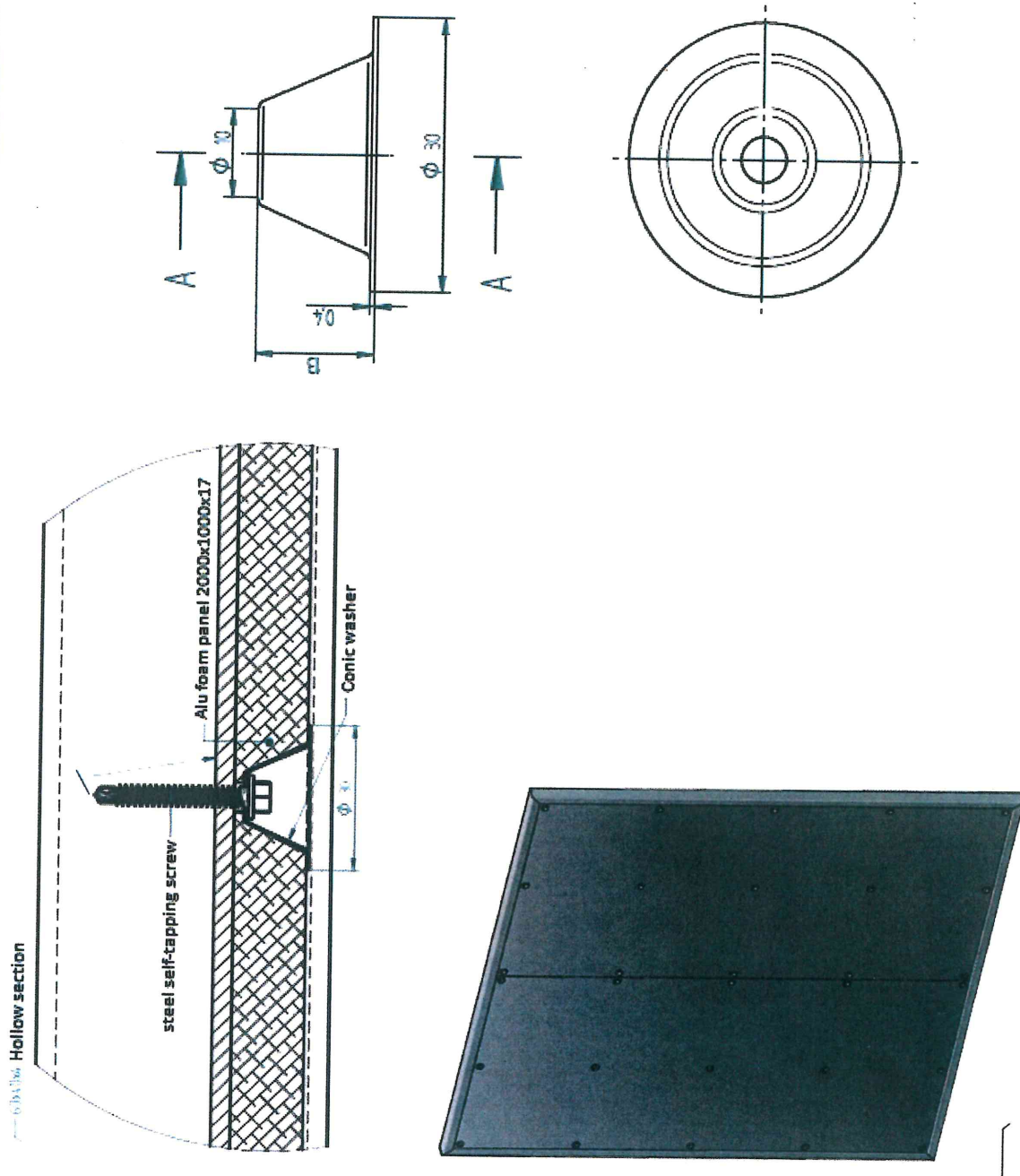
Mechanical (wired) fixing of Aluivent Designium® cladding panels:



Aluivent Designium® cladding system – fixing methods

Annex A.2

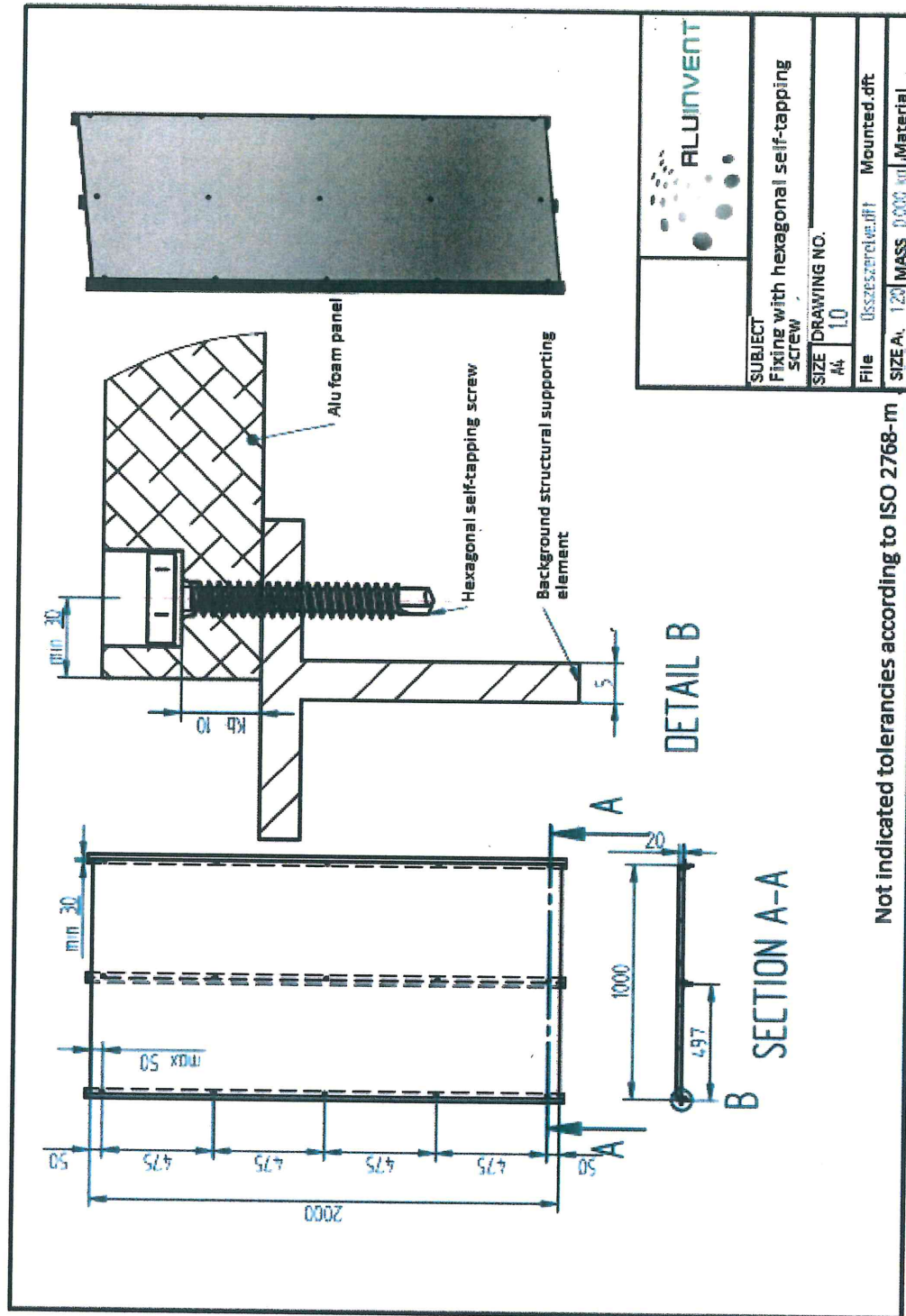
Mechanical (with conic washer and screws) fixing of Aluivent Designium® cladding panels:



Aluivent Designium® cladding system – fixing methods

Annex A.2

Mechanical fixing (with self-tapping screws) of Aluivent Designium® cladding panels:

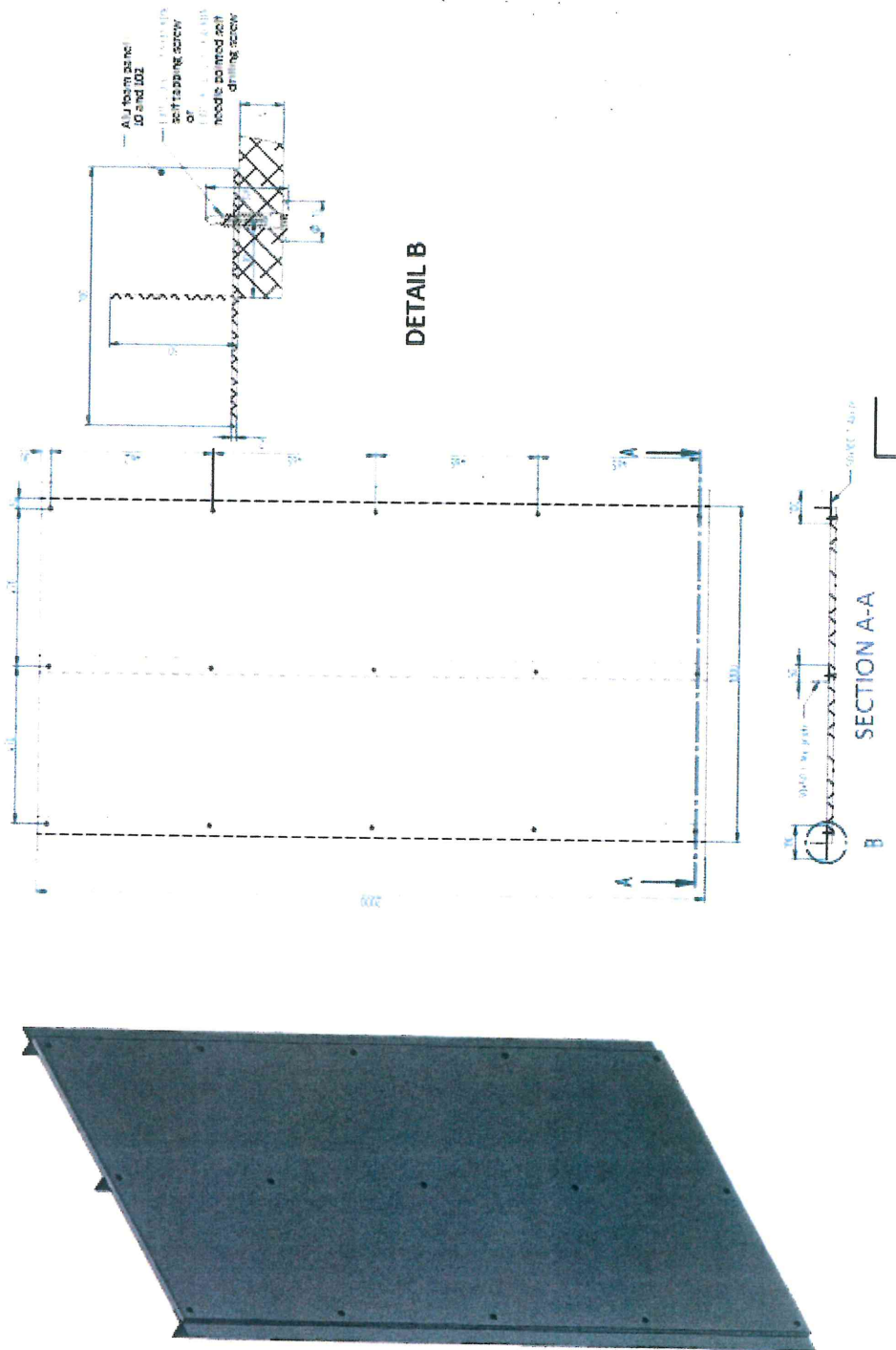


Not indicated tolerances according to ISO 2768-m

Aluivent Designium® cladding system – fixing methods

Annex A.2

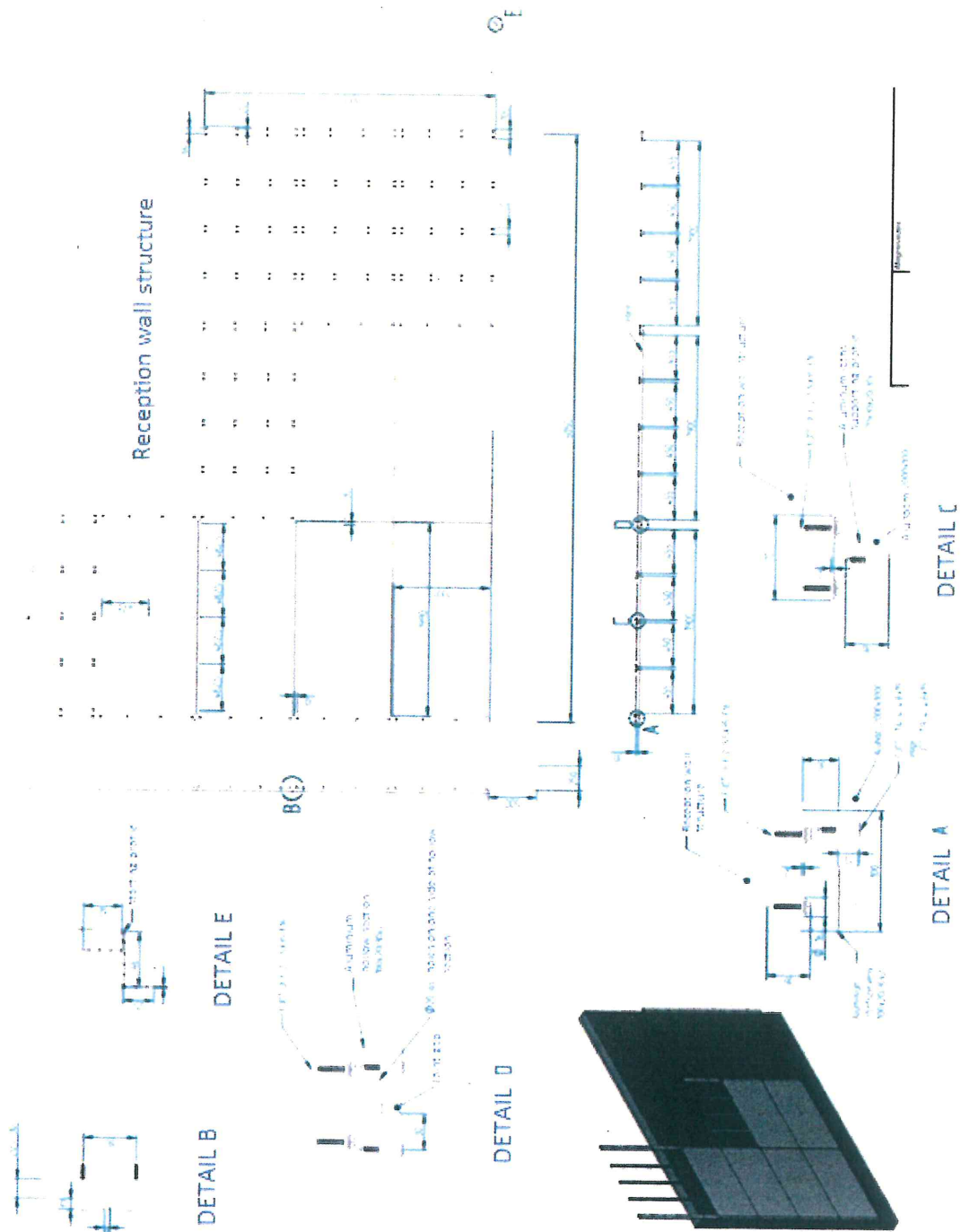
Mechanical fixing of Aluivent Designium® façade cladding (with self-tapping screws):



Aluivent Designium® cladding system – fixing methods

Annex A.2

Mechanical fixing (with self-tapping screws) of Aluivent Designium® cladding panels to aluminium hat-profile and rectangular hollow section profile:

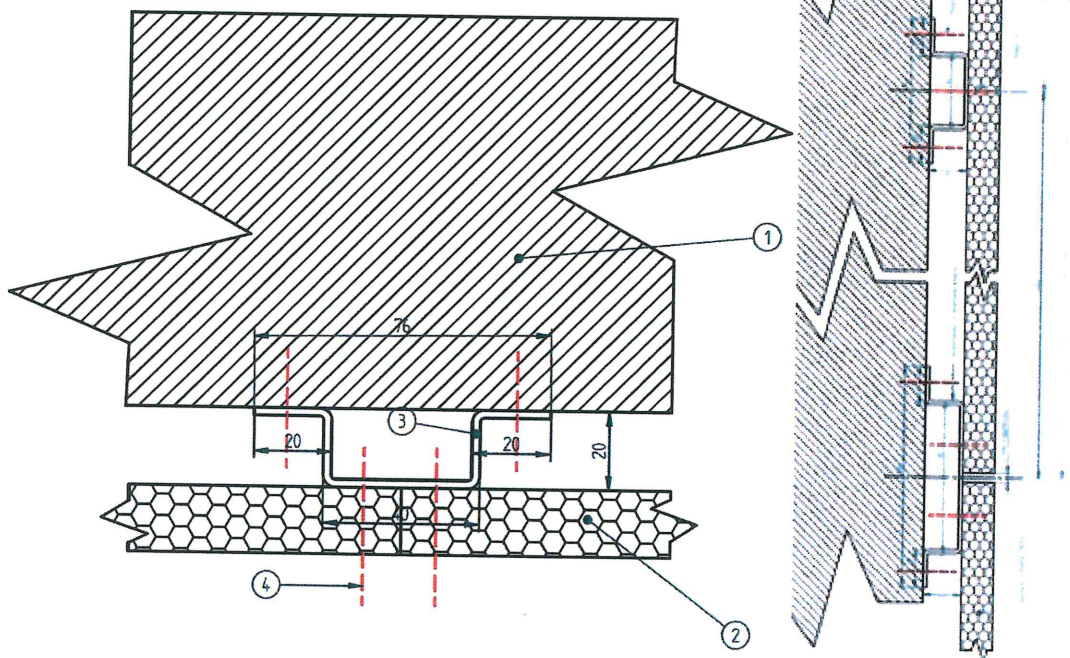


Aluivent Designium® cladding system – fixing methods

Annex A.2

Mechanical fixing (with self-tapping screws) of Aluivent Designium® cladding panels to unique aluminium hat-profile:

- 2 – Aluivent Designium® cladding panel
- 3 – aluminium hat-profile of 2 mm material thickness at least
- 1 – substrate
- 4 – mechanical fixing



Aluivent Designium® cladding system – fixing methods

Annex A.2

Component / material	Technical specification	ρ (kg/m ³)	Reaction to fire class	
Aluivent Designium® cladding panels - natural aluminium panel - Interpon D1036 Gloss PE-base powder-coated panel ⁽¹⁾ - Alesta AP PE-base powder-coated panel ⁽²⁾	EN AW 6061 to EN 573-3	133-200	A1 A2-s1,d0 D-s1,d0	96/603/EC ⁽³⁾ - -
Metal fasteners – Self-drilling screw with Hexagonal head (SW7) and flange	galvanised carbon steel to ETA-10/0184	-	A1	96/603/EC ⁽³⁾
Conical galvanised steel washer	see Annex A.2.	-	A1	96/603/EC ⁽³⁾
Aluminium soft wire fastener	EN AW 1050 (Al99.5) to EN 754-2	-	A1	96/603/EC ⁽³⁾

¹⁾ in case of the amount of Interpon D1036 Gloss PE-base powder used for painting does not exceed a surface area of 170 g/m²

²⁾ in case of the amount of Alesta AP PE-base powder used for painting does not exceed a surface area of 200 g/m²

³⁾ amended by Commission Decisions 2000/605/EC and 2003/424/EC

Aluivent Designium® façade cladding components

Annex A.3

Location of fixing		In the middle of the panel	At the edge of the panel	At the corner
Self-tapping steel screw with Hexagonal head and flange				
- bore diameter on the panel, d_1 [mm]			4,2	4,2
- flange diameter, d_k [mm]			$\geq 8,5$	$\geq 8,5$
- distance of fixing point from the edge of the sheet, a [mm]		-	30	30
- distance of fixing point from the corner, b [mm]		-	≥ 150	30
Pull-through resistance of fastening element on Designium LO cladding panel	Thickness of cladding panel [mm]			
Characteristic value of tensile strength, $F_{t,c}$ [N]*	15 mm \pm 3 mm	-	122,2	452,4
Characteristic value of shear capacity, $F_{s,c}$ [N]	15 mm \pm 3 mm	297,9		

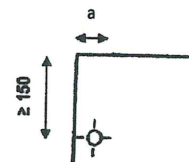
* by applying a test ring with a diameter of $d=180$ mm according to EAD 090062-00-0404, Annex I

SW7, 4.2x32, SW7, 4.2x13 self-tapping steel screw with hexagonal head and flange :

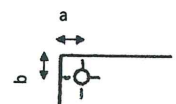
Screw		
l_1 [mm]	d_1 [mm]	d_k [mm]
13	4,2	8,5
32	4,2	8,5

Location of fixing:

At the edge of the panel:



At the corner of the panel:

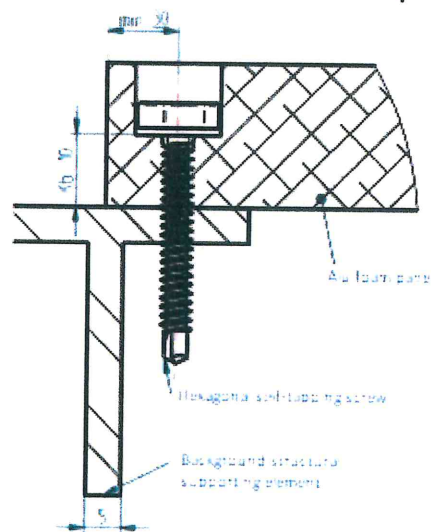
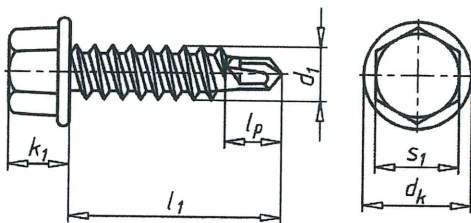


Screw material:

- galvanized carbon steel

Frame profile:

- aluminium, EN AW 6063
- thickness: 2 (± 0.1) mm



Aluivent Designium® façade cladding – Load bearing capacity of fastening systems

Annex A.4

Location of fixing		In the middle of the panel	At the edge of the panel	At the corner of the panel
Self-tapping steel screw with Hexagonal head, flange and wire				
- bore diameter on the panel, d_1 , [mm]		-	4,2	4,2
- flange diameter, d_k [mm]		-	$\geq 8,5$	$\geq 8,5$
- distance of fixing point from the edge of the sheet, a [mm]		-	30	30
- distance of fixing point from the corner, b [mm]		-	≥ 150	30
Pull-through resistance of fastening element on the Designium LO2 cladding panel	Thickness of cladding panel [mm]			
Characteristic value of tensile strength, $F_{t,c}$ [kN]*	15 mm \pm 3 mm	-	63,9	27,1
Characteristic value of shear capacity, $F_{s,c}$ [kN]	15 mm \pm 3 mm	202,7		

* by applying a test ring with a diameter of $d=180$ mm according to EAD 090062-00-0404, Annex I

SW7, 4,2x32, SW7, 4,2x13 self-tapping steel screw with hexagonal head and flange:

Screw		
l_1 [mm]	d_1 [mm]	d_k [mm]
13	4,2	8,5
32	4,2	8,5

Screw material:

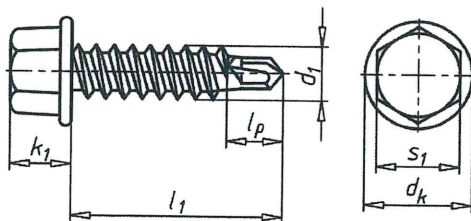
- galvanized carbon steel

Wire material quality:

- EN AW 1050 (Al99.5) aluminium wire, $d=3$ mm

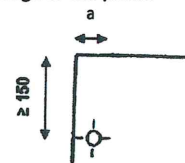
Frame profile:

- aluminium, EN AW 6063
- thickness: 2 ($\pm 0,1$) mm

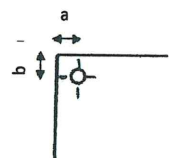


Location of fixing:

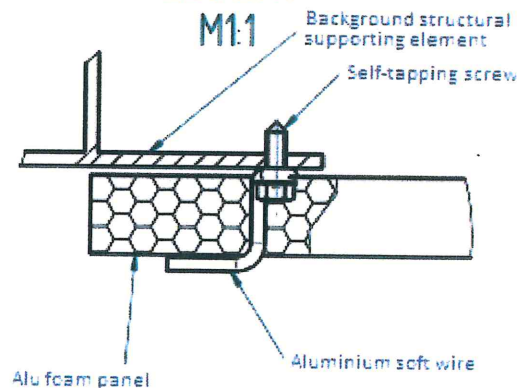
At the edge of the panel:



At the corner of the panel:



DETAIL A
M1:1



**Aluivent Designium® cladding system –
Load bearing capacity of fastening systems**

Annex A.4

