Deutsches Institut für Bautechnik

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European Technical Assessment Body for construction products

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European Technical Assessment ETA-25/0526 of 25 June 2026

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	StoTherm Vario AimS
Product family to which the construction product belongs	External Thermal Insulation Composite System with rendering on mineral wool for the use as external insulation of building walls
Manufacturer	Sto SE & Co. KGaA Ehrenbachstraße 1 79780 Stühlingen GERMANY
Manufacturing plant	
This European Technical Assessment contains	25 pages including 7 annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Article 95(4) of Regulation (EU) No 2024/3110, on the basis of	EAD 040083-01-0404

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Specific Part

1 Technical description of the product

This product is an ETICS (External Thermal Insulation Composite System) with rendering - a kit comprising components which are factory-produced by the manufacturer or component suppliers. It's made up on site from these. The ETICS manufacturer is ultimately responsible for the ETICS.

The ETICS kit comprises a prefabricated insulation product of expanded polystyrene (EPS) to be bonded and if necessary additional mechanically fixed onto a wall. The methods of fixing and the relevant components are specified in annex 1.

The insulation product is faced with a rendering system consisting of one base and finishing coat (site applied), the base coat contains reinforcement. The rendering system 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 ...) for connection to adjacent building elements (apertures, corners, parapets...). 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.

2 Specification of the intended use in accordance with the applicable European assessment Document

The performances in Section 3 can only be assumed if the ETICS is used in accordance with the specifications and under the boundary conditions specified in Annexes 2 to 7.

The verifications and assessment methods on which this ETA is based lead to the assumption of a working life of the ETICS "StoTherm Vario AimS" at least 50 years. 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 assumed economically reasonable working life of the works.

For use, maintenance and repair, the finishing coat shall normally be maintained in order to fully preserve the ETICS performance. Maintenance includes at least:

- visual inspection of the ETICS,
- the repairing of localized damaged areas due to accidents,
- the aspect maintenance with products compatible with the ETICS (possibly after washing or ad hoc preparation).

Necessary repairs are to be carried out as soon as the need has been identified.

The information on use, maintenance and repair is given in the manufacturer’s technical documentation.

It is the responsibility of the manufacturer to ensure that this information is made known to the concerned people.

3 Essential characteristics of the product

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Assessment method[1]	Performance
Reaction to fire of ETICS	2.2.1.1	see Annex 2.1
Reaction to fire of the thermal insulation product	2.2.1.2	see Annex 2.2
Reaction to fire performance of the PU-foam adhesives	2.2.1.3	see Annex 2.3
Façade fire performance	2.2.2	no performance assessed
Propensity to undergo continuous smouldering	2.2.3	see Annex 2.4

3.2 Hygiene, health and the environment (BWR 3)

Essential characteristic	Assessment method[1]	Performance
Content, emission and/or release of dangerous substances. Leachable substances	2.2.4.1	No performance assessed
Water absorption of the base coat and the rendering system	2.2.5.1	see Annex 3.1
Water absorption of the thermal insulation product	2.2.5.2	see Annex 3.2
Watertightness. Hygrothermal behaviour	2.2.6	see Annex 3.3
Watertightness. Freeze – thaw resistance	2.2.7	see Annex 3.4
Impact resistance	2.2.8	see Annex 3.5
Water vapour permeability of the rendering system (equivalent air thickness)	2.2.9.1	see Annex 3.6
Water vapour permeability of the thermal insulation product (Water-vapour resistance factor)	2.2.9.2	see Annex 3.7

[1] Clause in EAD 040083-01-0404, unless another EAD is specified

3.3 Safety and accessibility in use (BWR 4)

Essential characteristic	Assessment method[1]	Performance
Bond strength between the base coat and the thermal insulation product	2.2.10.1	see Annex 4.1
Bond strength between the adhesive and the substrate	2.2.10.2	see Annex 4.2
Bond strength between the adhesive and the thermal insulation product	2.2.10.3	see Annex 4.3
Bond strength of the PU-foam adhesives	2.2.10.4	see Annex 4.4
Fixing strength transverse displacement test with tension load	2.2.11.1	no performance assessed
Fixing strength transverse displacement test without tension load	2.2.11.2	no performance assessed
Wind load resistance. Pull-through resistance	2.2.12.1	no performance assessed
Wind load resistance. Static foam block resistance	2.2.12.2	no performance assessed
Wind load resistance. Dynamic wind uplift resistance	2.2.12.3	no performance assessed
Tensile strength perpendicular to the faces of the thermal insulation product in dry conditions	2.2.13.1	see Annex 4.5
Tensile strength perpendicular to the faces of the thermal insulation product in wet conditions	2.2.13.2	not relevant
Shear strength and shear modulus of elasticity of the thermal insulation product	2.2.14	no performance assessed
Pull-through resistance of mechanical fixing devices from profiles	2.2.15	not relevant
Render strip tensile strength	2.2.16	no performance assessed
Shear strength and shear modulus of the PU-foam adhesives	2.2.17	see Annex 4.6
Post expansion behaviour of the PU-foam adhesives	2.2.18	see Annex 4.7

3.4 Protection against noise (BWR 5)

Essential characteristic	Assessment method[1]	Performance
Airborne sound insulation	2.2.19	no performance assessed
Dynamic stiffness of the thermal insulation product	2.2.19.1	see Annex 5.1
Air flow resistance of the thermal insulation product	2.2.19.2	no relevant

3.5 Energy economy and heat retention (BWR 6)

Essential characteristic	Assessment method[1]	Performance
Thermal resistance of ETICS without influence of mechanical fixing devices	2.2.20.1	see Annex 6.1
Thermal conductivity and thermal resistance of the thermal insulation product	2.2.20.2	see Annex 6.2
Thermal transmittance of fixing devices	2.2.20.3	see Annex 6.3

3.6 Aspects of durability

Essential characteristic	Assessment method[1]	Performance
Bond strength after ageing of finishing layers tested on the rig	2.2.21.1	see Annex 7.1
Bond strength after ageing of finishing layers not tested on the rig	2.2.21.2	no performance assessed
Tensile strength and elongation of the glass fibre mesh at initial state and after ageing in alkali conditions	EAD 040016-01-0404, Clause 2.2.7	see Annex 7.2

4 Assessment and verification of constancy of performance

In accordance with EAD 040083-01-0404 the applicable European legal act is Commission Decision 97/556/EC, as amended by Decision 2001/596/EC.

Product	Intended use	Levels or classes (Reaction to fire [2])	Systems
"StoTherm Vario AimS"	ETICS in external wall subject to fire regulations	A1 (1), A2 (1), B (1), C (1)	1
		A1 (2), A2 (2), B (2), C (2), D, E, (A1 bis E) (3), F	2+
	ETICS in external wall not subject to fire regulations	any	2+

(1) Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e. g. an addition of fire retardants or a limiting of organic material)
(2) Products/materials not covered by footnote (1)
(3) Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of Classes A1 according to Commission Decision 96/603/EC)

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Deutsches Institut für Bautechnik.

Issued in Berlin on 25 June 2026 by Deutsches Institut für Bautechnik

Anja Rogsch
Head of Section

beglaubigt:
Keküllüoglu

[2] Including propensity to undergo continuous smouldering, where relevant

Annex 1 – Composition of the ETICS

Component National application documents shall be taken into account	**Coverage [kg/m²]**	**Thickness [mm]**
Insulation material with associated method of fixing		
Bonded ETICS:		
• **Insulation product** Factory-prefabricated expanded polystyrene (EPS)		
- Standard-EPS [a)]	–	60 - 400
- Elastified EPS [a)]	–	60 - 200
• **Adhesives**		
- **Sto-Baukleber** (cement based powder requiring addition of 21 - 23 % water)	3.0 to 7.5 (powder)	–
- **StoLevell Uni** (cement based powder requiring addition of 24 - 26 % water)	3.0 to 7.5 (powder)	–
- **StoLevell Duo** (cement based powder requiring addition of 20 – 23 % water)	3.0 to 7.5 (powder)	–
- **StoLevell Duo Plus** (cement based powder requiring addition of about 25 % of water)	3.0 to 7.5 (powder)	–
- **StoLevell Duo plus QS** (cement based powder requiring addition of 22 – 25 % water)	3.0 to 7.5 (powder)	–
- **StoLevell Novo** (cement based powder requiring addition of about 37 % water)	3.0 to 7.5 (powder)	–
- **StoLevell FT** (cement based powder requiring addition of about 28 % water)	3.0 to 7.5 (powder)	–
- **StoColl Mineral HP** (cement based powder requiring addition of 23 - 25 % water)	3.0 to 7.5 (powder)	–
- **StoColl CX** (cement based powder requiring addition of 23 – 25 % water)	3.0 to 7.5 (powder)	–
- **StoLevell SW plus** (cement based powder requiring addition of 21- 23 % water)	4.0 to 5.0 (powder)	–
- **StoColl IP Plus** (cement based powder requiring addition of 21- 23 % water)	3.0 to 7.5 (powder	–
- **StoLevell Neo AimS** (cement based powder requiring addition of 25- 28 % water)	3.0 to 7.5 (powder	–
- **Sto-Dispersionskleber** (organic based ready to use paste)	1.0 to 1.5 (prepared)	–
- **StoPrefa Coll** (organic based ready to use paste)	0.8 to 1.5 (prepared)	–
• **Foam adhesive**		
- **Sto-Turbofix Mini** (adhesive foam on polyurethane, ready to use, in bottles supplied)	0.20 l/m²	–
- **Sto-Turbofix Mini H** (adhesive foam on polyurethane, ready to use, in bottles supplied)	0.20 l/m²	–

Component National application documents shall be taken into account	**Coverage [kg/m²]**	**Thickness [mm]**
Mechanically fixed ETICS with anchors and supplementary adhesive:		
• **Insulation product** Factory-prefabricated expanded polystyrene (EPS) - Standard-EPS [a)] - Elastified EPS [a)] • **Supplementary adhesive** As with bonded ETICS • **Anchors for insulation product** Anchor with ETA in accordance with EAD 330196-01-0604[1]	 – –	 60 to 400 60 to 200
Base coat		
- **StoLevell Neo AimS** Identical to the adhesives mentioned above with the same name.	5.5 to 10.0 (powder)	3.0 to 5.0
Glass fibre mesh		
- **Sto-Glasfasergewebe** Alkali- and slide-resistant glass fibre mesh with mesh size of about 6.0 mm x 6.0 mm - **Sto-Glasfasergewebe F** Alkali- and slide-resistant glass fibre mesh with mesh size of about 4.0 mm x 4.0 mm	– –	– –
Key coat [b)]		
- **StoPrep Miral** - **StoPrep Miral AimS** - **Sto-Putzgrund** - **Sto-Putzgrund QS** Ready to use pigmented acrylic- resin dispersion liquids. StoPrep Miral with additional potassium silicate binder. To be used with finishing coats indicated hereafter.	0.3 0.3 0.3 0.3	– – – –
Finishing coat		
To use with key coat "Sto-Putzgrund"/"Sto-Putzgrund QS"/"StoPrep Miral AimS", if applicable Ready to use paste - acrylic binder: - **Stolit AimS K** [c)] (particle size 1.0 to 3.0 mm) - **Stolit AimS MP** (thin, middle or thick layer) - **StoLotusan K** (Particle size 1.0 to 3.0 mm) - **StoLotusan MP** (thin, middle or thick layer) - **StoSilco blue K** (particle size 1.0 to 3.0 mm) - **StoSilco blue MP** (particle size 0.5 mm)	 2.3 to 4.3 2.3 to 4.3 1.8 to 4.3 1.5 to 4.0 1.6 to 4.6 1.5 to 4.0	 regulated by particle size 1.0 to 3.0 1.0 to 3.0 1.0 to 3.0 1.0 to 3.0 1.0 to 3.0

[1] EAD 330196-01-0604 Plastic anchors made of virgin or non-virgin material for fixing of external thermal insulation composite systems with rendering (and previous versions)

Component National application documents shall be taken into account	**Coverage [kg/m²]**	**Thickness [mm]**
To use with key coat "Sto-Putzgrund"/"StoPrep Miral"/"StoPrep Miral AimS", **if applicable:** Cement based powder requiring addition of about 25 % water:		
- **StoMiral K** (particle size 1.0 to 6.0 mm)	1.6 to 5.2	regulated by particle size
- **StoMiral R** (particle size 1.0 to 6.0 mm)	1.6 to 5.2	
- **StoMiral MP** (fine structure)	1.5 to 4.0	1.0 to 3.0
Decorative paint (optional)		
Ready to use paint with acrylic/siloxane binder: **StoColor Lotusan AimS** **StoColor Solical**	0.20 to 0.40 [l/m²]	–
Ancillary material		
Remains the responsibility of the manufacturer of ETICS.		

a) see the different thermal insulation product sections
b) The instruction to the installer concerning the use of a key coat remains the responsibility of the manufacturer.
c) K / R / MP indicates different structures of the finishing coats.

Annex 2 – Safety in case of fire (BWR 2)

2.1 Reaction to fire of ETICS

Configurations	Organic content	Flame retardant content	Class according to EN 13501-1
Foam adhesive (layer thickness ≤ 6 mm)	< 89,6 %	no flame retardant	-
adhesive	max. 22.2 %		
Base coat	max. 3.6 %		
Standard EPS/ Elastified EPS (thickness ≥ 60 mm; density 15 kg/m³ ± 10%)	-	-	E
Anchors	-	-	-
Rendering system: Base coat with finishing coat and compatible key coat indicated hereafter			
Stolit AimS K/MP with key coat "Sto-Putzgrund"	max. 9.4 %	min. 8.0 %	B – s2,d0
StoLotusan K/MP with key coat "Sto-Putzgrund"			
StoSilco blue K/MP			
StoMiral K/R/MP	max. 1.8 %	no flame retardant	

2.2 Reaction to fire of the thermal insulation product

The reaction to fire class of thermal insulation product is E in accordance with the Commission Delegated Regulation (EU) No 2016/364 in connection with EN 13501-1.

2.3 Reaction to fire performance of the PU-foam adhesives

The reaction to fire class of PU-foam adhesives "Sto-Turbofix Mini" and "Sto-Turbofix Mini H" is B – s2,d0 in accordance with the Commission Delegated Regulation (EU) No 2016/364 in connection with EN 13501-1.

2.4 Propensity to undergo continuous smouldering

Assessment of the propensity to undergo continuous smouldering is not possible.

Annex 3 – Hygiene, health and environment (BWR 3)

3.1 Water absorption of the base coat and the rendering system

	Mean value water absorption	
	$W_{p,1h}$ [kg/m²]	$W_{p,24h}$ [kg/m²]
Base coat		
StoLevell Neo AimS	< 0.1	0.3
Rendering system Base coat "StoLevell Neo AimS" with finishing coat specified below		
Stolit AimS K/MP	< 0.1	0.1
Sto-Silco blue K/MP	< 0.1	0.8[a)]
StoMiral K/R/MP	< 0.1	0.2
StoLotusan K/MP	< 0.1	0.1

$W_{p,1h}$ water absorption after 1 hour

$W_{p,24h}$ water absorption after 24 hours

a) Water absorption of rendering system after 24 hours is ≥ 0.5 kg/m². Examination of hygrothermal behaviour (Annex 3.3) and freeze-thaw behaviour of base coat with finishing coat (Annex 3.4) required.

3.2 Water absorption of the thermal insulation product

The maximum value of water absorption of thermal insulation product after 24 hours ($W_{pi,24h}$) is 0.5 kg/m².

3.3 Watertightness. Hygrothermal behaviour

The hygrothermal behaviour was tested under “HWCFT” (Heating – Wetting – Cooling – Freezing – Thawing test conditioning/cycles).

ETICS is hygrothermal cycles (HWCFT) resistant.

3.4 Watertightness. Freeze–thaw resistance

ETICS is freeze-thaw resistant because no defects are observed after freeze-thaw cycles.

3.5 Impact resistance

Standard mesh: "Sto-Glasfasergewebe" or "Sto-Glasfasergewebe F"

	Level of damage with standard mesh	Level of damage with 2x Standard mesh
Rendering system Base coat "StoLevell Neo AimS" with finishing coat specified below		
Stolit AimS K/MP	$B_{10,w}$ $B_{3,w}$	$B_{10,w}$ $B_{3,w}$
Sto-Silco blue K/MP	$B_{10,w}$ $A_{3,w}$	$B_{10,w}$ $A_{3,w}$
StoMiral K/R/MP	$B_{10,w}$ $B_{3,w}$	$B_{10,w}$ $A_{3,w}$
StoLotusan K/MP	$B_{10,w}$ $B_{3,w}$	$B_{10,w}$ $A_{3,w}$

Explanation of the given results:

Level of damage:

- A — no cracks (not even hairline cracks) and no defects observed on the test surface for all five impact points
- B — no cracks wider than 0,1 mm and no defects observed on the test surface for five impacts out of five impact points
- C — no cracks wider than 0,2 mm and no defects observed on the test surface for five impacts out of five impact points
- D — cracks wider than 0,2 mm

1st Subscript: The number represents the impact energy level of the test in Joules.

2nd Subscript: Preconditioning before the test:

- HWC — test was performed on the rig subjected to hygrothermal cycles (heating-wetting-cooling)
- HWCFT — test was performed on the rig subjected to hygrothermal cycles (heating-wetting-cooling-freezing and thawing)
- w — specimen was conditioned by immersion in water and then dried

Example:

- $C_{3,HWC}$ — means that the level of damage C was identified, energy level of the test was 3 J and the test specimen was preconditioned by HWC cycles on the rig

3.6 Water vapour permeability of the rendering system (equivalent air thickness)

	Equivalent air thickness s_d [m] Test results obtained with layer thickness of base coat of 4 - 5 mm
Rendering system Base coat "StoLevell Neo AimS" and finishing coat indicated hereafter:	
Stolit AimS K/MP	≤ 1.0 m (Test result obtained with particle size 3 mm: 0.21 m)
Sto-Silco blue K/MP	≤ 1.0 m (Test result obtained with particle size 3 mm: 0.25 m)
StoMiral K/R/MP	≤ 1.0 m (Test result obtained with particle size 3 mm: 0.13 m)
StoLotusan K/MP	≤ 1.0 m (Test result obtained with particle size 3 mm: 0.27 m)
Rendering system Base coat "StoLevell Neo AimS" + Key coat "StoPrep Miral AimS" + finishing coat and decorative coat 2x "StoColor Solical" indicated hereafter:	
Stolit AimS K/MP	≤ 1.0 m (Test result obtained with particle size 3 mm: 0.62 m)
Sto-Silco blue K/MP	≤ 1.0 m (Test result obtained with particle size 3 mm: 0.46 m)
StoMiral K/R/MP	≤ 1.0 m (Test result obtained with particle size 3 mm: 0.22 m)
StoLotusan K/MP	≤ 1.0 m (Test result obtained with particle size 3 mm: 0.60 m)

The results were obtained using test method EN ISO 7783, method B of clause 6.2.3.

3.7 Water vapour permeability of the thermal insulation product (water-vapour resistance factor)

The water-vapour resistance factor of thermal insulation product is $20 \leq \mu \leq 70$

Annex 4 – Safety and accessibility in use (BWR 4)

4.0 Description of failure mode

Failure mode	Description of failure mode
A_{A-S}	Failure between substrate and adhesive
C_A	Failure in adhesive
A_{I-A}	Failure between adhesive and thermal insulation product
C_I	Failure in the thermal insulation product
A_{B-I}	Failure between thermal insulation product and base coat
C_B	Failure in base coat
A_{I-PU}	Failure between thermal insulation product and PU-foam
C_{PU}	Failure in PU-foam

4.1 Bond strength between the base coat and the thermal insulation product

Thermal insulation product: EPS		$F_{B-I,dry}$				$F_{B-I,HWC}$				$F_{B-I,F-T}$		
		[kPa][a)]	C_I	A_{B-I}	C_B	[kPa][a)]	C_I	A_{B-I}	C_B	[kPa][a)]	C_I	A_{B-I}
StoLevell Neo AimS	$F_{B-I,min,condition}$	98	100	0	0	81	5	80	15	100	95	5
	$F_{B-I,mean,condition}$	100				100				100		

$F_{B-I,dry}$	Initial state without conditioning (drying for at least 28 days)
$F_{B-I,HWC}$	Tested on the rig after HWC (heating-wetting-cooling)
$F_{B-I,F-T}$	The bond strength between the base coat and the thermal insulation product after freeze-thaw cycles
$F_{B-I,min,condition}$	Minimum value of bond strength between base coat and thermal insulation product
$F_{B-I,mean,condition}$	Mean value of bond strength between base coat and thermal insulation product
a)	Minimum 80 kPa for each individual results with adhesive failure (A) or cohesive failure (C) in the base coat. One single value lower than 80 kPa but higher than 60 kPa is accepted.
C_I, A_{B-I}, C_B	Failure mode (percentage of adhesive or cohesive rupture) [%]

4.2 Bond strength between the adhesive and the substrate

Substrate: Concrete		$F_{A\text{-}S,dry}$			$F_{A\text{-}S,2d,2h}$			$F_{A\text{-}S,2d,7d}$		
		[kPa][a)]	$A_{A\text{-}S}$	C_A	[kPa][b)]	$A_{A\text{-}S}$	C_A	[kPa][a)]	$A_{A\text{-}S}$	C_A
Sto-Baukleber (t = 4 - 5 mm)	$F_{A\text{-}S,min,condition}$	930	0	100	970	70	30	1210	0	100
	$F_{A\text{-}S,mean,condition}$	1210			1150			1620		
StoLevell Uni (t = 5 mm)	$F_{A\text{-}S,min,condition}$	1586	0	100	467	0	100	2489	0	100
	$F_{A\text{-}S,mean,condition}$	1793			637			2560		
StoLevell Duo (t = 5 mm)	$F_{A\text{-}S,min,condition}$	983	0	100	456	0	100	1660	0	100
	$F_{A\text{-}S,mean,condition}$	1175			524			1874		
StoLevell Duo Plus (t = 5 mm)	$F_{A\text{-}S,min,condition}$	1166	0	100	501	0	100	1893	0	100
	$F_{A\text{-}S,mean,condition}$	1230			583			2020		
StoLevell Duo Plus QS (t = 5 mm)	$F_{A\text{-}S,min,condition}$	961	0	100	341	0	100	1691	0	100
	$F_{A\text{-}S,mean,condition}$	1264			523			2001		
StoLevell Novo (t = 5 mm)	$F_{A\text{-}S,min,condition}$	733	0	100	327	0	100	947	0	100
	$F_{A\text{-}S,mean,condition}$	793			405			1059		
StoLevell FT (t = 5 mm)	$F_{A\text{-}S,min,condition}$	784	0	100	299	0	100	1026	0	100
	$F_{A\text{-}S,mean,condition}$	1233			369			1157		
Sto Coll Mineral HP (t = 3 - 5 mm)	$F_{A\text{-}S,min,condition}$	1927	0	100	1732	0	100	1732	0	100
	$F_{A\text{-}S,mean,condition}$	2080			1840			1790		
StoColl CX (t = 3 - 5 mm)	$F_{A\text{-}S,min,condition}$	1305	70	30	875	70	30	1759	60	40
	$F_{A\text{-}S,mean,condition}$	1360			960			1830		
StoLevell SW plus (t = 3 - 5 mm)	$F_{A\text{-}S,min,condition}$	787	70	30	1191	70	30	1776	20	80
	$F_{A\text{-}S,mean,condition}$	1311			1411			2119		
StoColl IP Plus (t = 4 - 5 mm)	$F_{A\text{-}S,min,condition}$	930	0	100	970	70	30	1210	0	100
	$F_{A\text{-}S,mean,condition}$	1210			1150			1620		
StoLevell Neo AimS (t = 4 – 5 mm)	$F_{A\text{-}S,min,condition}$	338	0	100	217	0	100	446	0	100
	$F_{A\text{-}S,mean,condition}$	360			230			460		
Sto-Dispersions-kleber (t = 3 - 5 mm)	$F_{A\text{-}S,min,condition}$	2130	70	30	1180	10	90	710	10	90
	$F_{A\text{-}S,mean,condition}$	2700			1420			870		

Substrate: Concrete		$F_{A\text{-}S,dry}$			$F_{A\text{-}S,2d,2h}$			$F_{A\text{-}S,2d,7d}$		
		[kPa][a)]	$A_{A\text{-}S}$	C_A	[kPa][b)]	$A_{A\text{-}S}$	C_A	[kPa][a)]	$A_{A\text{-}S}$	C_A
StoPrefa Coll (about 3 mm)	$F_{A\text{-}S,min,condition}$	1213	0	100	107	0	100	1203	0	100
	$F_{A\text{-}S,mean,condition}$	1220			120			1310		

$F_{A\text{-}S,dry}$	Initial state without conditioning (drying for at least 28 days)
$F_{A\text{-}S,2d,2h}$	Tested after immersion of the adhesive in water for 2 days and 2 hours drying
$F_{A\text{-}S,2d,7d}$	Tested after immersion of the adhesive in water for 2 days and 7 days drying
$A_{A\text{-}S}$, C_A	Failure mode (percentage of adhesive or cohesive rupture) [%]
a)	One single value lower than 250 kPa but higher than 200 kPa is accepted.
b)	One single value lower than 80 kPa but higher than 60 kPa is accepted.
$F_{A\text{-}S,min,condition}$	Minimum value of bond strength between the adhesive and the substrate
$F_{A\text{-}S,mean,condition}$	Mean value of bond strength between the adhesive and the substrate

4.3 Bond strength between the adhesive and the thermal insulation product

Thermal insulation product: EPS		$F_{A\text{-}I,dry}$			$F_{A\text{-}I,2d,2h}$			$F_{A\text{-}I,2d,7d}$		
		[kPa]	$A_{I\text{-}A}$ [a]	C_I [b]	[kPa]	$A_{I\text{-}A}$ [c]	C_I [d]	[kPa]	$A_{I\text{-}A}$ [a]	C_I [d]
Sto-Baukleber (t = 4 - 5 mm)	$F_{A\text{-}I,min,condition}$	100	0	100	100	0	100	100	0	100
	$F_{A\text{-}I,mean,condition}$	100			100			100		
StoLevell Uni (t = 5 mm)	$F_{A\text{-}I,min,condition}$	100	0	100	81	70	30	100	0	100
	$F_{A\text{-}I,mean,condition}$	100			99			100		
StoLevell Duo (t = 5 mm)	$F_{A\text{-}I,min,condition}$	92	0	100	72	90	10	100	0	100
	$F_{A\text{-}I,mean,condition}$	100			83			100		
StoLevell Duo Plus (t = 5 mm)	$F_{A\text{-}I,min,condition}$	99	30	70	58	100	0	81	20	80
	$F_{A\text{-}I,mean,condition}$	100			74			100		
StoLevell Duo Plus QS (t = 5 mm)	$F_{A\text{-}I,min,condition}$	74	80	20	45	100	0	67	100	0
	$F_{A\text{-}I,mean,condition}$	85			50			81		
StoLevell Novo (t = 5 mm)	$F_{A\text{-}I,min,condition}$	100	50	50	58	90	10	92	0	100
	$F_{A\text{-}I,mean,condition}$	100			74			100		
StoLevell FT (t = 5 mm)	$F_{A\text{-}I,min,condition}$	84	0	100	84	60	40	100	0	100
	$F_{A\text{-}I,mean,condition}$	100			89			100		
Sto Coll Mineral HP (t = 3 - 5 mm)	$F_{A\text{-}I,min,condition}$	88	0	100	87	0	100	80	0	100
	$F_{A\text{-}I,mean,condition}$	100			90			90		
StoColl CX (t = 3 - 5 mm)	$F_{A\text{-}I,min,condition}$	93	0	100	90	0	100	91	0	100
	$F_{A\text{-}I,mean,condition}$	100			90			90		
StoLevell SW plus (t = 3 - 5 mm)	$F_{A\text{-}I,min,condition}$	82	0	100	89	0	100	93	0	100
	$F_{A\text{-}I,mean,condition}$	96			100			99		
StoColl IP Plus (t = 4 - 5 mm)	$F_{A\text{-}I,min,condition}$	100	0	100	100	0	100	100	0	100
	$F_{A\text{-}I,mean,condition}$	100			100			100		
StoLevell Neo AimS (t = 4 – 5 mm)	$F_{A\text{-}I,min,condition}$	100	0	100	100	100	0	100	0	100
	$F_{A\text{-}I,mean,condition}$	100			100			100		
Sto-Dispersions-kleber (t = 3 - 5 mm)	$F_{A\text{-}I,min,condition}$	100	0	100	100	0	100	100	80	20
	$F_{A\text{-}I,mean,condition}$	100			100			100		

Thermal insulation product: EPS		$F_{A\text{-}I,dry}$			$F_{A\text{-}I,2d,2h}$			$F_{A\text{-}I,2d,7d}$		
		[kPa]	$A_{I\text{-}A}$ a)	C_I b)	[kPa]	$A_{I\text{-}A}$ c)	C_I d)	[kPa]	$A_{I\text{-}A}$ a)	C_I d)
StoPrefa Coll (about 3 mm)	$F_{A\text{-}I,min,condition}$	100	0	100	100	0	100	100	0	100
	$F_{A\text{-}I,mean,condition}$	100			100			100		

$F_{A\text{-}I,dry}$	Initial state without conditioning (drying for at least 28 days)
$F_{A\text{-}I,2d,2h}$	Tested after immersion of the adhesive in water for 2 days and 2 hours drying
$F_{A\text{-}I,2d,7d}$	Tested after immersion of the adhesive in water for 2 days and 7 days drying
$A_{I\text{-}A}$, C_I	Failure mode (percentage of adhesive or cohesive rupture) [%]
a)	The minimum failure resistance value is 80 kPa. One single value lower than 80 kPa but higher than 60 kPa is accepted
b)	The minimum failure resistance value is 30 kPa with respect to the minimum accepted bonded area B_S, as described below
c)	The minimum failure resistance value is 30 kPa
d)	No limit value
$F_{A\text{-}I,min,condition}$	Minimum value of bond strength between the adhesive and the thermal insulation product
$F_{A\text{-}I,mean,condition}$	Mean value of bond strength between the adhesive and the thermal insulation product

Minimum bonded area for bonded ETICS

The minimum bonded area B_S is 40%, as the minimum given in EAD 040083-01-0404, Clause 1.1 for bonded ETICS.

4.4 Bond strength of the PU-foam adhesives

		Bond strength [kPa]	Failure mode	
			$A_{l\text{-}PU}$	C_{PU}
Sto-Turbofix Mini (t = 8 mm)	$PU_{f\text{-}a,min}$	104.4	100	0
	$PU_{f\text{-}a,mean}$	112		
Sto-Turbofix Mini H (t = 8 mm)	$PU_{f\text{-}a,min}$	90.9	100	0
	$PU_{f\text{-}a,mean}$	96		
$PU_{f\text{-}a,min}$	Minimum value of bond strength of PU-foam adhesive			
$PU_{f\text{-}a,mean}$	Mean value of bond strength of PU-foam adhesive			

The minimum bonded area B_S is 40%, as the minimum given in EAD 040083-01-0404, Clause 1.1 for bonded ETICS.

4.5 Tensile strength perpendicular to the faces of the thermal insulation product in dry conditions

	$\sigma_{mt,mean,dry}$ [kPa]
Standard EPS	
Sto-Polystyrol-Hartschaumplatte PS15SE 034	≥ 100
Sto-Polystyrol-Hartschaumplatte PS20SE 035	≥ 150
Sto-Polystyrol-Hartschaumplatte PS15SE 040	≥ 100
Sto-Dämmplatte Top32	
Sto-Dämmplatte Top32 Biomass	
Sto-Dämmplatte EPS Mcycled	
Sto-EPS-Dämmplatte Polar II 34	
Sto-EPS-Dämmplatte Polar II 32	
Sto-Bossenplatte Top32	
Sto-Bossenplatte PS15SE 040	
Sto-Dämmplatte EPS 032	
Sto-Dämmplatte EPS 034	
Elastified EPS	
Sto-Polystyrol-Hartschaumplatte PS15SE 035 Silent	≥ 80
Sto-Dämmplatte Top32 Silent	
Sto-Dämmplatte Top32 Silent II	
$\sigma_{mt,mean,dry}$	Mean value of tensile test strength perpendicular to the faces of each thermal insulation type in dry condition

4.6 Shear strength and shear modulus of the PU-foam adhesives

		PU-foam adhesive	
		"Sto-Turbofix Mini"	**"Sto-Turbofix Mini H"**
Shear strength [kPa]	τ_{mean}	81	66.6
Shear modulus [kPa]	G_{mean}	960.5	640.8
τ_{mean}	mean value of shear strength [kPa]		
G_{mean}	mean value of shear modulus [kPa]		

4.7 Post expansion behaviour of the PU-foam adhesives

The post expansion behaviour of the PU-foam "Sto-Turbofix Mini" adhesive is 11 mm in accordance with Clause 5.6 of EN 17101.

The post expansion behaviour of the PU-foam "Sto-Turbofix Mini H" adhesive is 12 mm in accordance with Clause 5.6 of EN 17101.

Annex 5 – Protection against noise (BWR 5)

5.1 Dynamic stiffness of the thermal insulation product

Standard EPS

No performance assessed.

Elastified EPS

Thickness of the thermal insulation product [mm]	Sto-Polystyrol-Hartschaumplatte PS15SE 035 Silent	Sto-Dämmplatte Top32 Silent	Sto-Dämmplatte Top32 Silent II
	Dynamic stiffness s´ [MN/m³]		
60		15	
70		15	
80	20	10	20
90	20	10	20
100	20	10	20
110	20	10	20
120	15	10	15
130	15	7	15
140	15	7	15
150	15	7	15
160	10	7	10
170	10	7	10
180	10	5	10
190	10	5	10
200	10	5	7

Annex 6 – Energy economy and heat retention (BWR 6)

6.1 Thermal resistance of ETICS without influence of mechanical fixing devices

The thermal resistance of the ETICS (R_{ETICS}) is calculated in accordance with EN ISO 6946, cl. 6.7.1.2 without thermal bridges or internal and external surface resistances (R_{si} and R_{se}). It is considering the thermal insulation product ($R_{insulation}$) and the rendering system (R_{render}) as homogenous layers.

$$R_{ETICS} = R_{insulation} + R_{render}\ [(m^2 \cdot K)/W]$$

With: $R_{insulation}$ insulation thickness / thermal conductivity coefficient declared or measured $[(m^2 \cdot K)/W]$

R_{render} 0.02 $(m^2 \cdot K)/W$, in accordance with EN ISO 10456, cl. 8

6.2 Thermal conductivity and thermal resistance of the thermal insulation product

Tradename of thermal insulation product	**Thickness $t_{insulation}$** [mm]	**Thermal conductivity λ_D** [W/(m·K)]	**Thermal resistance $R_{insulation}$** [(m²·K)/W]
EPS Standard			
Sto-Polystyrol-Hartschaumplatte PS15SE 034	60 – 400	0.034	$t_{insulation}$ / λ_D
Sto-Polystyrol-Hartschaumplatte PS20SE 035	60 – 300	0.035	
Sto-Polystyrol-Hartschaumplatte PS15SE 040	60 – 400	0.040	
Sto-Dämmplatte Top32	60 – 400	0.032	
Sto-Dämmplatte Top32 Biomass	60 – 300	0.032	
Sto-Dämmplatte EPS Mcycled	60 – 200	0.032	
Sto-EPS-Dämmplatte Polar II 34	60 – 300	0.032	
Sto-EPS-Dämmplatte Polar II 32	60 – 300	0.032	
Sto-Bossenplatte Top32	60 – 300	0.032	
Sto-Bossenplatte PS15SE 040	60 – 300	0.040	
Sto-Dämmplatte EPS 032	60 – 300	0.032	
Sto-Dämmplatte EPS 034	60 – 300	0.034	
Elastified EPS			
Sto-Polystyrol-Hartschaumplatte PS15SE 035 Silent	60 – 200	0.035	$t_{insulation}$ / λ_D
Sto-Dämmplatte Top32 Silent	80 – 200	0.032	
Sto-Dämmplatte Top32 Silent II	60 – 200	0.032	

6.3 Thermal transmittance of fixing devices

The thermal bridges caused by mechanical fixing (anchors, profiles) increases the thermal transmittance U. This influence had to take into account according to EN ISO 6946

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

With	U_c	corrected thermal transmittance [W/(m² ·K)]
	U	thermal transmittance of the whole external wall, including ETICS, without thermal bridges

$$U = 1 / (R_{si} + R_{substrate} + R_{ETICS} + R_{se})$$

with:	R_{si}	internal surface thermal resistance [W/(m² ·K)]
	$R_{substrate}$	thermal resistance of the substrate wall [W/(m² ·K)]
	R_{ETICS}	thermal resistance of the entire ETICS [W/(m² ·K)]
	R_{se}	external surface thermal resistance [W/(m² ·K)]

n	number of anchors per m²
χ_p	local influence of thermal bridge caused by an anchor. The values listed below can be taken into account if not specified in the anchor's ETA:
χ_p = 0.002 W/K	for anchors with a stainless steel screw covered by plastic anchors and for anchors with an air gap at the head of the screw
χ_p = 0.004 W/K	for anchors with a galvanized steel screw with the head covered by a plastic material
χ_p = 0.008 W/K	for all other anchors (worst-case)

Annex 7 – Aspects of durability

7.1 Bond strength after ageing of finishing layers tested on the rig

Test conditioning applied is HWCFT (heating and wetting (HW) + heating and cooling (HC) + wetting, freezing and thawing (WFT)).

Rendering system Base coat "StoLevell Neo AimS" with finishing coat specified below	$F_{min,HWCFT}$	$F_{mean,HWCFT}$	**Failure mode**		
	[kPa][a)]		C_B	A_{B-I}	C_I
Stolit AimS K/MP	84	90	8	77	15
Sto-Silco blue K/MP	92	100	10	83	7
StoMiral K/R/MP	81	90	8	86	6
StoLotusan K/MP	81	90	5	72	23

$F_{min,HWCFT}$	minimum values of bond strength after ageing
$F_{mean,HWCFT}$	mean values of bond strength after ageing
C_B, A_{B-I}, C_I	Failure mode (percentage of adhesive or cohesive rupture (see Annex 4) [%]
a)	Minimum 80 kPa for each individual results with adhesive failure (A) or cohesive failure (C). One single value lower than 80 kPa but higher than 60 kPa is accepted.

No performance assessed for all other combinations.

7.2 Tensile strength and elongation of the glass fibre mesh at initial state and after ageing in alkali conditions

Sto-Glasfasergewebe	**Mean value warp**	**Mean value weft**
In as-delivered state		
Tensile strength $R_{50,m,min}$ [N/50 mm]	2154	2883
Tensile strength $T_{max,in}$ [kN/m]	43.1	57.7
Elongation $\varepsilon_{m,in}$ [%]	3.7	3.8
After ageing in alkali conditions		
Residual tensile strength $R_{50,m,alk}$ [N/50 mm]	1274	1807
Residual tensile strength $T_{max,m,alk}$ [kN/m]	25.5	36.1
Elongation $\varepsilon_{m,alk}$ [%]	1.8	2.1

Sto-Glasfasergewebe F	**Mean value warp**	**Mean value weft**
In as-delivered state		
Tensile strength $R_{50,m,min}$ [N/50 mm]	2150	2450
Tensile strength $T_{max,in}$ [kN/m]	43	49
Elongation $\varepsilon_{m,in}$ [%]	3.7	3.8
After ageing in alkali conditions		
Residual tensile strength $R_{50,m,alk}$ [N/50 mm]	1100	1380
Residual tensile strength $T_{max,m,alk}$ [kN/m]	22	27.6
Elongation $\varepsilon_{m,alk}$ [%]	1.8	2.1