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Evaluation Report of ETA 19/0732 of 24/11/2019

Technical Assessment Body issuing the ETA:
Technical and Test Institute for Construction Prague

Trade name of the construction product	Perlitti ventilated facade system
Product family to which the construction product belongs	EC PAC 9: Kits for external wall claddings
Manufacturer	Perlitti Bygg AS Innherredsveien 8, 7014 Trondheim, Norway
Manufacturing plant(s)	Perlitti Bygg AS Innherredsveien 8, 7014 Trondheim, Norway
This Evaluation Report contains	23 pages

INTRODUCTION

This Evaluation Report describes the methods and results to assess the fitness for the intended use of the facade system for vertical exterior wall claddings consisting of external cladding elements, which are mechanically fastened by cladding fixing devices to a metallic (stainless steel) or wooden subframe, associated joint materials and subframe fixing devices, rendering system. The cladding elements are covered subsequently by a rendering system including reinforcement mesh (glass fibre mesh). This kit is fixed to external walls of buildings. Between the cladding element and external wall, there is a ventilated air gap, which shall always be drained (Perlitti ventilated facade system) introduced by Perlitti Bygg AS, in accordance with CPR Basic Requirements for construction works as specified in EAD 090019-01-0404 Kits for ventilated external wall claddings made of expanded glass granulates or magnesium oxide boards on subframe, with rendering applied in situ, with or without thermal insulation.

A DESCRIPTION OF THE SYSTEM, INTENDED USE AND INTENDED WORKING LIFE

The Perlitti ventilated facade system is described in section 1 of the European Technical Assessment (ETA). As described in section 2.1 of the ETA, this kit is intended to be used as ventilated external wall cladding as much in new architectural work as in renovation and the provisions made there are based on an assumed working life of 25 years as minimum.

B TESTS ON THE PRODUCT

The tests reports referred to the list attached in part C in this document is available at Technical and Test Institute for Construction Prague (TTIC).

B.1 Mechanical resistance and stability (BWR 1)

See section 3.1 of the ETA.

B.2 Safety in case of fire (BWR 2)

B.2.1 Reaction to fire (EAD 090019-01-0404, Cl. 2.2.1)

B.2.1.1 Reaction to fire (EAD 090019-01-0404, Cl. 2.2.1.1)

Reaction to fire classification of the PERLITTI ventilated facade system was carried out in accordance with EN 13501-1 and in compliance EAD 090019-01-0404, Annex A Reaction to Fire.

The composition of the test sample (representative) was designed on the basis of EAD 090019-01-0404, Annex A Reaction to Fire

The composition of the tested sample was chosen based on the declared values of organic content of the individual components and for reinforcement based on values of the heat of combustion of the individual components determined in accordance with EN ISO 1716. (Test reports 197/15/BC/N, Pr-09-1.089, Pr-09-1.092, Pr-09-1.096, Pr-09-1.125, Pr-18-1.257, WF 362835, WF 360685, Pr-18-1.234, Pr-18-1.233, PK1-01-18-096-E-0)

The system composition (representative) for the evidential tests pursuant to EN 13823+A1 (SBI), EN ISO 11925-2 and EN ISO 1716:

- PERLITTI ventilated facade system
  - Wooden subframe: system of vertical wooden battens (98x30) mm, minimal ventilated air gap: 25 mm
  - Metal subframe: system of vertical metal profiles shaped U (channel no. 1 and channel no. 2) made from Stainless Steel, thickness 1 mm, dimensions: channel no. 1 (36x90) mm and channel no. 2 (42x92) mm, minimal ventilated air gap: 30 mm

Cladding elements: PERLITTI cladding element, thickness 12 mm, apparent density (1080±100) kg/m^3

Cladding fixing devices for wooden subframe: stainless steel screws (4,0x40) mm are made of stainless steel minimum Class C3

Cladding fixing devices for metal subframe: stainless steel self-drilling screws (4,2x32) mm are made of stainless steel minimum Class C3

Primer: PERLITTI GRUND U

Base Coat: PERLITTI SPECJAL, thickness 3 mm

Glass fibre mesh reinforcement: PERLITTI glass fibre mesh, mass per unit area: about 160 g/m^2 and mesh size of about (5,0x5,0) mm

Key coat: PERLITTI GRUND M, thickness 0,3 mm

Finishing coat: PERLITTI Kornspor SIL 3,0 mm, drilled structure, thickness 2,2 mm

Decorative coat: PERLITTI Silikon Maling, thickness 0,2 mm

Table 1: Test results – PERLITTI ventilated facade system

Test according to	Parameter	Average value	Assessment
EN 13823+A1 (SBI)	FIGRA $_{0.2MJ}$ [W/s]	49,3	≤ 120 (A2, B)
	THR $_{600s}$ [MJ]	1,8	≤ 7.5 (A2, B)
	LFS < edge of specimen	–	yes (A2, B)
	SMOGRA (m^2/s^2)	0,0	≤ 30 (s1)
	TSP $_{600s}$ (m^2)	18,3	≤ 50 (s1)
	Non-occurring of flaming droplets/ particles	–	yes (d0)
EN ISO 1716 Cladding element (PERLITTI cladding element)	PSC (MJ/kg)	0,39	≤ 3,0 (A2)
EN ISO 1716 Primer (water based)	PSC (MJ/m^2)	3,90	≤ 4,0 (A2)
EN ISO 1716 Base coat (cement based)	PSC (MJ/kg)	0,31	≤ 3,0 (A2)
EN ISO 1716 Glass fibre mesh (160 g/m^2)	PSC (MJ/m^2)	0,98	≤ 4,0 (A2)
EN ISO 1716 Key coat	PSC (MJ/m^2)	0,98	≤ 4,0 (A2)
EN ISO 1716 Finishing coat	PSC (MJ/kg)	2,30	≤ 3,0 (A2)
EN ISO 1716 Decorative coat	PSC (MJ/m^2)	1,56	≤ 4,0 (A2)
EN ISO 1716 Product as a whole	PSC (MJ/kg)	≤ 0,84	≤ 3,0 (A2)
EN ISO 11925-2 Exposure = 30 s according to Cl. 7.3.3.1	F_S ≤ 150 mm to 60 s No ignition of the filter paper	- -	yes (B) yes (d0)
EN ISO 11925-2 Exposure = 30 s according to Cl. 7.3.3.2	F_S ≤ 150 mm to 60 s No ignition of the filter paper	- -	yes (B) yes (d0)
EN ISO 11925-2 Exposure = 30 s according to Cl. 7.3.3.2.3	F_S ≤ 150 mm to 60 s No ignition of the filter paper	- -	yes (B) yes (d0)

In compliance with EN 13501-1+A1 and principles of extended application, PERLITTI ventilated facade system is classified as follows:

Table 2: Reaction to fire classification – PERLITTI ventilated facade system with wooden subframe

Reaction to fire		Smoke production			Flaming droplets	
B	-	s	1	,	d	0

Table 3: Reaction to fire classification – PERLITTI ventilated facade system with metal subframe

Reaction to fire		Smoke production			Flaming droplets	
A2	-	s	1	,	d	0

The classification is valid for the following product parameters:

Subframe: wooden and metal subframe according to description above
Cladding element: PERLITTI cladding element – composition cannot be changed, thickness at least 12 mm, reaction to fire Class A1 and density at least 980 kg/m^3
Primer: PERLITTI GRUND U - composition cannot be changed, the maximum applied amount 0,12 kg/m² or other primers having the same base of organic component and lower organic matter content (based on weight in dry state under end use conditions) than PERLITTI GRUND U
Base coat: PERLITTI SPECJAL - composition cannot be changed, the thickness at least 3 mm or other base coats having the same composition with lower the organic matter content (based on weight in dry state under end use conditions) than PERLITTI SPECJAL
Glass fibre mesh reinforcement: PERLITTI glass fibre mesh - composition cannot be changed or other glass fibre mesh reinforcement of same type with the same or lower gross heat of combustion PCS_S per unit area (according to EN ISO 1716)
Key coat: PERLITTI GRUND M - composition cannot be changed, the maximum applied amount 0,35 kg/m² or other key coats having the same base of organic component and lower organic matter content (based on weight in dry state under end use conditions) than PERLITTI GRUND M
Finishing coat: PERLITTI Kornspor SIL 3,0 mm - composition cannot be changed, grain size at most 3 mm, or other finishing coats of grain size at most 3,0 mm with the same or lower organic matter content (based on weight in dry state under end use conditions) than PERLITTI Kornspor SIL 3,0 mm (these requirements meet other alternatives of finishing coats: e.g. PERLITTI Kornspor SIL 2,0 mm, PERLITTI Homogen SIL 1,0 mm, PERLITTI Homogen SIL 1,5 mm;
PERLITTI Homogen SIL 2,0 mm this requirement does not meet if the finishing coat contains less than 5 % organic matter, then it may be of greater thickness (based on weight in dry state under end use conditions)
Decorative coat: PERLITTI Silikon Maling - composition cannot be changed, the maximum applied amount 0,37 kg/m² or other decorative coat having the same base of organic component and lower organic matter content (based on weight in dry state under end use conditions) than PERLITTI Silikon Maling
The classification is valid for the following end use applications:
Exposed side: outer (side of finishing coat)
Joint: between cladding element: tightly butted, reinforcement in the base coat – overlap joints

Substrate: wood-based substrates as well as any substrates od classes A1 and A2-s1,d0 with density not less than 413 kg/m^3

The method of fixing the subframe and cladding elements: mechanically by fixing devices and screws as is described in text above

Air gaps: ventilated air gap under cladding elements

B.2.1.2 Reaction to fire on rear side (EAD 090019-01-0404, Cl. 2.2.1.2)

This performance has not been assessed.

B.2.2. Facade fire performance (EAD 090019-01-0404, Cl. 2.2.2)

This performance has not been assessed.

B.2.3 Propensity to undergo continuous smouldering (EAD 090019-01-0404, Cl. 2.2.3)

This performance has not been assessed.

B.2.4 Adhesion of core at high temperature (EAD 090019-01-0404, Cl. 2.2.4)

This performance has not been assessed.

B.3 Hygiene, health and environment (BWR 3)

B.3.1 Drainability (EAD 090019-01-0404, Cl. 2.2.5)

This performance has not been assessed.

B.3.2 Water absorption (EAD 090019-01-0404, Cl. 2.2.6)

B.3.2.1 Water absorption of rendering system (EAD 090019-01-0404, Cl. 2.2.6.1)

See Cl. 3.3.2 of ETA. (Test Reports No. 060-047456, 060-048279). The test results are given in the following Tables.

Table 4: Water absorption of rendering system

Type of composition	Type of finishing coat	Water absorption [kg/m^2]			
		After 1 hour		After 24 hours	
		Individual value	Average value	Individual value	Average value
Composition 1	MgO board PERLITTI GRUNT U PERLITTI SPECJAL PERLITTI Glass fibre mesh	0,18 0,17 0,20	0,18	1,25 1,19 1,25	1,23
Composition 2	MgO board PERLITTI GRUNT U PERLITTI SPECJAL PERLITTI Glass fibre mesh PERLITTI GRUNT M PERLITTI Homogen SIL 2,0 mm	0,04 0,08 0,05	0,06	0,26 0,31 0,26	0,28
Composition 3	MgO board PERLITTI GRUNT U PERLITTI SPECJAL PERLITTI Glass fibre mesh PERLITTI Homogen SIL 2,0 mm PERLITTI Silikon Maling	0,08 0,08 0,06	0,07	0,35 0,35 0,31	0,34
Composition 4	MgO board PERLITTI GRUNT U PERLITTI SPECJAL PERLITTI Glass fibre mesh PERLITTI Homogen SIL 2,0 mm	0,06 0,05 0,07	0,06	0,30 0,29 0,36	0,32

Type of composition	Type of finishing coat	Water absorption [kg/m²]			
		After 1 hour		After 24 hours	
		Individual value	Average value	Individual value	Average value
Composition 5	MgO board PERLITTI GRUNT U PERLITTI SPECJAL PERLITTI Glass fibre mesh PERLITTI GRUNT M PERLITTI Homogen SIL 2,0 mm PERLITTI Silikon Maling	0,05 0,04 0,08	0,06	0,25 0,22 0,32	0,26
Other configuration		Not performance assessed			

B.3.2.2 Water absorption of cladding element (EAD 090019-01-0404, Cl. 2.2.6.2)
This performance has not been assessed.

B.3.3 Content, emission and/or release of DS (EAD 090019-01-0404, Cl. 2.2.7)
This performance has not been assessed.

B.4 Safety in use (BWR 4)

B.4.1 Wind load resistance of the kit (EAD 090019-01-0404, Cl. 2.2.8)

B.4.1.1 Wind load resistance of the kit in after-installation stage (EAD 090019-01-0404, Cl. 2.2.8.1)

B.4.1.1.1 Wind load resistance of the kit verified by calculation (EAD 090019-01-0404, Cl. 2.2.8.1.1)
This performance has not been assessed.

B.4.1.1.2 Wind load resistance of the kit verified by tests on components (EAD 090019-01-0404, Cl. 2.2.8.1.2)
The test results are given in Cl B.4.4.1, Cl. B.4.4.2, Cl. B.4.4.3, Cl. B.4.4.4 and B.4.5.3 of this ER.

B.4.1.1.3 Wind load resistance of the kit verified by test of the critical case (EAD 090019-01-0404, Cl. 2.2.8.1.3)
See Cl. 3.4.1.1.3 of ETA. (Test Reports No. Report 01, Report 02).

B.4.1.2 Mechanical resistance of fixing device for connection of subframe bracket to substrate (EAD 090019-01-0404, Cl. 2.2.8.2)

B.4.1.2.1 Pull-out/pull-through resistance of fixing device under tensile load from subframe bracket in after-installation stage (EAD 090019-01-0404, Cl. 2.2.8.2.1)
This performance has not been assessed.

B.4.1.2.2 Shear resistance of fixing device in subframe bracket in after-installation stage (EAD 090019-01-0404, Cl. 2.2.8.2.2)
This performance has not been assessed.

B.4.1.3 Bending strength and modulus of the elasticity of cladding element (EAD 090019-01-0404, Cl. 2.2.8.3)
See Cl. 3.4.1.3 of ETA. (Test Report No. 060-047150).

B.4.2 Impact resistance (EAD 090019-01-0404, Cl. 2.2.9)

B.4.2.1 Impact resistance of the kit (EAD 090019-01-0404, Cl. 2.2.9.1)

See Cl. 3.4.2.1 of ETA. (Test Reports No. 060-047319, 060-047320).

B.4.2.2 Impact resistance of the rendering system (EAD 090019-01-0404, Cl. 2.2.9.2)

See Cl. 3.4.2.2 of ETA. (Test Report No. 060-047360).

B.4.3 Bond strength (EAD 090019-01-0404, Cl. 2.2.10)

B.4.3.1 Bond strength of base coat to cladding element (EAD 090019-01-0404, Cl. 2.2.10.1)

See Cl. 3.4.3.1 of ETA. (Test Report No. 060-047360). The test results are given in following table.

Table 5: Bond strength of rendering system - Water absorption of rendering system – Composition 1

Composition 1		Test no.	F [kPa] Bond strength		Failure mode
MgO board + PERLITTI GRUND U + PERLITTI SPECJAL + PERLITTI Glass Fibre Mesh 160 g/m²		1	611		B 100%
		2	503		A/B 90% B 10%
		3	547		A/B 90% B 10%
		4	224		A/B 95% B 5%
		5	378		A/B 80% B 20%
Test results statistical interpretation					
F_{min} [kPa] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$f_{u(h)}$ [kPa] characteristic breaking force
224	611	453	154	2,33	95

Note: Failure mode: A – in the base coat, A/B – between base coat and cladding element, B – in the cladding element
$f_{u(h)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

B.4.3.2 Bond strength of rendering system (EAD 090019-01-0404, Cl. 2.2.10.2)

See Cl. 3.4.3.2 of ETA. (Test Report No. 060-047360).The test results are given in following tables.

Table 6: Bond strength of rendering system - Water absorption of rendering system – Composition 2

Composition 2		Test no.	F [kPa] Bond strength		Failure mode
MgO board + PERLITTI GRUND U + PERLITTI SPECJAL + PERLITTI Glass Fibre Mesh 160 g/m² + PERLITTI GRUND M + PERLITTI Kornspor SIL 2,0		1	576		A 80% A/B 15% B 5%
		2	488		A 85% A/B 15%
		3	471		A 70% A/B 5% B 25%
		4	350		A/B 65% B 35%
		5	389		A/B 70% B 30%
Test results statistical interpretation					
F_{min} [kPa] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$f_{ren(h)}$ [kPa] characteristic breaking force
350	576	455	89	2,33	249

Note: Failure mode: A – in the base coat, A/B – between base coat and cladding element, B – in the cladding element
$f_{u(h)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

Table 7: Bond strength of rendering system - Water absorption of rendering system – Composition 3

Composition 3	Test no.	F [kPa] Bond strength	Failure mode
MgO board + PERLITTI GRUND U + PERLITTI SPECJAL + PERLITTI Glass Fibre Mesh 160 g/m² + PERLITTI Kornspor SIL 2,0 + PERLITTI Silikon Maling	1	337	A 100%
	2	455	A/B 20% B 80%
	3	631	A 70% A/B 10% B 20%
	4	614	A 70% A/B 5% B 25%
	5	476	A 60% A/B 30% B 10%

Test results statistical interpretation

F_{min} [kPa] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$f_{ren(h)}$ [kPa] characteristic breaking force
337	631	503	122	2,33	219

Note: Failure mode: A – in the base coat, A/B – between base coat and cladding element, B – in the cladding element
$f_{u(h)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

Table 8: Bond strength of rendering system - Water absorption of rendering system – Composition 4

Composition 4	Test no.	F [kPa] Bond strength	Failure mode
MgO board + PERLITTI GRUND U + PERLITTI SPECJAL + PERLITTI Glass Fibre Mesh 160 g/m² + PERLITTI Kornspor SIL 2,0	1	357	A 35% A/B 65%
	2	357	A/B 90% B 10%
	3	215	A 100%
	4	247	A/B 100%
	5	641 *	A 40% A/B 20% B 40%

Test results statistical interpretation

F_{min} [kPa] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$f_{ren(h)}$ [kPa] characteristic breaking force
215	354	294	74	2,63	100

Note: * Value wasn´t included in static calculation due to another type of failure mode than most of other test results.
Failure mode: A – in the base coat, A/B – between base coat and cladding element, B – in the cladding element
$f_{u(h)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

Table 9: Bond strength of rendering system - Water absorption of rendering system – Composition 5

Composition 5	Test no.	F [kPa] Bond strength	Failure mode
MgO board + PERLITTI GRUND U + PERLITTI SPECJAL + PERLITTI Glass Fibre Mesh 160 g/m² + PERLITTI GRUND M + PERLITTI Kornspor SIL 2,0 + PERLITTI Silikon Maling	1	236	A 100%
	2	235	A 100%
	3	381	A 80% A/B 10% B 10%
	4	382	A 95% A/B 5%
	5	593 *	A/B 40% B 60%

Test results statistical interpretation

F_{min} [kPa] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$f_{ren(h)}$ [kPa] characteristic breaking force
235	382	309	84	2,63	87

Note: * Value wasn´t included in static calculation due to another type of failure mode than most of other test results.
Failure mode: A – in the base coat, A/B – between base coat and cladding element, B – in the cladding element
$f_{u(h)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

B.4.3.3 Bond strength of rendering system not tested on the rig (EAD 090019-01-0404, Cl. 2.2.10.3)

See Cl. 3.4.3.3 of ETA. (Test Report No. 060-048279). The test results are given in the following table.

Table 10: Bond strength of rendering system - Water absorption of rendering system – Composition 1

Composition 1	Test no.	F [kPa] Bond strength	Failure mode
MgO board + PERLITTI GRUND U + PERLITTI SPECJAL + PERLITTI Glass Fibre Mesh 160 g/m²	1	455	A 100%
	2	471	A 20% B 80%
	3	571	A 90% B 10%
	4	500	A 95% B 5%
	5	553	A 20% B 80%
	6	487	A 100%
	7	472	A 20% B 80%
	8	438	A 10% B 90%
	9	440	B 100%
	10	508	A 85% B 15%

Test results statistical interpretation

F_{min} [kPa] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$f_{u(f/t)}$ [kPa] characteristic breaking force
440	571	490	45	1,92	404

Note: Failure mode: A – in the base coat, A/B – between base coat and cladding element, B – in the cladding element
$f_{u(f/t)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

B.4.4 Mechanical resistance of fixing device of cladding element to subframe (EAD 090019-01-0404, Cl. 2.2.11)

B.4.4.1 Pull-out/ pull-through resistance of fixing device from cladding element under tensile load (EAD 090019-01-0404, Cl. 2.2.11.1)

See Cl. 3.4.4.1 of ETA. (Test Report No. 060-047148, 060-047149). The test results are given in the following Tables.

Table 11: Pull through resistance – center, supporting ring ø 180 mm – MgO boards + Facade drilling screws (4,2x32) mm for metal subframe

Test no.	F_{max} [N] Breaking force	Failure mode
1	1028	Conical failure of the board under the screw head
2	1180	Conical failure of the board under the screw head
3	1069	Conical failure of the board under the screw head
4	1257	Conical failure of the board under the screw head
5	1160	Conical failure of the board under the screw head

Test results statistical interpretation

F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{tl(r)}$ [kN] characteristic breaking force
1029	1257	1139	91	2,33	0,926

Note: $R_{tl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

Table 12: Pull through resistance – center, supporting ring ø 270 mm – MgO boards + Facade drilling screws (4,2x32) mm for metal subframe

Test no.	F_{max} [N] Breaking force	Failure mode
1	1110	Conical failure of the board under the screw head
2	1175	Conical failure of the board under the screw head
3	1071	Conical failure of the board under the screw head
4	1024	Conical failure of the board under the screw head
5	1105	Conical failure of the board under the screw head

Test results statistical interpretation

F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{tl(r)}$ [kN] characteristic breaking force
1024	1175	1097	56	2,33	0,968

Note: $R_{tl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

Table 13: Pull through resistance – center, supporting ring ø 350 mm – MgO boards + Facade drilling screws (4,2x32) mm for metal subframe

Test no.	F_{max} [N] Breaking force	Failure mode
1	1010	Conical failure of the board under the screw head
2	1001	Conical failure of the board under the screw head
3	1084	Conical failure of the board under the screw head
4	1090	Conical failure of the board under the screw head
5	1061	Conical failure of the board under the screw head

Test results statistical interpretation

F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{tl(r)}$ [kN] characteristic breaking force
1001	1090	1049	41	2,33	0,953

Note: $R_{tl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

Table 14: Pull through resistance – edge, supporting ring ø 180 mm – MgO boards + Facade drilling screws (4,2x32) mm for metal subframe

Test no.	F_{max} [N] Breaking force	Failure mode
1	693	Bursting of the board, crack at level of screw drill
2	635	Bursting of the board, crack at level of screw drill
3	682	Bursting of the board, crack at level of screw drill
4	668	Bursting of the board, crack at level of screw drill
5	669	Bursting of the board, crack at level of screw drill

Test results statistical interpretation

F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{tl(r)}$ [kN] characteristic breaking force
635	693	669	22	2,33	0,619

Note: $R_{tl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

Table 15: Pull through resistance – edge, supporting ring ø 270 mm – MgO boards + Facade drilling screws (4,2x32) mm for metal subframe

Test no.	F_{max} [N] Breaking force	Failure mode
1	540	Bursting of the board, crack at level of screw drill
2	530	Bursting of the board, crack at level of screw drill
3	550	Bursting of the board, crack at level of screw drill
4	590	Bursting of the board, crack at level of screw drill
5	591	Bursting of the board, crack at level of screw drill

Test results statistical interpretation

F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{tl(r)}$ [kN] characteristic breaking force
530	591	560	29	2,33	0,494

Note: $R_{tl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

Table 16: Pull through resistance – edge, supporting ring ø 350 mm – MgO boards + Facade drilling screws (4,2x32) mm for metal subframe

Test no.	F_{max} [N] Breaking force	Failure mode
1	442	Bursting of the board, crack at level of screw drill
2	507	Bursting of the board, crack at level of screw drill
3	458	Bursting of the board, crack at level of screw drill
4	437	Bursting of the board, crack at level of screw drill
5	493	Bursting of the board, crack at level of screw drill

Test results statistical interpretation

F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{tl(r)}$ [kN] characteristic breaking force
437	507	467	31	2,33	0,395

Note: $R_{tl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

Table 17: Pull through resistance – corner, supporting ring ø 180 mm – MgO boards + Facade drilling screws (4,2x32) mm for metal subframe

Test no.	F_{max} [N] Breaking force	Failure mode
1	219	Triangular failure of the board in tested corner
2	163	Triangular failure of the board in tested corner
3	221	Triangular failure of the board in tested corner
4	230	Triangular failure of the board in tested corner
5	179	Triangular failure of the board in tested corner

Test results statistical interpretation

F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{tl(r)}$ [kN] characteristic breaking force
163	230	202	30	2,33	0,134

Note: $R_{tl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

Table 18: Pull through resistance – corner, supporting ring ø 270 mm – MgO boards + Facade drilling screws (4,2x32) mm for metal subframe

Test no.	F_{max} [N] Breaking force	Failure mode
1	228	Triangular failure of the board in tested corner
2	138	Triangular failure of the board in tested corner
3	199	Triangular failure of the board in tested corner
4	179	Triangular failure of the board in tested corner
5	223	Triangular failure of the board in tested corner

Test results statistical interpretation

F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{tl(r)}$ [kN] characteristic breaking force
138	228	193	37	2,33	0,108

Note: $R_{tl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

Table 19: Pull through resistance – corner, supporting ring ø 350 mm – MgO boards + Facade drilling screws (4,2x32) mm for metal subframe

Test no.	F_{max} [N] Breaking force	Failure mode			
1	141	Triangular failure of the board in tested corner			
2	126	Triangular failure of the board in tested corner			
3	170	Triangular failure of the board in tested corner			
4	144	Triangular failure of the board in tested corner			
5	155	Triangular failure of the board in tested corner			
Test results statistical interpretation					
F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{tl(r)}$ [kN] characteristic breaking force
126	170	147	16	2,33	0,109
Note: $R_{tl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value k_n the eccentricity o 5 % with 75 % confidence					

Table 20: Pull through resistance – centre, supporting ring ø 180 mm – MgO boards + Facade drilling screws (4,0x40) mm for wooden subframe

Test no.	F_{max} [N] Breaking force	Failure mode			
1	896	Conical failure of the board under the screw head			
2	857	Conical failure of the board under the screw head			
3	878	Conical failure of the board under the screw head			
4	841	Conical failure of the board under the screw head			
5	897	Conical failure of the board under the screw head			
Test results statistical interpretation					
F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{tl(r)}$ k[N] characteristic breaking force
841	897	874	25	2,33	0,817
Note: $R_{tl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value k_n the eccentricity o 5 % with 75 % confidence					

Table 21: Pull through resistance – centre, supporting ring ø 270 mm – MgO boards + Facade drilling screws (4,0x40) mm for wooden subframe

Test no.	F_{max} [N] Breaking force	Failure mode			
1	987	Conical failure of the board under the screw head			
2	936	Conical failure of the board under the screw head			
3	909	Conical failure of the board under the screw head			
4	956	Conical failure of the board under the screw head			
5	991	Conical failure of the board under the screw head			
Test results statistical interpretation					
F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{tl(r)}$ [kN] characteristic breaking force
909	991	956	35	2,33	0,875
Note: $R_{tl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value k_n the eccentricity o 5 % with 75 % confidence					

Table 22: Pull through resistance – centre, supporting ring ø 350 mm – MgO boards + Facade drilling screws (4,0x40) mm for wooden subframe

Test no.	F_{max} [N] Breaking force	Failure mode
1	825	Conical failure of the board under the screw head
2	873	Conical failure of the board under the screw head
3	840	Conical failure of the board under the screw head
4	838	Conical failure of the board under the screw head
5	838	Conical failure of the board under the screw head

Test results statistical interpretation

F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{tl(r)}$ [kN] characteristic breaking force
825	873	843	18	2,33	0,801

Note: $R_{tl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

Table 23: Pull through resistance – edge, supporting ring ø 180 mm – MgO boards + Facade drilling screws (4,0x40) mm for wooden subframe

Test no.	F_{max} [N] Breaking force	Failure mode
1	587	Bursting of the board, crack at level of screw drill
2	617	Bursting of the board, crack at level of screw drill
3	595	Bursting of the board, crack at level of screw drill
4	616	Bursting of the board, crack at level of screw drill
5	598	Bursting of the board, crack at level of screw drill

Test results statistical interpretation

F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{tl(r)}$ [kN] characteristic breaking force
587	617	603	13	2,33	0,572

Note: $R_{tl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

Table 24: Pull through resistance – edge, supporting ring ø 270 mm – MgO boards + Facade drilling screws (4,0x40) mm for wooden subframe

Test no.	F_{max} [N] Breaking force	Failure mode
1	526	Bursting of the board, crack at level of screw drill
2	545	Bursting of the board, crack at level of screw drill
3	490	Bursting of the board, crack at level of screw drill
4	516	Bursting of the board, crack at level of screw drill
5	526	Bursting of the board, crack at level of screw drill

Test results statistical interpretation

F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{tl(r)}$ [kN] characteristic breaking force
490	545	521	20	2,33	0,474

Note: $R_{tl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

Table 25: Pull through resistance – edge, supporting ring ø 350 mm – MgO boards + Facade drilling screws (4,0x40) mm for wooden subframe

Test no.	F_{max} [N] Breaking force	Failure mode			
1	407	Bursting of the board, crack at level of screw drill			
2	408	Bursting of the board, crack at level of screw drill			
3	405	Bursting of the board, crack at level of screw drill			
4	408	Bursting of the board, crack at level of screw drill			
5	392	Bursting of the board, crack at level of screw drill			
Test results statistical interpretation					
F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{tl(r)}$ [kN] characteristic breaking force
392	408	404	7	2,33	0,388
Note: $R_{tl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value k_n the eccentricity o 5 % with 75 % confidence					

Table 26: Pull through resistance – corner, supporting ring ø 180 mm – MgO boards + Facade drilling screws (4,0x40) mm for wooden subframe

Test no.	F_{max} [N] Breaking force	Failure mode			
1	131	Triangular failure of the board in tested corner			
2	119	Triangular failure of the board in tested corner			
3	188	Triangular failure of the board in tested corner			
4	150	Triangular failure of the board in tested corner			
5	164	Triangular failure of the board in tested corner			
Test results statistical interpretation					
F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{tl(r)}$ [kN] characteristic breaking force
119	188	150	27	2,33	0,087
Note: $R_{tl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value k_n the eccentricity o 5 % with 75 % confidence					

Table 27: Pull through resistance – corner, supporting ring ø 270 mm – MgO boards + Facade drilling screws (4,0x40) mm for wooden subframe

Test no.	F_{max} [N] Breaking force	Failure mode			
1	101	Triangular failure of the board in tested corner			
2	85	Triangular failure of the board in tested corner			
3	103	Triangular failure of the board in tested corner			
4	77	Triangular failure of the board in tested corner			
5	87	Triangular failure of the board in tested corner			
Test results statistical interpretation					
F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{tl(r)}$ [kN] characteristic breaking force
77	103	91	11	2,33	0,065
Note: $R_{tl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value k_n the eccentricity o 5 % with 75 % confidence					

Table 28: Pull through resistance – corner, supporting ring ø 350 mm – MgO boards + Facade drilling screws (4,0x40) mm for wooden subframe

Test no.	F_{max} [N] Breaking force	Failure mode			
1	65	Triangular failure of the board in tested corner			
2	57	Triangular failure of the board in tested corner			
3	60	Triangular failure of the board in tested corner			
4	67	Triangular failure of the board in tested corner			
5	58	Triangular failure of the board in tested corner			
Test results statistical interpretation					
F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{tl(r)}$ [kN] characteristic breaking force
57	67	61	4	2,33	0,051
Note: $R_{tl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value k_n the eccentricity o 5 % with 75 % confidence					

B.4.4.2 Shear resistance of fixing device in cladding element (EAD 090019-01-0404, Cl. 2.2.11.2)

See Cl 3.4.4.2 of ETA. (Test Report No. 060-047148, 060-047149). The test results are given in the following tables.

Table 29: Pull through resistance under shear loads – edge – MgO boards + Facade drilling screws (4,2x32) mm for metal subframe

Test no.	F_{max} [N] Breaking force	Failure mode			
1	1385	Cleavage failure of the board in tested edge			
2	1263	Cleavage failure of the board in tested edge			
3	1275	Cleavage failure of the board in tested edge			
4	1109	Cleavage failure of the board in tested edge			
5	1232	Cleavage failure of the board in tested edge			
6	1263	Cleavage failure of the board in tested edge			
7	1114	Cleavage failure of the board in tested edge			
Test results statistical interpretation					
F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{sl(r)}$ [kN] characteristic breaking force
1109	1385	1234	97	2,10	1,031
Note: $R_{sl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value k_n the eccentricity o 5 % with 75 % confidence					

Table 30: Pull through resistance under shear loads – corner – MgO boards + Facade drilling screws (4,2x32) mm for metal subframe

Test no.	F_{max} [N] Breaking force	Failure mode			
1	834	Triangular failure of the board in tested corner			
2	839	Triangular failure of the board in tested corner			
3	716	Triangular failure of the board in tested corner			
4	750	Triangular failure of the board in tested corner			
5	695	Triangular failure of the board in tested corner			
6	750	Triangular failure of the board in tested corner			
7	656	Triangular failure of the board in tested corner			
Test results statistical interpretation					
F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{sl(r)}$ [kN] characteristic breaking force
656	839	749	68	2,10	0,605
Note: $R_{sl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value k_n the eccentricity o 5 % with 75 % confidence					

Table 31: Pull through resistance under shear loads – edge – MgO boards + Facade drilling screws (4,0x40) mm for wooden subframe

Test no.	F_{max} [N] Breaking force	Failure mode
1	865	Cleavage failure of the board in tested edge
2	941	Cleavage failure of the board in tested edge
3	1090	Cleavage failure of the board in tested edge
4	977	Cleavage failure of the board in tested edge
5	904	Cleavage failure of the board in tested edge
6	1004	Cleavage failure of the board in tested edge
7	895	Cleavage failure of the board in tested edge

Test results statistical interpretation

F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{sl(r)}$ [N] characteristic breaking force
865	1090	954	77	2,10	0,792

Note: $R_{sl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

Table 32: Pull through resistance under shear loads – corner – MgO boards + Facade drilling screws (4,0x40) mm for wooden subframe

Test no.	F_{max} [N] Breaking force	Failure mode
1	652	Triangular failure of the board in tested corner
2	558	Triangular failure of the board in tested corner
3	582	Triangular failure of the board in tested corner
4	669	Triangular failure of the board in tested corner
5	568	Triangular failure of the board in tested corner
6	625	Triangular failure of the board in tested corner
7	609	Triangular failure of the board in tested corner

Test results statistical interpretation

F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{sl(r)}$ [kN] characteristic breaking force
558	669	609	42	2,10	0,520

Note: $R_{sl(r)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

B.4.4.3 Pull-out/pull-through resistance of fixing device from subframe under tensile load (EAD 090019-01-0404, Cl. 2.2.11.3)

See Cl. 3.4.4.3 of ETA. (Test Report No. 060-047148). The test results are given in the following tables

Table 33: Pull-out resistance of fixing device from subframe under tensile load (metal subframe)

Test no.	F_{max} [N] Breaking force	Failure mode
1	1594	Pull the fixing out of the profile
2	1425	Pull the fixing out of the profile
3	1276	Pull the fixing out of the profile

Test results statistical interpretation

F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{SC(p-o)}$ [kN] characteristic breaking force
1276	1594	1432	159	3,37	0,895

Note: $R_{SC(p-o)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

Table 34: Pull-through resistance of fixing device from subframe under tensile load (metal subframe)

Test no.	F_{max} [N] Breaking force	Failure mode
1	8474	Tear off the wafer head of the screw
2	7915	Tear off the wafer head of the screw
3	7544	Tear off the wafer head of the screw

Test results statistical interpretation

F_{min} [N] min. breaking force	F_{max} [N] max .breaking force	F_{mean}[N] mean breaking force	S [N] standard deviation	k_n [-] coefficient	$R_{SC(p-t)}$ k[N] characteristic breaking force
7544	8474	7978	468	3,37	6,400

Note: $R_{SC(p-t)}$ characteristic breaking force giving 75 % confidence that 95 % of the test results will be higher than this value
k_n the eccentricity o 5 % with 75 % confidence

B.4.4.4 Shear resistance of fixing device in subframe (EAD 090019-01-0404, Cl. 2.2.11.4)

The test results of shear resistance of fixing device in subframe in after-installation stage are given in Cl. B.4.4.2.

B.4.5 Mechanical resistance of the subframe (EAD 090019-01-0404, Cl. 2.2.12)

B.4.5.1 Resistance of subframe bracket to axial horizontal load (EAD 090019-01-0404, Cl. 2.2.12.1)

This performance has not been assessed.

B.4.5.2 Resistance of subframe bracket to vertical load (EAD 090019-01-0404, Cl. 2.2.12.2)

This performance has not been assessed.

B.4.5.3 Inertia moment of the cross-cut section of metallic profile for subframe (EAD 090019-01-0404, Cl. 2.2.12.3)

See Cl. 3.4.5.3 of ETA.

B.4.5.4 Resistance of connection between subframe profile and bracket to combined vertical and axial horizontal load in after-installation stage (EAD 090019-01-0404, Cl. 2.2.12.4)

This performance has not been assessed.

B.5 Protection against noise (BWR 5)

B.5.1 Airborne sound insulation (EAD 090019-01-0404, Cl. 2.2.13)

This performance has not been assessed.

B.6 Energy economy and heat retention (BWR 6)

B.6.1 Thermal resistance (EAD 090019-01-0404, Cl. 2.2.14)

This performance has not been assessed.

B.7 Sustainable use of natural resources (BWR 7)

B.7.1 Hygrothermal behaviour (EAD 090019-01-0404, Cl. 2.2.15)

See Cl. 3.7.1 of ETA. (Test Report No. 060-047360). The test results of the impact resistance and bond strength are given in the following tables.

Table 35: Composition – PERLITTI GRUND U + PERLITTI SPECJAL + PERLITTI Glass Fibre Mesh 160 g/m²

Bond strength [kPa]		Characteristic value [kPa]
Individual value	Average value	
611	453	95
503		
547		
224		
378		

Table 36: Composition – PERLITTI GRUND U + PERLITTI SPECJAL + PERLITTI Glass Fibre Mesh 160 g/m² + PERLITTI GRUND M + PERLITTI Kornspor SIL 2,0

Bond strength [kPa]		Characteristic value [kPa]
Individual value	Average value	
576	455	249
488		
471		
350		
389		

Table 37: Composition – PERLITTI GRUND U + PERLITTI SPECJAL + PERLITTI Glass Fibre Mesh 160 g/m² + PERLITTI Kornspor SIL 2,0 + PERLITTI Silikon Maling

Bond strength [kPa]		Characteristic value [kPa]
Individual value	Average value	
337	503	219
455		
631		
614		
476		

Table 38: Composition – PERLITTI GRUND U + PERLITTI SPECJAL + PERLITTI Glass Fibre Mesh 160 g/m² + PERLITTI Kornspor SIL 2,0

Bond strength [kPa]		Characteristic value [kPa]
Individual value	Average value	
357	294	100
357		
215		
247		
641 *		
Note: * Value wasn´t included in static calculation due to another type of failure mode than most of other test results.		

Table 39: Composition – PERLITTI GRUND U + PERLITTI SPECJAL + PERLITTI Glass Fibre Mesh 160 g/m² + PERLITTI GRUND M + PERLITTI Kornspor SIL 2,0 + PERLITTI Silikon Maling

Bond strength [kPa]		Characteristic value [kPa]
Individual value	Average value	
236	309	87
235		
381		
382		
593 *		
Note: * Value wasn´t included in static calculation due to another type of failure mode than most of other test results.		

Table 40: Impact resistance category on the test specimen after hygrothermal behaviour

Impact resistance category and its description		
Composition	Impact resistance category	Description of failure
PERLITTI GRUND U + PERLITTI SPECJAL + PERLITTI Glass Fibre Mesh 160 g/m²	I_{render}	No deterioration [1]
PERLITTI GRUND U + PERLITTI SPECJAL + PERLITTI Glass Fibre Mesh 160 g/m² + PERLITTI GRUND M + PERLITTI Kornspor SIL 2,0	I_{render}	No deterioration [1]
PERLITTI GRUND U + PERLITTI SPECJAL + PERLITTI Glass Fibre Mesh 160 g/m² + PERLITTI Kornspor SIL 2,0 + PERLITTI Silikon Maling	I_{render}	No deterioration [1]
PERLITTI GRUND U + PERLITTI SPECJAL + PERLITTI Glass Fibre Mesh 160 g/m² + PERLITTI Kornspor SIL 2,0	I_{render}	No deterioration [1]
PERLITTI GRUND U + PERLITTI SPECJAL + PERLITTI Glass Fibre Mesh 160 g/m² + PERLITTI GRUND M + PERLITTI Kornspor SIL 2,0 + PERLITTI Silikon Maling	I_{render}	No deterioration [1]
[1] Superficial damage, provided there is no cracking, is considered as showing "no deterioration" for all the impacts.		

B.7.2 Freeze-thaw behaviour (EAD 090019-01-0404, Cl. 2.2.16)

B.7.2.1 Freeze-thaw behaviour based on water absorption level (EAD 090019-01-0404, Cl. 2.2.16.1)

See Cl. B.3.2.1 of ER and Cl. 3.7.2.1 of ETA. (Test Report No. 060-048279).

B.7.2.2 Freeze-thaw behaviour based on water absorption level (EAD 090019-01-0404, Cl. 2.2.16.2)

See Cl. B.3.2.1 of ER and Cl. 3.7.2.2 of ETA. (Test Reports No. 060-047456, 060-048279).

The test results of the bond strength after freeze-thaw cycles are given in the following tables.

Table 41: Composition – MgO board + PERLITTI GRUND U + PERLITTI SPECJAL + PERLITTI Glass Fibre Mesh 160 g/m²

Bond strength [kPa]		Characteristic value [kPa]
Individual value	Average value	
455	490	404
471		
571		
500		
553		
487		
472		
438		
440		
508		

There were no observations relating to a change in characteristics of the surface after the test. Flatness deviation of cladding element was detected after the test.

B.7.2.3 Freeze-thaw behaviour based on freeze/thaw test (EAD 090019-01-0404, Cl. 2.2.16.3)

This performance has not been assessed

B.7.3 Resistance of subframe to corrosion (metallic subframe) and/or deterioration (wooden subframe) (EAD 090019-01-0404, Cl. 2.2.17)

B.7.3.1 Resistance of metallic subframe and/or metallic parts of subframe to corrosion (EAD 090019-00-0404, Cl. 2.2.17.1)

See Cl. 3.7.3.1 of ETA.

B.7.3.2 Resistance of wooden parts of subframe to deterioration (EAD 090019-00-0404, Cl. 2.2.17.2)

See Cl. 3.7.3.2 of ETA.

C LIST OF TEST REPORTS

Classification Report No. PK1-01-18-096-E-0 Reaction to fire. Issued by PAVUS, a.s. - branch Veselí nad Lužnicí, Čtvrť J. Hybešova 879, 391 81 Veselí nad Lužnicí, dated 21/12/2018

Test Report Nr. 197/15/BC/N Determination of the gross heat of combustion. Issued by Instytut Ceramiki I Materiałów Budowlanych, ul. Cementowa 8, 31-983 Kraków, dated 30/9/2015

Test Report Nr. Pr-09-1.089 Determination of the gross heat of combustion. Issued by PAVUS, a.s. - branch Veselí nad Lužnicí, Čtvrť J. Hybešova 879, 391 81 Veselí nad Lužnicí, dated 22/4/2009

Test Report Nr. Pr-09-1.092 Determination of the gross heat of combustion. Issued by PAVUS, a.s. - branch Veselí nad Lužnicí, Čtvrť J. Hybešova 879, 391 81 Veselí nad Lužnicí, dated 22/4/2009

Test Report Nr. Pr-09-1.096 Determination of the gross heat of combustion. Issued by PAVUS, a.s. - branch Veselí nad Lužnicí, Čtvrť J. Hybešova 879, 391 81 Veselí nad Lužnicí, dated 22/4/2009

Test Report Nr. Pr-09-1.125 Determination of the gross heat of combustion. Issued by PAVUS, a.s. - branch Veselí nad Lužnicí, Čtvrť J. Hybešova 879, 391 81 Veselí nad Lužnicí, dated 25/5/2009

Test Report Nr. Pr-18-1.257-0 Determination of the gross heat of combustion. Issued by PAVUS, a.s. - branch Veselí nad Lužnicí, Čtvrť J. Hybešova 879, 391 81 Veselí nad Lužnicí, dated 19/12/2018

Test Report Nr. Pr-018-1.233 SBI test. Issued by PAVUS, a.s. - branch Veselí nad Lužnicí, Čtvrť J. Hybešova 879, 391 81 Veselí nad Lužnicí, dated 31/10/2018

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ETAG 004 External and thermal insulation composite systems (ETICS) with rendering