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EAD 220089-00-0401-v01

October 2018

European Assessment Document for

Self-supporting translucent roof and
wall kits with covering made of
plastic sheets,
including opaque sheets



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This European Assessment Document (EAD) has been developed taking into account up-to-date technical and scientific knowledge at the time of issue and is published in accordance with the relevant provisions of Regulation (EU) No 305/2011 as a basis for the preparation and issuing of European Technical Assessments (ETA).

Contents

1	Scope of the EAD	4
1.1	Description of the construction product	4
1.2	Information on the intended use(s) of the construction product	4
1.2.1	Intended use.....	4
1.2.2	Working life/Durability.....	4
1.3	Specific terms used in this EAD	4
1.3.1	Specific terms	4
1.3.2	Symbols and abbreviations	5
2	Essential characteristics and relevant assessment methods and criteria	6
2.1	Essential characteristics of the product	6
2.2.	Methods and criteria for assessing the performance of the product in relation to essential characteristics of the product	7
	Determination of the transverse tensile strength (profiles with thermal barrier)	7
	Aspects of ageing and environmental influences of the thermal barrier	8
	Aspects of temperature influences of the thermal barrier	8
2.2.3	Durability.....	8
3	Assessment and verification of constancy of performance	9
3.1	System(s) of assessment and verification of constancy of performance to be applied	9
3.2	Tasks of the manufacturer	9
3.3	Tasks of the notified body	10
3.4	Special methods of control and testing used for the assessment and verification of constancy of performance	11
4	Reference documents	12
Annex A:	Examples of roof kits	13

1 SCOPE OF THE EAD

1.1 Description of the construction product

EAD 220089-00-0401, Clause 1.1, applies.

Additionally, this variant covers self-supporting wall kits with covering made of plastic sheets and their fixings (in the following referred to as wall kits).

The wall kits deviate from the roof kits as covered by EAD 220089-00-0401 with regard to their intended use and the load application (no snow).

The components of the wall kits are prefabricated construction products and are assembled on building site in accordance with the manufacturer product installation information. The covering itself is composed of single or multi-layer polymeric translucent sheets and support profiles.

Additionally, this variant covers also single or multi-layer polymeric opaque sheets for the wall kits as well as for the self-supporting translucent roof kits with covering made of plastic sheets as covered by EAD 220089-00-0402 (in the following referred to as roof kits).

The covering sheets can be supported by covering profiles with or without additional bearing profiles.

The covering can also be used multi-layered with and without air gap.

1.2 Information on the intended use(s) of the construction product

1.2.1 Intended use

EAD 220089-00-0401, Clause 1.2.1, applies.

Additionally, the wall kits are intended to provide weather protection and, where applicable, daylight illuminance to any enclosed or partially enclosed building or space. They are intended to be used as continuous wall kits of any length with a plane layout as external wall covering for open and closed structure.

The wall kits transfer dead loads and wind loads to the load-bearing substructure.

The wall kits are not intended to be used for bracing of the support structure.

Use for fall protection is not covered by this EAD. Furthermore, the wall kits are neither intended to be used as stiffening elements in walls nor subject to requirements against accidental injuries from cutting objects.

The wall kits made out of plastic materials are not intended to contribute to the resistance to fire of the building or parts thereof, therefore, resistance to fire is does not need to be assessed.

1.2.2 Working life/Durability

EAD 220089-00-0401, Clause 1.2.2, applies.

1.3 Specific terms used in this EAD

1.3.1 Specific terms

EAD 220089-00-0401, Clause 1.3.1, applies.

Additionally, the following terms are used:

1.3.10 Lift anchors/aluminium fasteners

The PC sheets are connected together by means of a joint on the long side and can be constructed as single-span systems or, with additional intermediate supports transverse to the main bearing direction, as multi-span systems. To withstand wind suction on continuous systems, they are held on internal supports by lift anchors.

Lift anchors are flat fasteners made of extruded aluminium profiles in accordance with EN 755-2, stainless steel in accordance with EN 10088-1 or other materials. They can be punctually or linearly embedded in the panel joint (Detail see Annex A2)

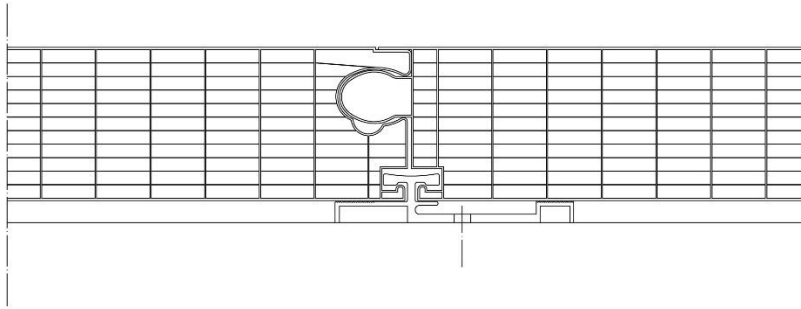


Figure 1.3.10.1: Example for multi-layer sheet with lift anchor/aluminium fastener (section)

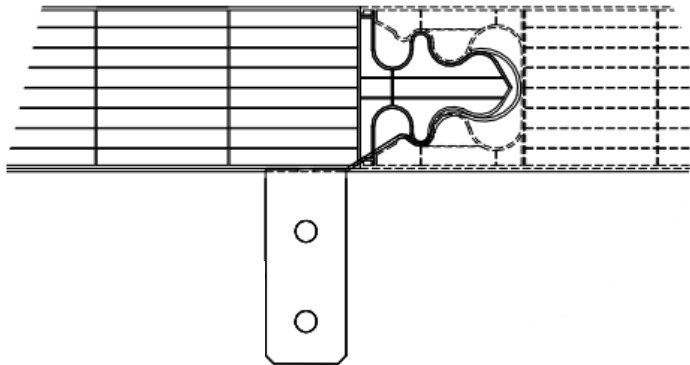


Figure 1.3.10.2: example for multi-layer sheet with lift anchor/stainless steel fastener (section)

1.3.2 Symbols and abbreviations

EAD 220089-00-0401, Clause 1.3.2, applies.

Additionally, the following abbreviations and terms are used:

Thermal barrier in accordance with EN 14024

$q_{R,k}$ Characteristic value of resistance, for the ultimate limit of load bearing

$q_{C,k}$ Characteristic value of resistance, for the limit of serviceability

2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

2.1 Essential characteristics of the product

Table 2.1.1 shows how the performance of the roof kits and the wall kits is assessed in relation to the essential characteristics.

Table 2.1.1 Essential characteristics of the wall kits and methods and criteria for assessing the performance of the product in relation to those essential characteristics

No	Essential characteristic	Assessment method	Type of expression of product performance
Basic Works Requirement 2: Safety in case of fire			
1	Reaction to fire	EAD 220089-00-0401, Clause 2.2.1	Class
2	External fire performance	EAD 220089-00-0401, Clause 2.2.2	Class
Basic Works Requirement 3: Hygiene, health and the environment			
3	Content, emission and/or release of dangerous substances	EAD 220089-00-0401, Clause 2.2.3	Description
4	Watertightness for roof kits: for wall kits:	EAD 220089-00-0401, Clause 2.2.4 Clause 2.2.1	Class
Basic Works Requirement 4: Safety and accessibility in use			
5	Load-bearing capacity for roof kits: for wall kits:	EAD 220089-00-0401, Clause 2.2.5 Clause 2.2.2	Level
6	Resistance to damage by impact loads with a soft object (50 kg)	EAD 220089-00-0401, Clause 2.2.7	Class
7	Resistance to impact loads from a hard object (250 g)	EAD 220089-00-0401, Clause 2.2.8	Level
Basic Works Requirement 5: Protection against noise			
8	Airborne sound insulation	EAD 220089-00-0401, Clause 2.2.9	Level
Basic Works Requirement 6: Energy economy and heat retention			
9	Thermal transmittance (performance)	EAD 220089-00-0401, Clause 2.2.10	Level
10	Air permeability for roof kits: for wall kits:	EAD 220089-00-0401, Clause 2.2.11 Clause 2.2.4	Class
11	Radiation properties (not relevant for kits with opaque sheets)	EAD 220089-00-0401, Clause 2.2.12	Level
Aspects of durability			
12	Durability for roof kits: for wall kits:	EAD 220089-00-0401, Clause 2.2.6 Clause 2.2.3	Class

2.2. Methods and criteria for assessing the performance of the product in relation to essential characteristics of the product

This chapter is intended to provide instructions for TABs. Therefore, the use of wordings such as “shall be stated in the ETA” or “it has to be given in the ETA” shall be understood only as such instructions for TABs on how results of assessments shall be presented in the ETA. Such wordings do not impose any obligations for the manufacturer and the TAB shall not carry out the assessment of the performance in relation to a given essential characteristic when the manufacturer does not wish to declare this performance in the Declaration of Performance.

Testing will be limited only to the essential characteristics which the manufacturer intends to declare. If for any components covered by harmonised standards or European Technical Assessments the manufacturer of the component has included the performance regarding the relevant characteristic in the Declaration of Performance, retesting of that component for issuing the ETA under the current EAD is not required.

2.2.1 Watertightness

For roof kits, EAD 220089-00-0401, Clause 2.2.4, applies.

For wall kits, the following applies:

Watertightness of the joints shall be determined using the method 1A given in EN 1027. The classification shall be made in accordance with Clause 4.5 of EN 14351-1.

2.2.2 Load-bearing capacity

For roof kits, EAD 220089-00-0401, Clause 2.2.5, applies.

For wall kits, EAD 220089-00-0401, Clause 2.2.5, applies and, additionally, the following:

Determination of the transverse tensile strength (profiles with thermal barrier)

The transverse tensile strength of the aluminium profile with thermal barrier shall be determined in accordance with Clause 5.3 of EN 14024.

It shall also be determined after simulated shear failure.

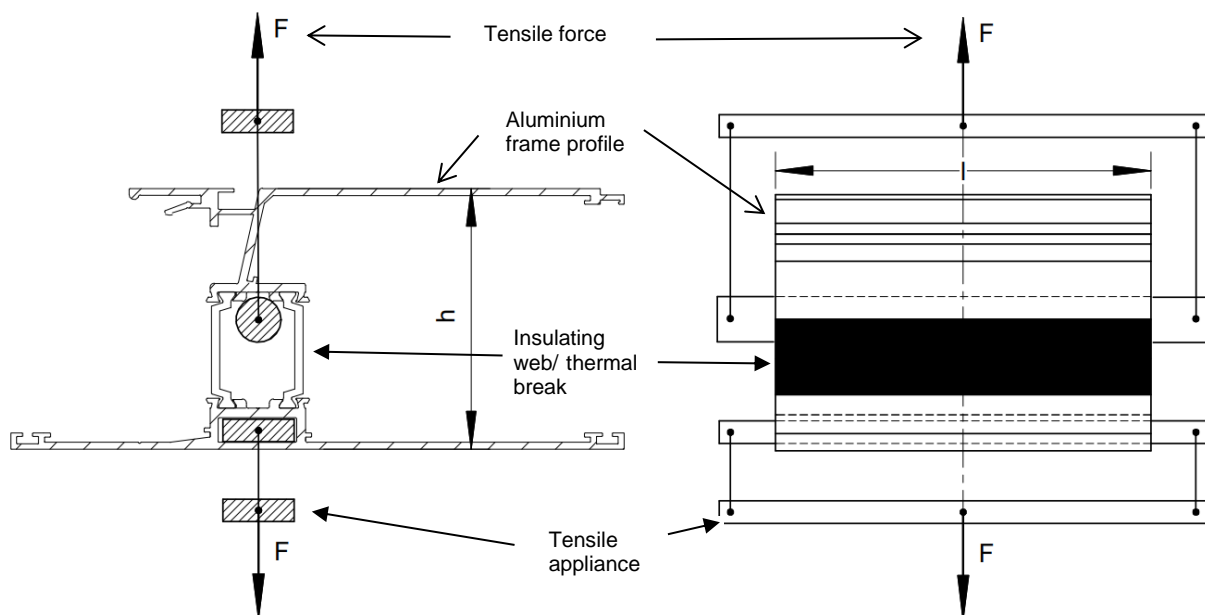


Figure 2.2.5.2.10: Example test rig for determination of the transverse tensile strength

The characteristic values of the transverse tensile strength shall be given in the ETA.

Aspects of ageing and environmental influences of the thermal barrier

The transverse tensile strength Q of ten specimens shall be determined at 23 °C according to the tensile test (see description in above) after storage for a period of 96 hours in a hot, saturated atmosphere (85 ± 5 °C, 95 to 100 % relative humidity).

The characteristic transverse tensile strength shall be determined from the measured values as 5 % quantiles based on a logarithmic normal distribution with 75 % confidence and given in the ETA.

The ratio of the transverse tensile strength Q determined under normal conditions and under ageing and environmental influences shall be given in the ETA in %.

Aspects of temperature influences of the thermal barrier

The transverse tensile strength Q of ten specimens shall be determined according to the tensile test (see description in above) at 80 ± 3 °C and at -20 ± 2 °C. The temperature of the test specimens (as a whole) shall be maintained during the test.

The characteristic transverse tensile strength shall be determined from the measured values as 5 % quantiles based on a logarithmic normal distribution with 75 % confidence and given in the ETA.

The ratio of the transverse tensile strength Q determined under normal conditions and under temperature influences shall be given in the ETA in %.

2.2.3 Durability

For wall kits, EAD 220089-00-0401, Clause 2.2.6, applies.

For opaque sheets only clause 2.2.5.3.2 "Ageing and Environmental Influences (K_u , C_u) of EAD 220089-00-0401 applies.

2.2.4 Air permeability

For roof kits, EAD 220089-00-0401, Clause 2.2.11, applies.

For wall kits the test methods for windows and external doors given in EN 1026 apply.

The classification achieved in accordance with Clause 4.14 of EN 14351-1 shall be indicated in the ETA.

3 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

3.1 System(s) of assessment and verification of constancy of performance to be applied

EAD 220089-00-0401, Clause 3.1, applies.

For the wall kits the applicable European legal act is Commission Decision 2003/640/EC. The system is 2+ for any use except for uses subject to regulations on reaction to fire.

For uses subject to regulations on reaction to fire the applicable AVCP systems are 1, 3 or 4 depending on the conditions defined in the said Decision.

3.2 Tasks of the manufacturer

EAD 220089-00-0401, Clause 3.2, applies.

In addition, the cornerstones of the actions to be undertaken by the manufacturer of the wall kits in the procedure of assessment and verification of constancy of performance are laid down in Table 3.2.1.

Table 3.2.1 Addition to control plan for the manufacturer; cornerstones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Factory production control (FPC) [including testing of samples taken at the factory in accordance with a prescribed test plan]					
10	Deformation behaviour	Pull-through-test of the Lift anchor and test of B_{EI} see EAD 220089-00-0401, clause 2.2.5.2 a)	As defined in the control plan	1	4x/ month
11	Transverse tensile strength capacity of the aluminium profile with thermal barrier	Tensile strength test see 2.2.5.2 e)	As defined in the control plan	3	Every 8h of production

3.3 Tasks of the notified body

EAD 220089-00-0401, Clause 3.3, applies.

In addition, the cornerstones of the actions to be undertaken by the notified body for the wall kits under AVCP system 2+ are laid down in Table 3.3.1.

Table 3.3.1 Control plan for the notified body; cornerstones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Initial inspection of the manufacturing plant and of factory production control					
1	Notified Body will ascertain that the factory production control with the staff and equipment are suitable to ensure a continuous and orderly manufacturing of the wall kit.	Verification of the complete FPC as described in the Control Plan agreed between the TAB and the manufacturer	According to Control Plan	According to Control Plan	According to Control Plan
Continuous surveillance, assessment and evaluation of factory production control					
2	The Notified Body will ascertain that the system of factory production control and the specified manufacturing process are maintained taking account of the Control Plan.	Verification of the controls carried out by the manufacturer as described in the Control Plan agreed between the TAB and the manufacturer with reference to the raw materials, to the process and to the product as indicated in Table 3.2.1	According to Control Plan	According to Control Plan	Once per year

For reaction to fire the intervention of the notified body for wall kits under AVPC system 1 is only necessary for products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g., an addition of fire retardants or a limiting of organic material).

In this case the cornerstones of the tasks to be undertaken by the notified body under AVCP system 1 are laid down in Table 3.3.2.

Table 3.3.2 Control plan for the notified body; cornerstones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Initial inspection of the manufacturing plant and of factory production control carried out by the manufacturer regarding the constancy of performance related to reaction to fire					
1	The notified body will consider especially the clearly identifiable stage in the production process which results in an improvement of the reaction to fire classification (e.g., an addition of fire retardants or a limiting of organic material).	Verification of the complete FPC as described in the control plan agreed between the TAB and the manufacturer	As defined in the control plan agreed between the TAB and the manufacturer	As defined in the control plan agreed between the TAB and the manufacturer	When starting the production or a new line
Continuous surveillance, assessment and evaluation of factory production control carried out by the manufacturer regarding the constancy of performance related to reaction to fire					
2	The notified body will consider especially the clearly identifiable stage in the production process which results in an improvement of the reaction to fire classification and/or the propensity to undergo continuous smouldering (e.g., an addition of fire retardants or a limiting of organic material)	Verification of the controls carried out by the manufacturer as described in the control plan agreed between the TAB and the manufacturer with reference to the raw materials, to the process and to the product as indicated in Table 3.2.1	As defined in the control plan agreed between the TAB and the manufacturer	As defined in the control plan agreed between the TAB and the manufacturer	Once per year

3.4 Special methods of control and testing used for the assessment and verification of constancy of performance

EAD 220089-00-0401, Clause 3.4, applies.

4 REFERENCE DOCUMENTS

EAD 220089-00-0402	Self-supporting translucent roof kits with covering made of plastic sheet
EN 755-2:2016	Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 2: Mechanical properties
EN 10088-1:2014	Stainless steels – Part 1: List of stainless steels
EN 1027:2016	Windows and doors – Water tightness – Test method
EN 14024:2004	Metal profiles with thermal barrier - Mechanical performance - Requirements, proof and tests for assessment
EN 14351-1:2006+A2:2016	Windows and doors – Product standard, performance characteristics – Part 1: Windows and external pedestrian doorsets

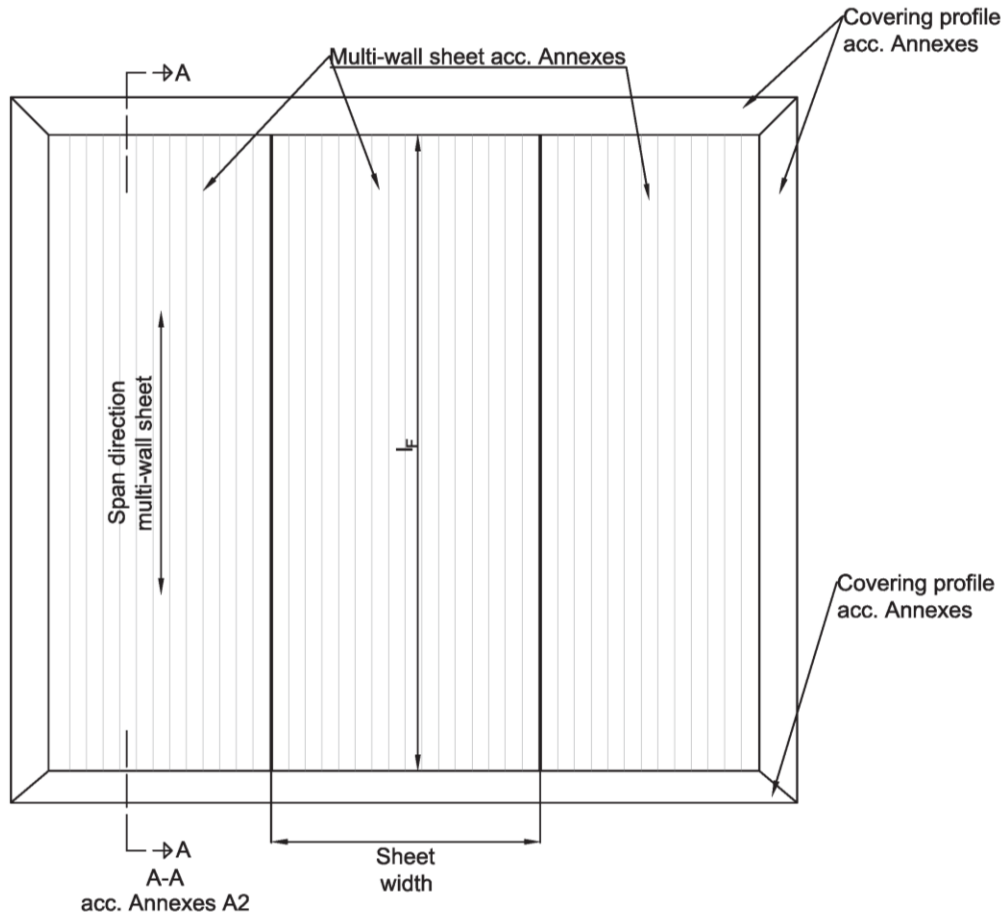
ANNEX A: EXAMPLES OF ROOF KITS

Annex A1

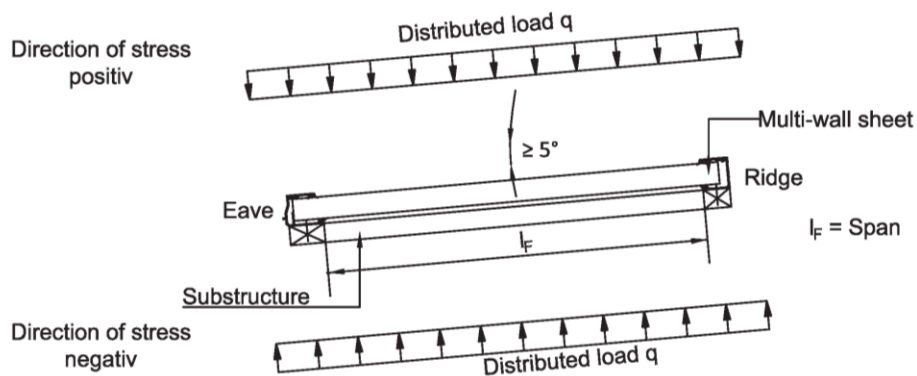
EAD 220089-00-0401, Annex A, applies.

Annex A2: Examples of roof and wall kits

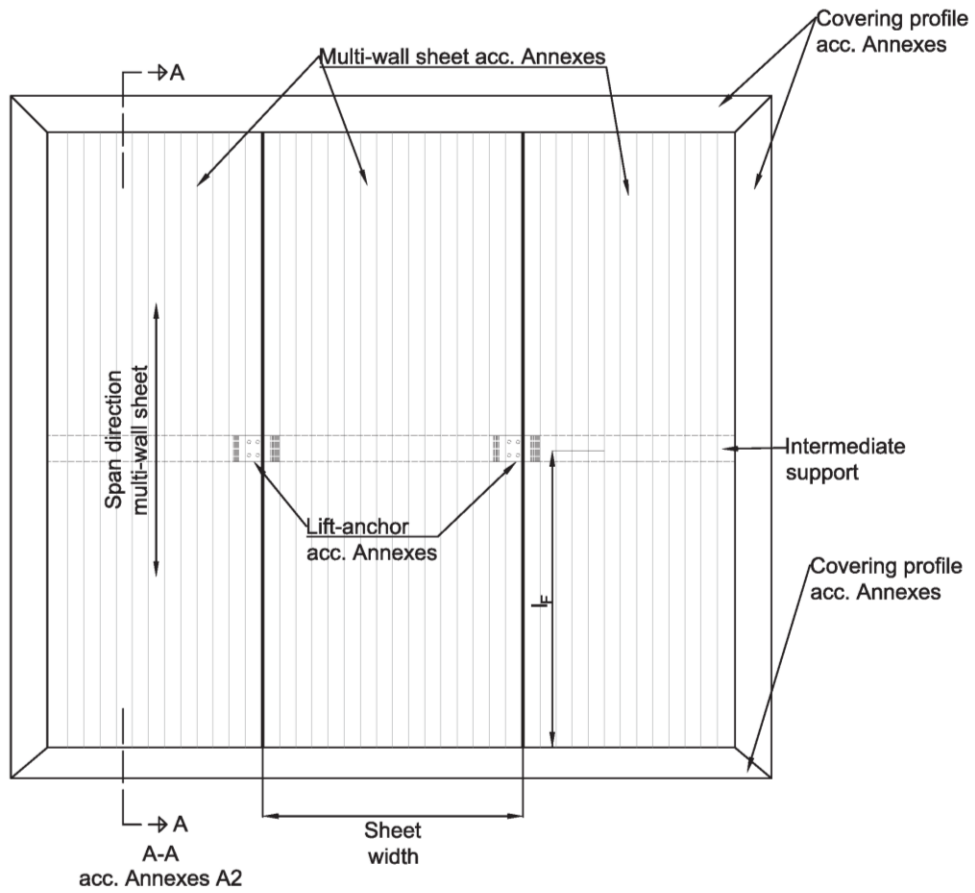
Front view roof and wall -single-span-system-



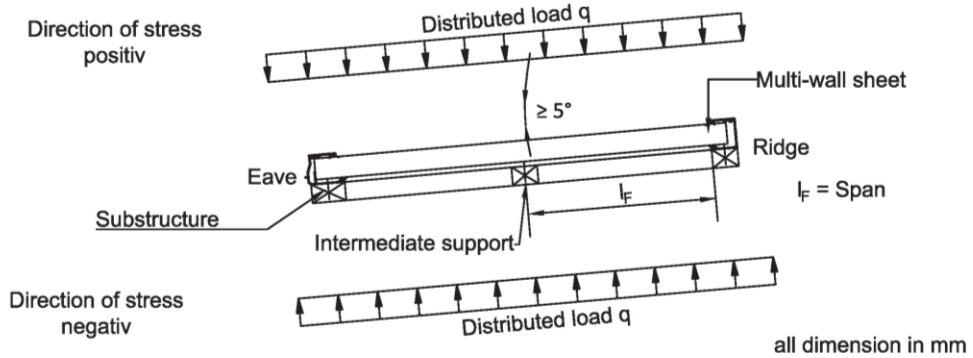
Schematic figure longitudinal section roof



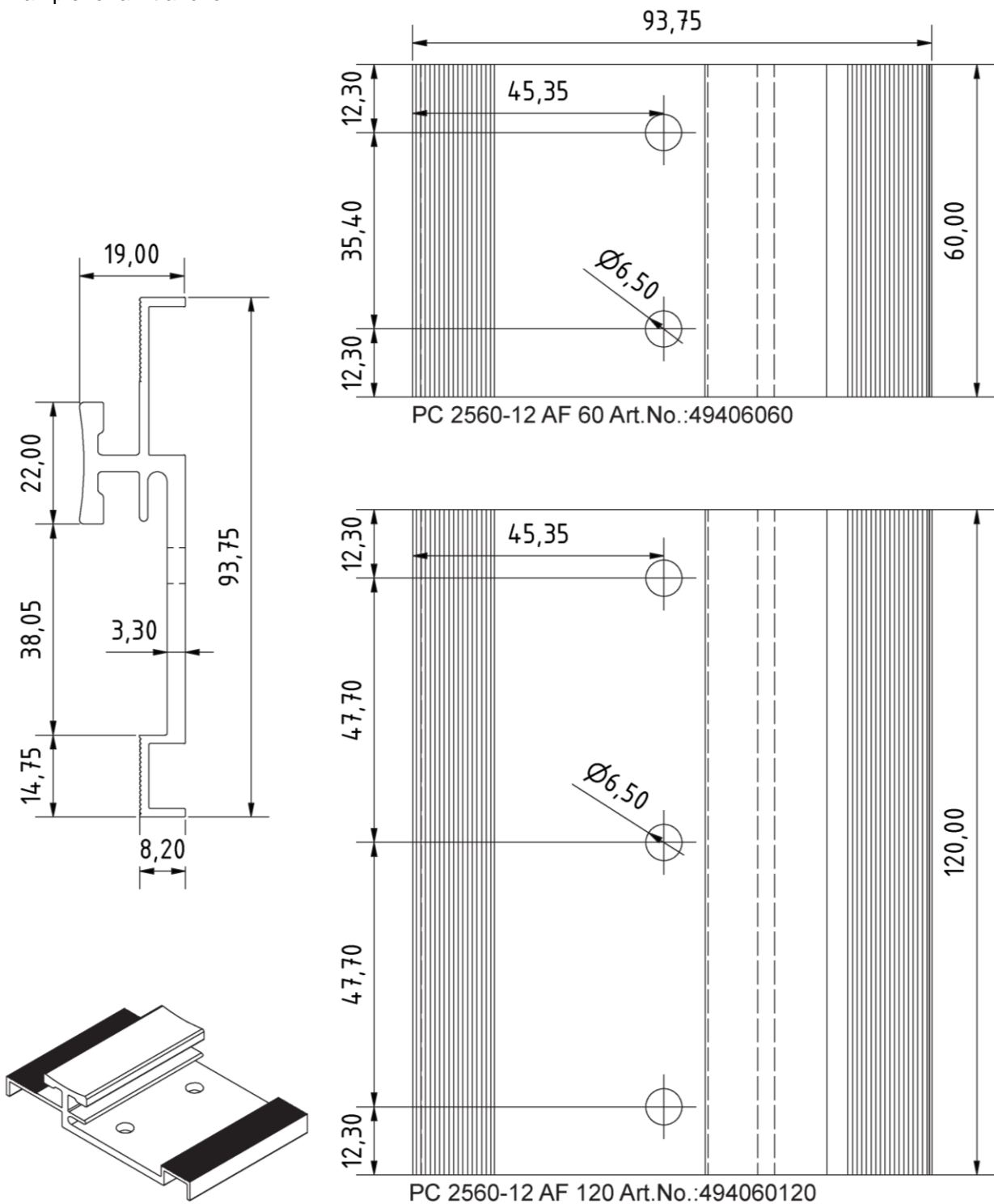
Front view roof and wall -continuous-span-system-



Schematic figure longitudinal section roof



Example for a lift anchor



PC 2560-12 AF 60 Art.No.:49406060

PC 2560-12 AF 120 Art.No.:494060120

All dimension in mm / Material Aluminium EN6060 T66 / Tolerances acc. EN 755-9