

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

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European Technical Assessment

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of 2 April 2024

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 Classic AimS

Product family
to which the construction product belongs

Product area code: 4
External Thermal Insulation Composite System with
rendering on expanded polystyrene intended for use on
building walls

Manufacturer

Sto SE & Co. KGaA
Ehrenbachstraße 1
79780 Stühlingen
DEUTSCHLAND

Manufacturing plant

Sto SE & Co. KGaA
Ehrenbachstraße 1
79780 Stühlingen

This European Technical Assessment
contains

17 pages including 5 annexes which form an integral part
of this assessment

This European Technical Assessment is
issued in accordance with Regulation (EU)
No 305/2011, on the basis of

040083-00-0404

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Specific Part

1 Technical description of the product

This product is an External Thermal Insulation Composite System (ETICS) 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 additionally 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 5.

The verifications and assessment methods on which this ETA is based lead to the assumption of a working life of the "StoTherm Classic AimS" of at least 25 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.

English translation prepared by DIBt

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

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire of the ETICS	(see annex 2) Euroclass according to EN 13501-1
Reaction to fire of the EPS-insulation product - Apparent density of the EPS-insulation product according to EN 1602	(see annex 2) Euroclass E according EN 13501-1 Value [kg/m ³]
Facade fire performance	no performance assessed

3.2 Hygiene, health and environment (BWR 3)

Essential characteristic	Performance
Release of dangerous substances	no performance assessed
Water absorption Base coat after 1 hour after 24 hours Rendering system after 1 hour after 24 hours EPS insulation product after 24 hours	(see annex 3.1) Average [kg/m ²] Average [kg/m ²] Average [kg/m ²] Average [kg/m ²] Maximum value 0.5 kg/m ²
Water-tightness of the ETICS: Hygrothermal behaviour on the test wall	Pass without defects
Water-tightness of the ETICS: Freeze/thaw behaviour	The water absorption of the base coats as well as the rendering systems is less than 0.5 kg/m ² for all configurations of the ETICS. The ETICS is so assessed as free/thaw resistant.
impact resistance	(see annex 3.2) Category
Water vapour permeability - Rendering system - EPS insulation product	(see annex 3.3) s _d value [m] μ = 20 - 70 Thickness of the insulation product 400 mm

3.3 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
<p>Bond strength between base coat and EPS-insulation product</p> <p>between adhesive and substrate</p> <p>between adhesive and EPS insulation</p>	<p>(see annex 4.1)</p> <ul style="list-style-type: none"> - Minimal value/average [kPa], rupture type: Initial state (28 d immersion) - Minimal value/average [kPa], rupture type: after hygrothermal cycles <p>(see annex 4.2)</p> <ul style="list-style-type: none"> - Thickness [mm] of the used adhesives - Minimal value/average [kPa]: rupture type: Initial state (dry conditions) - Minimal value/average [kPa]: rupture type: after 2 d immersion in water, 2 h drying - Minimal value/average [kPa]: rupture type: after 2 d immersion in water, 7 d drying <p>(see annex 4.3)</p> <ul style="list-style-type: none"> - Thickness [mm] of the used adhesives - Minimal value/average [kPa]: rupture type: Initial state (dry conditions) - Minimal value/average [kPa]: rupture type: after 2 d immersion in water, 2 h drying - Minimal value/average [kPa]: rupture type: after 2 d immersion in water, 7 d drying
<p>Fixing strength (displacement test)</p>	<p>Test not required therefore no limitation of ETICS length required.</p>
<p>Wind load resistance of ETICS pull-through test of fixing static foam block test</p>	<p>(see annex 4.4)</p> <ul style="list-style-type: none"> - R_{panel} [kN/fixing], - R_{joint} [kN/fixing], - Plate diameter of anchor ≥ 60 mm resp. ≥ 90 mm - plate stiffness ≥ 0.3 kN/mm² - load resistance of the anchor plate ≥ 1.0 kN
<p>Tensile strength perpendicular to the faces in dry conditions standard EPS</p> <p>elastified EPS</p>	<p>$\sigma_{\text{mt}} \geq 80$ kPa (bonded ETICS)</p> <p>$\sigma_{\text{mt}} \geq 100$ kPa (mechanically fixed ETICS with supplementary adhesive)</p> <p>$\sigma_{\text{mt}} \geq 80$ kPa (mechanically fixed ETICS with supplementary adhesive)</p>

Essential characteristic	Performance
Shear modulus of the ETICS standard EPS elastified EPS	$1.0 \leq G_m \leq 3.8$ [MPa] $0.3 \leq G_m \leq 1.0$ [MPa]
Render strip tensile test	no performance assessed
Bond strength after ageing finishing coat tested on the rig finishing coat not tested on the rig	(see annex 4.5) Minimal value/average [kPa] Minimal value/average [kPa]
Tensile strength of the glass fibre mesh in the as-delivered state	(see annex 4.6) Average [N/mm]
Residual tensile strength of the glass fibre mesh after aging	(see annex 4.6) Average [N/mm]
Relative residual tensile strength of the glass fibre mesh after aging	(see annex 4.6) Average [%]
Elongation of the glass fibre mesh in the as-delivered state	(see annex 4.6) Average [%]
Elongation of the glass fibre mesh after aging	(see annex 4.6) Average [%]

3.4 Protection against noise (BWR 5)

Essential characteristic	Performance
Airborne sound insulation of ETICS	no performance assessed
Dynamic stiffness of the EPS insulation product	no performance assessed
Air flow resistance of the EPS insulation product	no performance assessed

3.5 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Thermal resistance of ETICS	(see annex 5) Calculated value or measurement value R [(m ² · K)/W]
Thermal transmittance of ETICS	(see annex 5) Calculated value or measurement value U [W/(m ² · K)]

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

In accordance with EAD 040083-00-0404 the applicable European legal act is: 97/556/EC changed by 2001/596/EC

The systems to be applied are:

Product	Intended use	Levels or classes (Reaction to fire)	Systems
"StoTherm Classic 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+
<p>⁽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)</p> <p>⁽²⁾ Products/materials not covered by footnote (1)</p> <p>⁽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)</p>			

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 2 April 2024 by Deutsches Institut für Bautechnik

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beglaubigt:
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Annex 1

Composition of the ETICS

	Components National application documents shall be taken into account	Coverage [kg/m ²]	Thickness [mm]
Insulation material with associated method of fixing	Bonded ETICS: <ul style="list-style-type: none"> • Insulation product factory-prefabricated expanded polystyrene (EPS)* <ul style="list-style-type: none"> – standard EPS – elastified EPS • Adhesive <ul style="list-style-type: none"> - Sto-Baukleber (cement based powder requiring addition of 21 – 23 % of water) - StoLevell Uni (cement based powder requiring addition of 24 – 26 % of water) - StoLevell Duo (cement based powder requiring addition of 20 – 23 % of water) - StoLevell Duo plus (cement based powder requiring addition of about 25 % of water) - StoLevell Duo plus QS (cement based powder requiring addition of 22 – 25 % of water) - StoLevell Novo (cement based powder requiring addition of about 37 % of water) - StoLevell FT (cement based powder requiring addition of about 28 % of water) - StoColl Mineral HP (cement based powder requiring addition of 23 – 25 % of water) - StoColl CX (cement based powder requiring addition of 23 – 25 % of water) 	<p>–</p> <p>–</p> <p>3.0 to 7.5 (powder)</p> <p>3.0 to 7.5 (powder)</p> <p>3.0 to 7.5 (powder)</p> <p>3.0 to 7.5 (powder)</p> <p>3.0 to 7.5 (powder)</p> <p>3.0 to 7.5 (powder)</p> <p>3.0 to 7.5 (powder)</p> <p>3.0 to 7.5 (powder)</p>	<p>≤ 400</p> <p>≤ 200</p> <p>–</p> <p>–</p> <p>–</p> <p>–</p> <p>–</p> <p>–</p> <p>–</p> <p>–</p>
	Mechanically fixed ETICS with anchors and supplementary adhesive: <ul style="list-style-type: none"> • Insulation product factory-prefabricated expanded polystyrene (EPS)* <ul style="list-style-type: none"> – standard EPS – elastified EPS • supplementary adhesive (equal to bonded ETICS) • Anchors for insulation product All anchors with ETA according to EAD 330196-01-0604¹ 	<p>–</p> <p>–</p>	<p>60 to 400</p> <p>60 to 200</p>

¹ EAD330196-01-0604

Plastic anchors made of virgin or non-virgin material for fixing of external thermal insulation composite systems with rendering (and previous versions)

	Components National application documents shall be taken into account	Coverage [kg/m ²]	Thickness [mm]
Base coat	StoArmat Classic AimS Ready to use paste - acryldispersion	4.5 to 10.0 (powder)	2.0 to 5.0
Glass fibre mesh	Sto-Glasfasergewebe Alkali- and slide-resistant glass fibre mesh with mass per unit area of about 165 g/m ² and mesh size of about 6.0 mm x 6.0 mm	–	–
	Sto-Glasfasergewebe F Alkali- and slide-resistant glass fibre mesh with mass per unit area of about 165 g/m ² and mesh size of about 4.0 mm x 4.0 mm	–	–
Finishing coat	<ul style="list-style-type: none"> Ready to use pastes – acrylic-siloxan binder: Stolit AimS K (particle size 1.5 to 3.0 mm) StoSilco blue (particle size 1.5 to 3.0 mm) 	2.3 to 4.3 2.3 to 4.3	} regulated by { particle size
Decorative paint (optional)	StoColor Lotusan AimS StoColor Solical	[l/ m ²] 0.2 to 0.4	
Ancillary material	Remains the responsibility of the manufacturer of ETICS.		
* Factory-prefabricated, uncoated panels made of expanded polystyrene (EPS) acc.to EN 133163 shall be used			

Annex 2

Safety in case of fire (BWR 2)

2.1 Reaction to fire

Configurations	Organic content	Flame retardant content	Euroclass according to EN 13501-1
Base coat	max. 7.0 %	min. 12.0 %	B - s2,d0
EPS insulation product	Euroclass E according to EN 13501-1	Euroclass E according to EN 13501-1	
Profile	-	-	
Anchors	-	-	
Rendering system: Base coat with finishing coat indicated in annex 1:			
Stolit AimS K	max. 8.5 %	min 10.0 %	
StoSilco blue	max. 9.4 %	min. 8.0 %	

2.2 Apparent density of the EPS-insulation product according to EN 1602

$$\rho_a \leq 17 \text{ kg/m}^3$$

Annex 3

Hygiene, health and environment (BWR 3)

3.1 Water absorption (capillarity test)

Base coat:

Base coat	Thickness	Average water absorption [kg/m ²]	
		after 1 h	after 24 h
StoArmat Classic AimS	3 mm	0.015	0.255

Rendering system:

Rendering system: base coat "StoArmat Classic AimS" with finishing coat indicated hereafter	Thickness	Average water absorption [kg/m ²]	
		after 1 h	after 24 h
Stolit AimS K	5 mm	0.021	0.154
StoSilco blue	5 mm	0.027	0.386

3.2 Impact resistance

Rendering system: base coat "StoArmat Classic AimS" with finishing coat indicated hereafter	Single mesh: Sto-Glasfasergewebe F
Stolit AimS K	II

The impact resistance of all other configurations of the ETICS is not assessed (no performance assessed).

3.3 Water vapour permeability

Rendering system: base coat "StoArmat Classic AimS" with finishing coat indicated hereafter	Equivalent air thickness s_d [m]
Stolit AimS K	≤ 1.0 m (Test result obtained with Stolit AimS MP: 0.20 m)
StoSilco blue	≤ 1.0 m (Test result obtained with StoSilco blue K2: 0.10 m)

Annex 4

Safety and accessibility in use (BWR 4)

4.1 Bond strength between base coat and insulation product (EPS)

		Failure load	Conditioning		
			Initial state [kPa]	After hygrothermal cycles [kPa]	After freeze/thaw test
StoArmat Classic AimS	Average	in insulation product	120	120	Test not required because freeze/thaw cycles not necessary
	Minimal value		109	85	

4.2 Bond strength between adhesive and substrate

Untergrund: Beton		Failure load	Conditioning		
			Initial state [kPa]	2 d immersion in water and 2 h drying [kPa]	2 d immersion in water and 7 d drying [kPa]
Sto-Baukleber (5 mm)	Average	In adhesive	2197	1110	3332
	Minimal value		2158	989	3105
StoLevell Uni (5 mm)	Average	In adhesive	1793	637	2560
	Minimal value		1586	467	2489
StoLevell Duo (5 mm)	Average	In adhesive	1175	524	1874
	Minimal value		983	456	1660
StoLevell Duo plus (5 mm)	Average	In adhesive	1230	583	2020
	Minimal value		1166	501	1893
StoLevell Duo plus QS (5 mm)	Average	In adhesive	1264	523	2001
	Minimal value		961	341	1691
StoLevell Novo (5 mm)	Average	In adhesive	793	405	1059
	Minimal value		733	327	947
StoLevell FT (5 mm)	Average	In adhesive	1233	369	1157
	Minimal value		784	299	1026

Substrate: concrete		Failure load	Conditioning		
			Initial state [kPa]	2 d immersion in water and 2 h drying [kPa]	2 d immersion in water and 7 d drying [kPa]
StoColl CX (3 – 5 mm)	Average	In adhesive	1360	960	1830
	Minimal value		1305	875	1759
StoColl Mineral HP (3 – 5 mm)	Average	In adhesive	2080	184	1790
	Minimal value		1927	173	1732

4.3 Bond strength between adhesive and insulation product (EPS)

		Failure load	Conditioning		
			Initial state [kPa]	2 d immersion in water and 2 h drying [kPa]	2 d immersion in water and 7 d drying [kPa]
Sto-Baukleber (3 – 5 mm)	Average	In insulation product	112	109	126
	Minimal value		96	105	119
StoLevell Uni (3 – 5 mm)	Average	In insulation product	121	99	122
	Minimal value		112	81	112
StoLevell Duo (3 – 5 mm)	Average	In insulation product	106	83	120
	Minimal value		92	73	118
StoLevell Duo plus (3 – 5 mm)	Average	In insulation product	109	74	101
	Minimal value		99	58	81
StoLevell Duo plus QS (3 – 5 mm)	Average	In insulation product	85	50	81
	Minimal value		74	45	67

		Failure load	Conditioning		
			Initial state [kPa]	2 d immersion in water and 2 h drying [kPa]	2 d immersion in water and 7 d drying [kPa]
StoLevell Novo (3 – 5 mm)	Average	In insulation product	115	74	108
	Minimal value		107	58	92
StoLevell FT (3 – 5 mm)	Average	In insulation product	103	89	120
	Minimal value		84	84	113
StoColl CX (3 – 5 mm)	Average	In insulation product	100	90	90
	Minimal value		93	90	91
StoColl Mineral HP (3 – 5 mm)	Average	In insulation product	100	90	90
	Minimal value		88	87	80

Minimal bonded surface area

$$S [\%] = 0.03 \text{ N/mm}^2 \times 100 / 0.08 \text{ N/mm}^2$$

$$S = 37.50 \%$$

The minimal bonded surface S of bonded ETICS is 40 %.

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4.4 Wind load resistance

The following failure loads only apply to the listed combination of component characteristics and the characteristics of the insulation product.

4.4.1 Safety in use of mechanically fixed ETICS using anchors

Apply to all anchors listed in annex 1 mounted on the insulation panels surface				
Characteristics of the EPS (standard EPS)	Thickness	≥ 60 mm		
	Tensile strength perpendicular to the faces	≥ 100 kPa		
	Shear modulus	≥ 1.0 N/mm ²		
Plate diameter of anchor		∅ 60 mm	∅ 90 mm	
plate stiffness		≥ 0.3 kN/mm		
load resistance of the anchor plate		≥ 1.0 kN		
Failure loads [kN]	Anchors not placed at the panel joints (Static Foam Block Test)	R _{panel}	Minimal: 0.51 Average: 0.52	Minimal: 0.72 Average: 0.73
	Anchors placed at the panel joints (Pull-through test)	R _{joint}	Minimal: 0.40 Average: 0.43	Minimal: 0.43 Average: 0.47

Apply to all anchors listed in annex 1 mounted on the insulation panels surface				
Characteristics of the EPS (elastified EPS)	Thickness	≥ 60 mm		
	Tensile strength perpendicular to the faces	≥ 80 kPa		
	Shear modulus	≥ 0.3 N/mm ²		
Plate diameter of anchor		∅ 60 mm		
plate stiffness		≥ 0.3 kN/mm		
load resistance of the anchor plate		≥ 1.0 kN		
Failure load [kN]	Anchors not placed at the panel joints (Static Foam Block Test)	R _{panel}	Minimal: 0.35 Average: 0.36	
	Anchors placed at the panel joints (Pull-through test)	R _{joint}	Minimal: 0.30 Average: 0.31	

The failure loads specified above for a plate diameter of anchor of 60 mm apply to the following anchors with deep mounting but only on the following conditions of installation:

Anchor	Thickness of the EPS panel [t]	Conditions of installation*
ejotherm STR U, ejotherm STR U 2G (ETA-04/0023)	t ≥ 80 mm (for standard and elastified EPS)	– Maximum installation depth of the anchor plate: 15 mm (△ thickness of insulation cover) – Incision depth: 20 mm
	t ≥ 100 mm (for standard and elastified EPS)	– Maximum installation depth of the anchor plate: 15 mm (△ thickness of insulation cover) – Incision depth: 35 mm
TERMOZ 8 SV (ETA-06/0180)	t ≥ 80 mm (for standard EPS only)	– Maximum installation depth of the anchor plate: 15 mm (△ thickness of insulation cover)

* according to the appropriate ETA of anchor

4.5 Bond strength after aging

Finishing coat with base coat indicated hereafter		After hygrothermal cycles [kPa] with base coat "StoArmat Classic AimS"
Stolit AimS K	Average	120
	Minimal value	96
StoSilco blue	Average	110
	Minimal value	82

4.6 Reinforcement (glass fibre mesh)

Sto-Glasfasergewebe	Average warp	Average weft
Tensile strength in as-delivered state	2154 N / 50 mm	2883 N / 50 mm
Residual tensile strength after aging	1274 N / 50 mm	1807 N / 50 mm
Relative residual tensile strength after aging	59.1 %	62.7 %
Elongation in as-delivered state	3.7 %	3.8 %
Elongation after aging	1.8 %	2.1 %

Sto-Glasfasergewebe F	Average warp	Average weft
Tensile strength in as-delivered state	2150 N / 50 mm	2450 N / 50 mm
Residual tensile strength after aging	1100 N / 50 mm	1380 N / 50 mm
Relative residual tensile strength after aging	59.1 %	62.7 %
Elongation in as-delivered state	3.7 %	3.8 %
Elongation after aging	1.8 %	2.1 %

Annex 5

Energy economy and heat retention (BWR 6)

5.1 Thermal resistance und thermal transmittance

The nominal value of the additional thermal resistance R provided by the ETICS to the substrate wall is calculated in accordance with EN ISO 6946 from the nominal value of the insulation product's thermal resistance R_D given accompanied to the CE marking and from the thermal resistance of the rendering system R_{render} which is about $0.02 \text{ (m}^2 \cdot \text{K)/W}$.

$$R = R_D + R_{render}$$

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

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

- Where:
- U_c : corrected thermal transmittance [$\text{W}/(\text{m}^2 \cdot \text{K})$]
 - n : number of anchors per m^2
 - 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:
 - $\chi_p = 0.004 \text{ W/K}$ for anchors with a galvanized steel screw with the head covered by a plastic material
 - $\chi_p = 0.002 \text{ W/K}$ for anchors with a stainless steel screw covered by plastic anchors and for anchors with an air gap at the head of the screw