European Technical Assessment

Łukasiewicz
Institute
of Ceramics
and Building
Materials

Łukasiewicz
Instytut Ceramiki
i Materiałów
Budowlanych

31-983 Kraków,
POLAND
Cementowa Str. 8
Tel.: +48 12 683 79 00
jot@icimb.lukasiewicz.gov.pl
www.icimb.lukasiewicz.gov.pl

Member of EOTA
www.eota.eu

European Technical Assessment

ETA-17/0521 of 17/10/2024

General Part

Technical Assessment Body issuing the European Technical Assessment: Łukasiewicz Research Network, Institute of Ceramics and Building Materials	
Trade name of the construction product	DREIER PROFI
Product family to which the construction product belongs	04: External Thermal Insulation Composite Systems (ETICS) with rendering
Manufacturer	HUFGARD OPTOLITH BAUPRODUKTE POLSKA Sp. z o.o. ul. Rząsawska 40/42 42-209 Częstochowa POLSKA
Manufacturing plants	ul. Św. Rocha 219B 42-200 Częstochowa POLAND
This European Technical Assessment contains	25 pages including 3 Annexes which form an integral part of this assessment. Annex No 4 Control Plan contains confidential information and is not included in the European Technical Assessment when that assessment is publicly disseminated.
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	EAD 040083-00-0404 ed. January 2019 – External Thermal Insulation Composite Systems (ETICS) with renderings
This European Technical Assessment replaces	ETA-17/0521, version 1, issued on 23/08/2018

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Specific parts

1. Technical description of the product

This product DREIER PROFI is an External Thermal Insulation Composite System (ETICS) with renderings - a kit comprising components which are factory-produced by the manufacturer or component suppliers. The ETICS manufacturer is ultimately responsible for all components of the ETICS specified in this ETA.

The ETICS kit comprises a prefabricated insulation product of expanded polystyrene (EPS) to be bonded onto a wall. The method of fixing and the relevant components are specified in Table 1. The insulation product is faced with a rendering system consisting of one or more layers (site applied), one of which contains reinforcement. The rendering is applied directly to the insulating panels, without any air gap or disconnecting layer.

The ETICS may include special fittings (e.g. base profiles, corner profiles) to treat details of ETICS (connections, apertures, corners, parapets, sills). Assessment and performance of these components is not addressed in this ETA, however the ETICS manufacturer is responsible for adequate compatibility and performance within the ETICS when the components are delivered as a part of the kit.

Table 1.

	Components	Coverage (kg/m²)	Thickness (mm)
	Bonded ETICS or bonded ETICS with supplementary mechanical fixings. National application documents shall be taken into account.		
Insulation materials with associated methods of fixing	• **Insulation product:** Boards of expanded polystyrene (EPS) according to EN 13163 *Product characteristics - see Annex No 1*	-	20 to 250
	• **Adhesives:** - **DREIER 303** Cement based powder requiring addition of 0,23-0,25 l/kg of water	3,5 to 4,0 (powder)	-
	- **DREIER 305** Cement based powder requiring addition of 0,23-0,25 l/kg of water	3,5 to 4,0 (powder)	-
	• **Supplementary mechanical fixings:** Plastic anchors covered by relevant ETA	-	-
Base coats	• **DREIER 305** Cement based powder requiring addition of 0,23-0,25 l/kg of water	3,5 to 4,0 (powder)	3,5 to 4,0

Table 1. cont.

	Components	Coverage (kg/m²)	Thickness (mm)
Reinforce-ment	• **Standard glass fibre meshes:** - DREIER S145 - DREIER S160 *Products characteristics - see Annex No 2*	 - -	 - -
Key coat	• **DREIER 606** Ready to use liquid to be used with mineral, acrylic, modelled and mosaic finishing coats	0,2 to 0,3	-
	• **SI DREIER 608** Ready to use liquid to be used with silicone-silicate, silicone and acrylic modeled finishing coats	0,2 to 0,3	-
	• **DREIER 750** Ready to use paste (consisting of two components) to be used optionally with mosaic finishing coats	1,4 to 2,0 (for single layer)	-
Finishing coats	• **Mineral finishing coat** **DREIER 600** Cement based powder requiring addition of 0,23-0,25 l/kg of water		Regulated by particles size
	floated structure max. particles size: 1,5; 2,0; 2,5; 3,0 mm	2,0 to 4,0	
	ribbed structure max. particles size: 1,5; 2,0; 2,5; 3,0 mm	2,0 to 4,0	
	DREIER 650 Cement based powder requiring addition of 0,14-0,20 l/kg of water		
	modeled structure max. particles size: 1,0 mm	5,5 to 7,0	3,0 to 4,0
	• **Acrylic finishing coats** Ready to use pastes – acrylic binder:		
	DREIER 601		Regulated by particles size
	floated structure max. particles size: 1,0; 1,5; 2,0; 2,5 mm	1,7 to 4,0	
	ribbed structure max. particles size: 1,5; 2,0; 2,5 mm	1,7 to 4,0	

Table 1. cont.

	Components	Coverage (kg/m²)	Thickness (mm)
Finishing coats	**DREIER 635** modeled structure max. particles size: 0,8 mm	2,0 to 2,8	about 1,2
	DREIER 605 mosaic structure max. particles size: 1,6 mm	about 4,0	Regulated by particles size
	mosaic structure max. particles size: 1,2 mm	2,0 to 2,5	
	• **Silicon-silicate finishing coat** Ready to use paste – acrylic-silicone-silicate binder:		
	DREIER 602 floated structure max. particles size: 1,0; 1,5; 2,0; 2,5 mm	1,7 to 4,0	
	ribbed structure max. particles size: 1,5; 2,0; 2,5 mm	1,7 to 4,0	
	• **Silicone finishing coat** Ready to use pastes – silicone binder:		
	DREIER 603 floated structure max. particles size: 1,0; 1,5; 2,0; 2,5 mm	1,7 to 4,0	
	ribbed structure max. particles size: 1,5; 2,0; 2,5 mm	1,7 to 4,0	
	modeled structure max. particles size: 0,5 mm	2,0 to 2,8	about 1,5
Key coats	• **DREIER 706** Ready to use liquid to be used with DREIER 701 decorative coat	0,2 to 0,3	-
	• **DREIER 708** Ready to use liquid to be used with DREIER 703 decorative coat	0,2 to 0,3	-

Table 1. cont.

	Components	Coverage (kg/m²)	Thickness (mm)
Decorative coats	• **Acrylic decorative coat DREIER 701** Ready to use liquid to be used optionally with following finishing coats: - DREIER 600 - DREIER 601	0,2 to 0,3	-
	• **Silicone decorative coat DREIER 703** Ready to use liquid to be used optionally with following finishing coats: - DREIER 600 - DREIER 601 - DREIER 602 - DREIER 603	0,2 to 0,3	-
	• **Decorative coat DREIER 710** Ready to use liquid to be used obligatory with following finishing coats: - DREIER 650	0,2 to 0,3	-
Ancillary materials	Remain under the manufacturer's responsibility		

2. Specification of the intended use in accordance with the applicable European Assessment Document (hereinafter EAD):

This ETICS is intended to be used on new or existing (retrofit) vertical building walls. The ETICS may also be used on horizontal or inclined surfaces which are not exposed to precipitation. The ETICS gives the building wall to which it is applied additional thermal insulation and protection from effects of weathering. ETICS are non-load-bearing construction elements. They do not contribute directly to the stability of the building wall on which they are installed.

ETICS are not intended to ensure the air tightness of the building structure.

Concerning product packaging, transport and storage it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport and storage, as he considers necessary in order to reach the declared performances.

The information about installation is provided with the technical documentation from the Manufacturer and it is assumed that the product will be installed according to it or (in absence of such instructions) according to the usual practice of the building professionals.

The performances assessed in this European Technical Assessment, according to the applicable EAD, are based on an assumed intended working life of at least 25 years, provided that the conditions for the installation, packaging, transport, storage, installation as well as appropriate use, maintenance and repair are met. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

The ETICS belongs to Category S/W2 according to EOTA Technical Report No 034.

3. Performance of the product and references to the methods used for its assessment:

The tests for performance assessment of DREIER PROFI were carried out in compliance with EAD 040083-00-0404 according to the test methods reported herein, as well for what concerns sampling, conditioning and testing provisions. The performances of the kit as described in this chapter are valid provided that the components of the kit comply with Section 1 of the ETA and the relative Annexes 1 and 2. The numbering in the following tables corresponds to the numbering of Table 1 of EAD 040083-00-0404.

3.1. Safety in case of fire (BWR 2)

3.1.1. Reaction to fire (EAD 040083-00-0404: clause 2.2.1, EN 13501-1)

3.1.1.1. Reaction to fire of ETICS (EAD 040083-00-0404: clause 2.2.1.1)

Table 2.

Configuration	Max. heat of combustion MJ/kg	Flame retardant content	Class acc. to EN 13501-1
Adhesive	1,30	No flame retardant	B-s1, d0
EPS boards *density ≤ 100 kg/m³*	-		
Base coat	1,30		
Glass fibre mesh	8,19		
Key coat	3,84		
Finishing coat	1,77		
Decorative coat	30,09		
Remaining configurations with:		No flame retardant	C-s1, d0
- *Key coat DREIER 750*	4,26		
- *Finishing coat DREIER 605*	1,21		

3.1.1.2. Reaction to fire of the thermal insulation material (EAD 040083-00-0404: clause 2.2.1.2)

See Annex No 1.

3.1.1.3. Reaction to fire of PU foam adhesive (EAD 040083-00-0404: clause 2.2.1.3)

Not relevant.

3.1.2. Façade fire performance (EAD 040083-00-0404: clause 2.2.2)

No performance assessed.

3.1.3. Propensity to undergo continuous smouldering of ETICS (EAD 040083-00-0404: clause 2.2.3)

No performance assessed.

3.2. Hygiene, health and environment (BWR 3)

3.2.1. Content, emission and/or release of dangerous substances – leachable substances (EAD 040083-00-0404: clause 2.2.4, EOTA TR034)

No performance assessed.

Note: There may be requirements applicable to the ETICS falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Regulation (EU) No 305/2011, these requirements need to be complied with, when and where they apply.

3.2.2. Water absorption (EAD 040083-00-0404: clause 2.2.5)

3.2.2.1. Water absorption of the base coat and the rendering system (EAD 040083-00-0404: clause 2.2.5.1)

- Base coat:
- Water absorption after 1 hour = 0,1 kg/m²;
- Water absorption after 24 hours = 0,4 kg/m².
- Rendering systems: Table 3.

Table 3.

		Water absorption after 1 hour	Water absorption after 24 hours
		mean value [kg/m²]	
Rendering system: Base coat DREIER 305 + relevant key coat + finishing coat indicated hereafter + decorative coat (when indicated):	DREIER 606 + DREIER 600	0,1	0,4
	DREIER 606 + DREIER 601	0,1	0,4
	SI DREIER 608 + DREIER 602	0,1	0,4
	SI DREIER 608 + DREIER 603	0,1	0,4
	SI DREIER 608 + DREIER 603 modeled	0,1	0,3
	DREIER 606 + DREIER 605	0,1	0,2
	DREIER 750 + DREIER 605	0,1	0,2
	SI DREIER 608 + DREIER 635	0,1	0,3
	DREIER 606 + DREIER 650 + DREIER 710	0,0	0,1

3.2.2.2. Water absorption of the thermal insulation product (EAD 040083-00-0404: clause 2.2.5.2)

See Annex No 1.

3.2.3. Water-tightness of the ETICS: Hygrothermal behavior (EAD 040083-00-0404: clause 2.2.6)

Hygrothermal cycles have been performed on a rig in hygrothermal chamber. None of the following defects occurred during the testing:

- blistering or peeling of any finishing coat,
- failure or cracking associated with joints between insulation product boards,
- detachment of render,
- cracking allowing water penetration to the insulation layer.

The ETICS is so assessed resistant to hygrothermal cycles.

3.2.4. Water-tightness: Freeze-thaw performance (EAD 040083-00-0404: clause 2.2.7)

Water absorption of both, base coat and the rendering systems after 24 hours was lower than 0,5 kg/m^2 (Tab. 3).

The ETICS is so assessed resistant to freeze-thaw cycles.

3.2.5. Impact resistance tested on the rig (EAD 040083-00-0404: clause 2.2.8)

Table 4.

		Hard body impact		
		Impact energy 3 J	Impact energy 10 J	Impact resistance category
Single layer of standard mesh DREIER S145		**Impact diameter (mm) / damages**		
Rendering system: Base coat DREIER 305 + relevant key coat + finishing coat indicated hereafter + decorative coat (when indicated):	DREIER 606 + DREIER 601, floated 1,0 mm	20 / superficial damages without cracks formation	40 / cracks without reaching the thermal insulation product	II
	SI DREIER 608 + DREIER 602, floated 1,0 mm	20 / superficial damages without cracks formation	40 / cracks without reaching the thermal insulation product	II
	SI DREIER 608 + DREIER 603, floated 1,0 mm	30 / superficial damages without cracks formation	45 / cracks without reaching the thermal insulation product	II
	SI DREIER 608 + DREIER 603 modeled, 0,5 mm	10 / superficial damages without cracks formation	30 / cracks without reaching the thermal insulation product	II
	DREIER 606 + DREIER 605, mosaic 1,2 mm	20 / superficial damages without cracks formation	30 / cracks without reaching the thermal insulation product	II
	SI DREIER 608 + DREIER 635, 1,0 mm	25 / cracks without reaching the thermal insulation product	40 / cracks without reaching the thermal insulation product	III
	DREIER 606 + DREIER 650, 3,0 mm + DREIER 710	20 / superficial damages without cracks formation	30 / cracks without reaching the thermal insulation product	II

3.2.6. Impact resistance not tested on the rig (EAD 040083-00-0404: clause 2.2.8)

Table 5.

		Hard body impact		
		Impact energy 3 J	Impact energy 10 J	Impact resistance category
Single layer of standard mesh DREIER S145		**Impact diameter (mm) / damages**		
Rendering system: Base coat DREIER 305 + relevant key coat + finishing coat indicated hereafter:	DREIER 606 + DREIER 600, ribbed 1,0 mm	19 / cracks without reaching the thermal insulation product	43 / cracks without reaching the thermal insulation product	III
	DREIER 750 + DREIER 605, mosaic 1,2 mm	0 / no damages	19 / superficial damages without cracks formation	I

Table 6.

		Hard body impact		
		Impact energy 3 J	Impact energy 10 J	Impact resistance category
Single layer of standard mesh DREIER S160		**Impact diameter (mm) / damages**		
Rendering system: Base coat DREIER 305 + relevant key coat + finishing coat indicated hereafter:	SI DREIER 608 + DREIER 603, floated 1,5 mm *excluding max. particle size: 1,0 mm*	10 / superficial damages without cracks formation	30 / superficial damages without cracks formation	I

Table 7.

		Hard body impact		
		Impact energy 3 J	Impact energy 10 J	Impact resistance category
Double layer of standard mesh DREIER S160		**Impact diameter (mm) / damages**		
Rendering system: Base coat DREIER 305 + relevant key coat + finishing coat indicated hereafter:	DREIER 606 + DREIER 601, floated 1,5 mm *excluding max. particle size: 1,0 mm*	6 / superficial damages without cracks formation	10 / superficial damages without cracks formation	I
	SI DREIER 608 + DREIER 602, floated 1,5 mm *excluding max. particle size: 1,0 mm*	0 / no damages	9 / superficial damages without cracks formation	I
	SI DREIER 608 + DREIER 603, floated 1,0 mm	0 / no damages	17 / superficial damages without cracks formation	I
	SI DREIER 608 + DREIER 603 modeled, 0,5 mm	16 / superficial damages without cracks formation	23 / superficial damages without cracks formation	I
	DREIER 606 + DREIER 605, mosaic 1,2 mm	0 / no damages	20 / superficial damages without cracks formation	I
	DREIER 750 + DREIER 605, mosaic 1,2 mm	0 / no damages	16 / superficial damages without cracks formation	I
	SI DREIER 608 + DREIER 635, modeled 0,8 mm	0 / no damages	17 / superficial damages without cracks formation	I

3.2.7. Water vapour permeability (EAD 040083-00-0404: clause 2.2.9)

3.2.7.1. Water vapour permeability of the rendering system (equivalent air thickness s_d) (EAD 040083-00-0404: clause 2.2.9.1)

Table 8.

		Equivalent air thickness s_d (m)
Rendering system: Base coat DREIER 305 + relevant key coat + finishing coat indicated hereafter + relevant key coat + decorative coat:	DREIER 606 + DREIER 600 floated 3,0 mm + DREIER 706 + DREIER 701	0,2
	thickness of rendering : 7,0 mm	
	DREIER 606 + DREIER 600 floated 3,0 mm + DREIER 708 + DREIER 703	0,2
	thickness of rendering : 7,0 mm	
	DREIER 606 + DREIER 601 floated 2,5 mm + DREIER 706 + DREIER 701	0,3
	thickness of rendering : 6,5 mm	
	DREIER 606 + DREIER 601 floated 2,5 mm + DREIER 708 + DREIER 703	0,2
	thickness of rendering : 6,5 mm	
	SI DREIER 608 + DREIER 602 floated 2,5 mm + DREIER 708 + DREIER 703	0,3
	thickness of rendering : 6,5 mm	
	SI DREIER 608 + DREIER 603 floated2,5 mm + DREIER 708 + DREIER 703	0,3
	thickness of rendering : 6,5 mm	
	SI DREIER 608 + DREIER 603 modeled 0,5 mm + DREIER 708 + DREIER 703	0,2
	thickness of rendering : 5,5 mm	

Table 8. cont.

		Equivalent air thickness s_d (m)
Rendering system: Base coat DREIER 305 + relevant key coat + finishing coat indicated hereafter + relevant key coat + decorative coat:	DREIER 606 + DREIER 605* mosaic 1,6 mm	0,2
	thickness of rendering : 5,6 mm	
	DREIER 750 + DREIER 605* mosaic 1,6 mm	0,4
	thickness of rendering : 5,6 mm	
	SI DREIER 608 + DREIER 635*	0,1
	thickness of rendering : 5,2 mm	
	DREIER 606 + DREIER 650 + DREIER 710	0,2
	thickness of rendering : 8,0 mm	

*decorative coat not used

3.2.7.2. Water vapour permeability of the thermal insulation product (water-vapour resistance factor) (EAD 040083-00-0404: clause 2.2.9.2)

See Annex No 1.

3.3. Safety and accessibility in use (BWR 4)

3.3.1. Bond strength (EAD 040083-00-0404: clause 2.2.11)

3.3.1.1. Bond strength between the base coat and the thermal insulation product (EAD 040083-00-0404: clause 2.2.11.1)

Table 9.

		Bond strength (kPa)	
		mean	**min.**
DREIER 305	initial state	81*	80
	hygrothermal cycles	87**	80
	freeze-thaw cycles	test not required	

*adhesive rupture; **cohesive rupture in insulation

3.3.1.2. Bond strength between the adhesive and the substrate (EAD 040083-00-0404: clause 2.2.11.2)

Table 10.

		Bond strength (kPa)	
		mean	min.
DREIER 303** minimal bonded surface area S= 31 %	initial state	949*	702
	48 h immersion in water + 2 hours 23°C/50% RH	790*	706
	48 h immersion in water + 7 days 23°C/50% RH	1712*	1550
DREIER 305** minimal bonded surface area S= 27 %	initial state	911*	854
	48 h immersion in water + 2 hours 23°C/50% RH	544*	392
	48 h immersion in water + 7 days 23°C/50% RH	1832*	1018

*adhesive rupture; **thickness of adhesive – 3 mm

3.3.1.3. Bond strength between the adhesive and the thermal insulation product (EAD 040083-00-0404: clause 2.2.11.3)

Table 11.

		Bond strength (kPa)	
		mean	min.
DREIER 303*** minimal bonded surface area S= 31 %	initial state	106*	96
	48 h immersion in water + 2 hours 23°C/50% RH	53**	48
	48 h immersion in water + 7 days 23°C/50% RH	107*	100
DREIER 305*** minimal bonded surface area S= 27 %	initial state	128*	110
	48 h immersion in water + 2 hours 23°C/50% RH	54**	46
	48 h immersion in water + 7 days 23°C/50% RH	137*	119

*cohesive rupture in insulation; ** adhesive rupture; ***thickness of adhesive – 3 mm

3.3.2. Fixing strength (transverse displacement test) (EAD 040083-00-0404: clause 2.2.12)

Test not required because the ETICS fulfils the following criteria: $E \cdot d < 50\,000$ N/mm.

3.3.3. Wind load resistance of ETICS (EAD 040083-00-0404: clause 2.2.13)

The DREIER PROFI is not foreseen to be mechanically fixed in any way (neither using anchors, nor using profiles). Supplementary mechanical fixings are foreseen to be used only where necessary to provide stability until adhesive has dried and as an ancillary component without any contribution to wind-load resistance.

3.3.3.1. Pull-through test of fixings (EAD 040083-00-0404: clause 2.2.13.1)

Not relevant

3.3.3.2. Static foam block test (EAD 040083-00-0404: clause 2.2.13.2)

Not relevant

3.3.3.3. Dynamic wind uplift test (EAD 040083-00-0404: clause 2.2.13.3)

Not relevant

3.3.4. Tensile test perpendicular to the faces of thermal insulation product (EAD 040083-00-0404: clause 2.2.14)

See Annex No 1

3.3.5. Shear strength and shear modulus of elasticity test of ETICS (EAD 040083-00-0404: clause 2.2.15)

See Annex No 1

3.3.6. Render strip tensile test (EAD 040083-00-0404: clause 2.2.17)

No performance assessed.

3.3.7. Bond strength after ageing (EAD 040083-00-0404: clause 2.2.20)

3.3.7.1. Bond strength after ageing of finishing coat tested on the rig (EAD 040083-00-0404: clause 2.2.20.1)

Table 12.

		Bond strength after hygrothermal cycles (kN/m²)	
		mean value	individual values
Rendering system: Base coat DREIER 305 + relevant key coat + finishing coat indicated hereafter + decorative coat (when indicated):	DREIER 606 + DREIER 601	98*	108; 88; 94; 118; 82
	SI DREIER 608 + DREIER 602	107*	114; 112; 79; 124; 106
	SI DREIER 608 DREIER 603	104*	117; 123; 96; 96; 90
	SI DREIER 608 + DREIER 603 modeled	88*	81; 100; 88; 88; 82
	DREIER 606 + DREIER 605	101*	95; 106; 87; 108; 109
	SI DREIER 608 + DREIER 635	85*	80; 94; 83; 87; 80
	DREEIER 606 + DREIER 650 + DREIER 710	80*	82; 78; 80; 81; 81

*cohesive rupture in insulation

3.3.7.2. Bond strength after ageing of finishing coat not tested on the rig (EAD 040083-00-0404: clause 2.2.20.2)

Table 13.

		Bond strength after hygrothermal cycles (kN/m²)	
		mean value	mean value
Rendering system: Base coat DREIER 305 + relevant key coat + finishing coat indicated hereafter:	DREIER 606 + DREIER 600	83*	87; 80; 78; 87; 82
	DREIER 750 + DREIER 605	89*	100; 95; 80; 83; 86

*adhesive rupture

3.3.8. Mechanical and physical characteristics of the mesh (EAD 040083-00-0404: clause 2.2.21)

3.3.8.1. Tensile strength and elongation of the glass fibre mesh in the as-delivered (EAD 040083-00-0404: clause 2.2.21.1)

Table 14.

	Average tensile strength in the as-delivered state (N/mm)		Average elongation in the as-delivered state (%)	
	warp	weft	warp	weft
DREIER S145 (TEXTOLAN TG 22)	49,0	46,0	3,7	3,8
DREIER S145 (E118L)	43,0	41,0	3,34	3,34
DREIER S145 (FF145 – plant Slovakia)	35,0	50,0	3,7	4,0
DREIER S145 (FF145 – plant Macedonia)	38,0	48,0	3,7	3,6
DREIER S160 (TEXTOLAN TG15)	44,1	53,0	3,55	3,77
DREIER S160 (FF165 – plant Macedonia)	47,0	49,0	3,9	3,4
FF165 – plant Slovakia	44,0	46,0	3,9	3,5
E132L	43,0	48,0	3,56	3,60

3.3.8.2. Tensile strength and elongation of the glass fibre mesh after ageing state (EAD 040083-00-0404: clause 2.2.21.2)

Table 15

	Average tensile strength after ageing (N/mm)		Residual strength after ageing (%)		Average elongation after ageing (%)	
	warp	weft	warp	weft	warp	weft
DREIER S145 (TEXTOLAN TG 22)	27,0	24,7	55,1	53,7	2,1	2,0
DREIER S145 (E118L)	23,0	29,0	53,5	70,7	1,87	2,36
DREIER S145 (FF145 – plant Slovakia)	20,0	29,0	57,1	58,0	2,2	2,4
DREIER S145 (FF145 – plant Macedonia)	22,0	35,0	57,9	72,9	2,1	2,6
DREIER S160 (TEXTOLAN TG15)	27,8	32,9	63,0	62,1	2,31	2,21
DREIER S160 (FF165 – plant Macedonia)	27,0	36,0	57,4	73,5	2,3	2,5
FF165 – plant Slovakia	23,0	29,0	52,3	63,0	2,1	2,1
E132L	26,0	29,0	60,5	60,4	2,15	2,17

3.4. Protection against noise (BWR 5)

3.4.1. Airborne sound insulation of ETICS (EAD 040083-00-0404: clause 2.2.22)

3.4.1.1. Airborne sound insulation of ETICS (EAD 040083-00-0404: clause 2.2.22.1)

No performance assessed.

3.4.1.2. Dynamic stiffness of the thermal insulation product (EAD 040083-00-0404: clause 2.2.22.2)

No performance assessed.

3.4.1.3. Air flow resistance of the thermal insulation product (EAD 040083-00-0404: clause 2.2.22.3)

No performance assessed.

3.5. Economy and heat retention (BWR 6)

3.5.1. Thermal resistance and thermal transmittance of ETICS (EAD 040083-00-0404: clause 2.2.23)

The additional thermal resistance provided by the ETICS (R_{ETICS}) to the substrate has been assessed by calculations on the basis of the thermal resistance of the thermal insulation product ($R_{insulation}$) and from either the tabulated (R_{render}) value of the render system [about 0,02 in $(m^2 \cdot K)/W$].

$$R_{ETICS} = R_{insulation} + R_{render}$$

as described in EN ISO 10456.

Table 13.

Thermal resistance R_{ETICS} with minimum thickness of EPS* $[(m^2 \cdot K)/W]$	Thermal resistance R_{ETICS} with maximum thickness of EPS* $[(m^2 \cdot K)/W]$
0,46	5,58

*at maximum value of thermal conductivity 0,045 W/(m · K)

The thermal transmittance of the substrate wall covered by the ETICS is calculated in accordance with the standard EN ISO 6946:

$$U_c = U + \chi_p \cdot n$$

where:

$\chi_p \cdot n$ has only to be taken into account if it is greater than 0,04 $W/(m^2 \cdot K)$

U_c: corrected thermal transmittance of the entire wall $(W/(m^2 \cdot K))$

n: number of anchors (through insulation product) per 1 m^2

χ_p: point thermal transmittance value of the anchor (W/K). The values listed below can be taken into account if not specified in the anchor's ETA:

= 0,002 W/K for anchors with a plastic screw/nail, stainless steel screw/nail with the head covered by at least 15 mm plastic material, or with a minimum 15 mm air gap at the head of the screw/nail;

= 0,004 W/K for anchors with a galvanized carbon steel screw/nail with the head covered by at least 15 mm plastic material, or with a minimum 15 mm air gap at the head of the screw/nail;

= 0,008 W/K for all other anchors (worst case);

U: thermal transmittance of the current part of the covered wall (excluding thermal bridges) (W/ (m^2·K)) determined as follows:

$$U = \frac{1}{R_{insulation} + R_{render} + R_{substrate} + R_{se} + R_{si}}$$

where:

$R_{insulation}$: thermal resistance of the insulation product (according to declaration in reference to EN 13163) in (m^2·K)/W

R_{render}: thermal resistance of the render (about 0,02 in (m^2·K)/W or determined by test according to EN 12667 or EN 12664)

$R_{substrate}$: thermal resistance of the substrate wall in (m^2·K)/W

R_{se}: external surface thermal resistance in (m^2·K)/W

R_{si}: internal surface thermal resistance in (m^2·K)/W

The value of thermal resistance of each insulation product shall be given in the manufacturer's documentation along with the possible range of thicknesses. In addition, the point thermal conductivity of anchors shall be given when anchors are used in the ETICS.

3.5.2. Thermal resistance of the thermal insulation product (EAD 040083-00-0404: clause 2.2.23.1)

See Annex No 1

4. Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base

In accordance with the European Assessment Document EAD No. 040083-00-0404, the applicable European legal act is: Decision 97/556/EC. The system(s) of assessment and verification of constancy of performance (AVCP) is 2+.

In addition, with regard to reactionto fire for products, the applicable European legal act is Decision 97/556/EC, as amended by Decision 2001/596/EC. The system of assessment and verification of constancy of performance (AVCP) is 2+.

5. Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

The manufacturer shall perform a permanent internal factory production control based on the Control Plan.

The Control Plan for the manufacturer is specified in clause 3.2 of EAD 040083-00-0404 *External Thermal Insulation Composite Systems (ETICS) with renderings*.

The manufacturer and Łukasiewicz Research Network, Institute of Ceramics and Building Materials TAB have agreed a Control Plan which is deposited at Łukasiewicz Research Network, Institute of Ceramics and Building Materials TAB in documentation which accompanies ETA.

Issued in Krakow on 17.10.2024

By

Paweł PICHNIARCZYK

Director of Łukasiewicz Research Network, Institute of Ceramics and Building Materials

Annexes:

Annex No 1 - Insulation product characteristics

Annex No 2 - Glass fibre meshes characteristics

Annex No 3 – Alternative trade names of DREIER PROFI system components

Annex No 1 – Insulation product characteristics

		Boards of expanded polystyrene EPS
Reaction to fire / EN 13501-1		Euroclass – E max. density: 18,0 kg/m^3
Thermal resistance		Defined in the CE marking in reference to EN 13163 (m^2·K)/W
Thermal conductivity (λ_D) / EN 12667 / EN 12939		≤ 0,045 W/(m · K)
Thickness / EN 823		± 1 mm [EN 13163 – T(1)]
Length / EN 822		± 2 mm [EN 13163 – L(2)]
Width / EN 822		± 2 mm [EN 13163 – W(2)]
Squareness / EN 824		± 5 mm/m [EN 13163 – S(5)]
Flatness / EN 825		5 mm [EN 13163 – P(5)]
Dimensional stability under specified conditions	EN 1603	± 0,2 % [EN 13163 – DS(N)2]
	EN 1604	2 % [EN 13163 – DS(70,-)2]
Bending strength / EN 12089		≥ 75 kPa [EN 13163 – BS75]
Water vapour permeability, diffusion factor (μ) / EN 12086 - EN 13163		20 to 40
Water absorption / EN 1609/Method A		≤ 1,0 kg/m^2
Tensile strength perpendicular to the EN 1607		≥ 80 kPa [EN 13163 – TR80]
Shear strength / EN 12090 – EN 13163		≥ 35 kPa
Shear modulus / EN 12090 – EN 13163		≥ 1000 kPa

Annex No 2 – Glass fibre meshes characteristics

Mesh trade name		Description	Alkalis resistance	
			Residual resistance after ageing (N/mm)	Relative residual resistance: % (after ageing) of the strength in the as delivered state
DREIER S145	TEXTOLAN TG 22	Mass per unit area: 151 g/m² Mesh size: 4,6 x 4,3 mm	≥ 20	≥ 50
	E118L	Mass per unit area: 145 g/m² Mesh size: 4,7 x 4,0 mm	≥ 20	≥ 50
	FF145 (plant Slovakia)	Mass per unit area: 149 g/m² Mesh size: 3,5 x 4,9 mm	≥ 20	≥ 50
	FF145 (plant Macedonia)	Mass per unit area: 149 g/m² Mesh size: 3,5 x 4,8 mm	≥ 20	≥ 50
DREIER S160	TEXTOLAN TG15	Mass per unit area: 163 g/m² Mesh size: 3,9 x 3,5 mm	≥ 20	≥ 50
	FF165 (plant Macedonia)	Mass per unit area: 160 g/m² Mesh size: 3,5 x 3,9 mm	≥ 20	≥ 50
FF165 – plant Slovakia		Mass per unit area: 165 g/m² Mesh size: 3,5 x 3,9 mm	≥ 20	≥ 50
E132L		Mass per unit area: 163 g/m² Mesh size: 3,9 x 3,8 mm	≥ 20	≥ 50

Annex No 3 – Alternative trade names of DREIER PROFI system components

Component	Trade name	Alternative trade name
Adhesives	DREIER 303	DREIER 303 PROFI
	DREIER 305	DREIER 305 PROFI
Base coat	DREIER 305	DREIER 305 PROFI
Key coats	DREIER 606	DREIER 606 PROFI
	SI DREIER 608	SI DREIER 608 PROFI
	DREIER 750	DREIER 750 PROFI
Finishing coats	DREIER 600	DREIER 600 PROFI
	DREIER 650	DREIER 650 PROFI
	DREIER 601	DREIER 601 PROFI
	DREIER 605	DREIER 605 PROFI
	DREIER 602	DREIER 602 PROFI
	DREIER 603	DREIER 603 PROFI
	DREIER 635	DREIER 635 PROFI
Key coats	DREIER 706	DREIER 706 PROFI
	DREIER 708	DREIER 708 PROFI
Decorative coats	DREIER 701	DREIER 701 PROFI
	DREIER 703	DREIER 703 PROFI
	DREIER 710	DREIER 710 PROFI

Łukasiewicz
Instytut Ceramiki
i Materiałów
Budowlanych

31-983 Kraków,
POLAND
Cementowa Str. 8
Tel.: +48 12 683 79 00
jot@icimb.lukasiewicz.gov.pl
www.icimb.lukasiewicz.gov.pl

Member of EOTA
www.eota.eu

Annex No 4 to **ETA-17/0521 of 17/10/2024**

Control Plan of DREIER PROFI

Control plan has been prepared by Technical Assessment Body - Łukasiewicz Research Network, Institute of Ceramics and Building Materials (Łukasiewicz – ICiMB TAB) in agreement with manufacturer DREIER Sp. z o.o. This document is a confidential part of the ETA-17/0521 and can be shared only with Notified Body participating in the procedure of assessment and verification of constancy of performance.

The manufacturer is obliged to notify Łukasiewicz – ICiMB TAB of every changes of the product, production process or the way of use of DREIER PROFI which may lead to errors in the control plan. Łukasiewicz – ICiMB TAB will decide if such changes affect the validity of the ETA-17/0521, thus validity of product CE marking and necessity of again technical assessment or changes in the ETA-17/0521. On request of Łukasiewicz – ICiMB TAB the manufacturer is obliged to present the results confirming that requirements of control plan are met.

CONTROL PLAN OF DREIER PROFI

Table 1a. Components produced by the manufacturer himself

Adhesive: **DREIER 303** Adhesive / Base coat: **DREIER 305** Key coats: **DREIER 606, SI DREIER 608, DREIER 750** Finishing coats: **DREIER 600, DREIER 650, DREIER 601, DREIER 635, DREIER 605, DREIER 602, DREIER 603** Key coats: **DREIER 706, DREIER 708** Decoative coats: **DREIER 701, DREIER 703, DREIER 710**			
Subject / type of control	**Test or control method**	**Requirement**	**Frequency of control**
Incoming materials			
Receipt materials	Delivery ticket and/or label on the package	Conformity with the order	Each delivery
	Supplier certificates or supplier tests		
Particle size grading of loose raw materials for the production of the adhesives	According to the prescription of the manufacturer*	According to the prescription of the manufacturer*	
Mixing process			
Mixing process	According to the prescription of the manufacturer*		
Packing			

Table 1b. Components produced by the manufacturer himself – tests on components

Adhesive: **DREIER 303**			
Examination	**Method**	**Requirement**	**Frequency of testing**
Appearance	Instruction No. P-07/1*	powder of uniform color without lumps and mechanical impurities	Every production lot
Density	EAD 040083-00-0404** cl. A.6.1 (powders)	1620 ÷ 1980 kg/m^3	
Bond strength between the adhesive and EPS after curing in dry condition	EAD 040083-00-0404** cl. 2.2.11.3	≥ 80 kPa	At least once per 2 months
Bond strength between the adhesive and the substrate after curing in dry condition	EAD 040083-00-0404** cl. 2.2.11.2	≥ 250 kPa	At least once per 24 months
Ash content at 450°C	EAD 040083-00-0404** cl. A.6.6	≤ 99,5 %	At least once per 12 months
Adhesive / Base coat: **DREIER 305**			
Examination	**Method**	**Requirement**	**Frequency of testing**
Appearance	Instruction No. P-07/1*	powder of uniform color without lumps and mechanical impurities	Every production lot
Density	EAD 040083-00-0404** cl. A.6.1 (powders)	1629 ÷ 1991 kg/m^3	
Bond strength between the base coat and EPS after curing in dry condition	EAD 040083-00-0404** cl. 2.2.11.1	≥ 80 kPa	At least once per 2 months
Bond strength between the adhesive and the substrate after curing in dry condition	EAD 040083-00-0404** cl. 2.2.11.2	≥ 250 kPa	At least once per 24 months
Ash content at 450°C	EAD 040083-00-0404** cl. A.6.6	≤ 98,5 %	At least once per 12 months

Table 1b. Components produced by the manufacturer himself – tests on components cont.

Key coat: **DREIER 606**			
Examination	**Method**	**Requirement**	**Frequency of testing**
Appearance	Instruction No. P-07/2*	homogeneous liquid, can contain a filler	Every batch
Density	EAD 040083-00-0404** cl. A.6.1 (pastes and liquids)	1431 ÷ 1749 kg/m³	
Dry extract	EAD 040083-00-0404** cl. A.6.5	62,4 ÷ 72,3 %	At least once per 6 months
Ash content at 450°C	EAD 040083-00-0404** cl. A.6.6	82,6 ÷ 87,8 %	At least once per 24 months
Key coat: **SI DREIER 608**			
Examination	**Method**	**Requirement**	**Frequency of testing**
Appearance	Instruction No. P-07/2*	homogeneous liquid, can contain a filler	Every batch
Density	EAD 040083-00-0404** cl. A.6.1 (pastes and liquids)	1458 ÷ 1782 kg/m³	
Dry extract	EAD 040083-00-0404** cl. A.6.5	62,8 ÷ 72,7 %	At least once per 6 months
Ash content at 450°C	EAD 040083-00-0404** cl. A.6.6	84,9 ÷ 90,2 %	At least once per 24 months
Key coat: **DREIER 750**			
component A			
Examination	**Method**	**Requirement**	**Frequency of testing**
Appearance	Instruction No. P-07/1*	powder of uniform color without lumps and mechanical impurities	Every production lot
Density	EAD 040083-00-0404** cl. A.6.1 (powders)	1215 ÷ 1485 kg/m³	
component B			
Examination	**Method**	**Requirement**	**Frequency of testing**
Appearance	Instrukcja nr P-07/2*	homogeneous liquid	Every batch
Density	EAD 040083-00-0404** cl. A.6.1 (pastes and liquids)	918 ÷ 1122 kg/m³	
mixed components A and B			
Examination	**Method**	**Requirement**	**Frequency of testing**
Dry extract	EAD 040083-00-0404** cl. A.6.5	82,3 ÷ 95,3 %	At least once per 6 months
Ash content at 450°C	EAD 040083-00-0404** cl. A.6.6	85,0 ÷ 90,3 %	At least once per 24 months

Table 1b. Components produced by the manufacturer himself – tests on components cont.

Mineral finishing coat: **DREIER 600**			
Examination	**Method**	**Requirement**	**Frequency of testing**
Appearance	Instruction No. P-07/1*	powder of uniform color without lumps and mechanical impurities	Every production lot
Density	EAD 040083-00-0404** cl. A.6.1 (powders)	1161 ÷ 1419 kg/m^3	
Ash content at 450°C	EAD 040083-00-0404** cl. A.6.6	≤ 99,5 %	At least once per 24 months
Modeled mineral finishing coat: **DREIER 650**			
Examination	**Method**	**Requirement**	**Frequency of testing**
Appearance	Instruction No. P-07/1*	powder of uniform color without lumps and mechanical impurities	Every production lot
Density	EAD 040083-00-0404** cl. A.6.1 (powders)	1458 ÷ 1782 kg/m^3	
Ash content at 450°C	EAD 040083-00-0404** cl. A.6.6	≤ 99,8 %	At least once per 24 months
Acrylic finishing coat: **DREIER 601**			
Examination	**Method**	**Requirement**	**Frequency of testing**
Appearance	Instruction No. P-07/2*	homogeneous paste of uniform color, not foamy, without lumps and mechanical impurities	Every batch
Density	EAD 040083-00-0404** cl. A.6.1 (pastes and liquids)	1710 ÷ 2090 kg/m^3	
Dry extract	EAD 040083-00-0404** cl. A.6.5	77,2 ÷ 89,4 %	At least once per 6 months
Ash content at 450°C	EAD 040083-00-0404** cl. A.6.6	87,9 ÷ 93,3%	At least once per 24 months
Modeled silicone finishing coat: **DREIER 635**			
Examination	**Method**	**Requirement**	**Frequency of testing**
Appearance	Instruction No. P-07/2*	homogeneous paste of uniform color, not foamy, without lumps and mechanical impurities	Every batch
Density	EAD 040083-00-0404** cl. A.6.1 (pastes and liquids)	1710 ÷ 2090 kg/m^3	
Dry extract	EAD 040083-00-0404** cl. A.6.5	80,7 ÷ 93,4 %	At least once per 6 months
Ash content at 450°C	EAD 040083-00-0404** cl. A.6.6	90,9 ÷ 96,5 %	At least once per 24 months

Table 1b. Components produced by the manufacturer himself – tests on components cont.

Mosaic finishing coat: **DREIER 605**			
Examination	**Method**	**Requirement**	**Frequency of testing**
Appearance	Instruction No. P-07/2*	homogeneous paste of uniform color, not foamy, without lumps and mechanical impurities	Every batch
Density	EAD 040083-00-0404** cl. A.6.1 (pastes and liquids)	1521 ÷ 1859 kg/m^3	
Dry extract	EAD 040083-00-0404** cl. A.6.5	66,3 ÷ 76,8 %	At least once per 6 months
Ash content at 450°C	EAD 040083-00-0404** cl. A.6.6	81,0 ÷ 86,0 %	At least once per 24 months
Silicone-silicate finishing coat: **DREIER 602**			
Examination	**Method**	**Requirement**	**Frequency of testing**
Appearance	Instruction No. P-07/2*	homogeneous paste of uniform color, not foamy, without lumps and mechanical impurities	Every batch
Density	EAD 040083-00-0404** cl. A.6.1 (pastes and liquids)	1701 ÷ 2079 kg/m^3	
Dry extract	EAD 040083-00-0404** cl. A.6.5	76,5 ÷ 88,5 %	At least once per 6 months
Ash content at 450°C	EAD 040083-00-0404** cl. A.6.6	88,4 ÷ 93,9 %	At least once per 24 months
Silicone finishing coat: **DREIER 603**			
Examination	**Method**	**Requirement**	**Frequency of testing**
Appearance	Instruction No. P-07/2*	homogeneous paste of uniform color, not foamy, without lumps and mechanical impurities	Every batch
Density	EAD 040083-00-0404** cl. A.6.1 (pastes and liquids)	1647 ÷ 2013 kg/m^3	
Dry extract	EAD 040083-00-0404** cl. A.6.5	77,0 ÷ 89,2 %	At least once per 6 months
Ash content at 450°C	EAD 040083-00-0404** cl. A.6.6	88,6 ÷ 94,1 %	At least once per 24 months
Key coat: **DREIER 706**			
Examination	**Method**	**Requirement**	**Frequency of testing**
Appearance	Instruction No. P-07/2*	homogeneous liquid, can contain a filler	Every batch
Density	EAD 040083-00-0404** cl. A.6.1 (pastes and liquids)	1287 ÷ 1573 kg/m^3	
Dry extract	EAD 040083-00-0404** cl. A.6.5	53,0 ÷ 61,4 %	At least once per 6 months
Ash content at 450°C	EAD 040083-00-0404** cl. A.6.6	74,7 ÷ 79,3 %	At least once per 24 months

Table 1b. Components produced by the manufacturer himself – tests on components cont.

Key coat: **SI DREIER 708**			
Examination	**Method**	**Requirement**	**Frequency of testing**
Appearance	Instruction No. P-07/2*	homogeneous liquid, can contain a filler	Every batch
Density	EAD 040083-00-0404** cl. A.6.1 (pastes and liquids)	1296 ÷ 1584 kg/m³	
Dry extract	EAD 040083-00-0404** cl. A.6.5	54,2 ÷ 62,8 %	At least once per 6 months
Ash content at 450°C	EAD 040083-00-0404** cl. A.6.6	74,3 ÷ 78,9 %	At least once per 24 months
Decorative coat: **DREIER 701**			
Examination	**Method**	**Requirement**	**Frequency of testing**
Appearance	Instruction No. P-07/2*	homogeneous liquid, can contain a filler	Every batch
Density	EAD 040083-00-0404** cl. A.6.1 (pastes and liquids)	1377 ÷ 1683 kg/m³	
Dry extract	EAD 040083-00-0404** cl. A.6.5	60,0 ÷ 69,5 %	At least once per 12 months
Ash content at 450°C	EAD 040083-00-0404** cl. A.6.6	81,6 ÷ 86,7 %	At least once per 24 months
Decorative coat: **DREIER 703**			
Examination	**Method**	**Requirement**	**Frequency of testing**
Appearance	Instruction No. P-07/2*	homogeneous liquid, can contain a filler	Every batch
Density	EAD 040083-00-0404** cl. A.6.1 (pastes and liquids)	1314 ÷ 1606 kg/m³	
Dry extract	EAD 040083-00-0404** cl. A.6.5	57,3 ÷ 66,3 %	At least once per 12 months
Ash content at 450°C	EAD 040083-00-0404** cl. A.6.6	78,3 ÷ 83,2 %	At least once per 24 months
Decorative coat: **DREIER 710**			
Examination	**Method**	**Requirement**	**Frequency of testing**
Appearance	Instruction No. P-07/2*	homogeneous liquid, can contain a filler	Every batch
Density	ETAG 004** cl. C.1.1.1 (pastes and liquids)	918 ÷ 1122 kg/m³	
Dry extract	EAD 040083-00-0404** cl. A.6.5	25,8 ÷ 29,9 %	At least once per 12 months
Ash content at 450°C	EAD 040083-00-0404** cl. A.6.6	0,35 ÷ 0,75 %	At least once per 24 months

Table 2. Tests on glass fibre meshes

Glass fibre meshes: **DREIER S145** (TEXTOLAN TG22) **DREIER S145** (E118L) **DREIER S145** (FF145 plant Slovakia) **DREIER S145** (FF145 plant Macedonia) **DREIER S160** (TEXTOLAN TG 15) **DREIER S 160** (FF165 plant Macedonia)			
Examination	**Method**	**Requirement**	**Frequency of testing**
Residual resistance after ageing	EAD 040016-00-0404 / EAD 040016-01-0404*** cl. 2.2.7	≥ 20 N/mm	At least once per 36 months
Relative residual resistance after ageing		≥ 50 %	

Table 3. Reaction to fire of ETICS

DREIER PROFI				
Examination	**Method**	**Requirement**		**Frequency of testing**
Reaction to fire classification PN-EN 13501-1	EAD 040083-00-0404** Annex B	B-s1, d0	C-s1, d0	At least once per 5 years
		depending on configuration as specified in ETA		

*Instruction included in the DREIER Sp. z o.o. factory production control system.
**EAD 040083-00-0404 – European Assessment Document "External Thermal Insulation Composite Systems (ETICS) with renderings", actual version.
***EAD 040016-00-0404 / EAD 040016-01-0404 – European Assessment Document "Glass fibre mesh for reinforcement of cement based renderings"; tensile strength testing methods are identical with methods included in EAD 040083-00-0404.

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