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European Technical Assessment

**ETA 18/0228
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I General Part

Technical Assessment Body issuing the European Technical Assessment:

Technical and Test Institute for Construction Prague

Trade name of the construction product

HECK EPS

Product family to which the construction product belongs

Product area code: 4
External Thermal Insulation Composite Systems (ETICS) with rendering insulation product - expanded polystyrene (EPS)

Manufacturer

HECK Wall Systems
Thölauer Str. 25
95615 Marktredwitz
Germany
www.wall-systems.com

Manufacturing plant(s)

HECK Wall Systems
Thölauer Str. 25
95615 Marktredwitz
Germany

This European Technical Assessment contains

28 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

Annex No. 6 Control Plan contains confidential information and is not included in the European Technical Assessment when that assessment is publicly disseminated. ETAG 004, edition 2013, used as European Assessment Document (EAD)

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II Specific part

1 Technical description of the product

1.1 Definition and composition of the kit

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. 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 or mechanically fixed onto a wall. The methods of fixing and the relevant components are specified in the table below. The insulation product is faced with a rendering system consisting of one or more layers (site applied), one of which contains reinforcement. The rendering system is applied directly to the insulating boards, 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, 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.

Composition of the ETICS

Table No. 1

| | Components | Coverage (kg/m ²) | Thickness (mm) |
|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------|
| Insulation products with associated methods of fixing | Bonded ETICS (fully or partially bonded) with or without supplementary anchors. National application documents shall be taken into account. | | |
| | <ul style="list-style-type: none"> • Insulation product: EPS according to EN 13163 see Annex No. 1 for product characteristics | / | 50 - 400 |
| | <ul style="list-style-type: none"> • Adhesives: min. bonded surface: 40 % - HECK BK - cement based powder requiring addition of water - 0.26 – 0.28 l/kg - HECK K+A (grey/white) - cement based powder requiring addition of water - 0.22 – 0.26 l/kg - HECK K+A PLUS - cement based powder requiring addition of water - 0.42 – 0.42 l/kg - HECK K+A ZF 70 - ready to use paste - polymer dispersion | 3.0 - 6.0 (dry) | / |
| | | 3.0 - 6.0 (dry) | / |
| | | 3.0 - 6.0 (dry) | / |
| | | cca. 4 (paste) | / |

| | Components | Coverage (kg/m ²) | Thickness (mm) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|--------------------|
| Insulation products with associated methods of fixing | Mechanically fixed ETICS with profiles and supplementary adhesive (see Cl. 3.3.5 and Annex No. 3 for possible associations profiles/anchors) National application documents shall be taken into account. | | |
| | <ul style="list-style-type: none"> • Insulation product: EPS according to EN 13163 see Annex No. 1 or 2 for product characteristics | / | 60 - 400 |
| | <ul style="list-style-type: none"> • Supplementary adhesives: min. bonded surface: 40 % - HECK BK - cement based powder requiring addition of water - 0.26 – 0.28 l/kg - HECK K+A (grey/white) - cement based powder requiring addition of water - 0.22 – 0.26 l/kg - HECK K+A PLUS - cement based powder requiring addition of water - 0.42 – 0.42 l/kg - HECK K+A ZF 70 - ready to use paste - polymer dispersion | 3.0 - 6.0 (dry) | 3.0 - 6.0 (dry) |
| | <ul style="list-style-type: none"> - HECK K+A PLUS - cement based powder requiring addition of water - 0.42 – 0.42 l/kg - HECK K+A ZF 70 - ready to use paste - polymer dispersion | 3.0 - 6.0 (dry) | 3.0 - 6.0 (dry) |
| | <ul style="list-style-type: none"> • Profiles see Annex No. 5 - Polyvinyl chloride profiles - HECK Halteleiste PVC - HECK Verbindungsschiene PVC | | |
| <ul style="list-style-type: none"> • Anchors for profiles - ejothem SK U - WS 8 L - WS 8 N - ejothem SDK U - IsoFux ND-8Z - SDF-K plus, SDF-S plus - ejothem NK U | / | / | |

| | Components | Coverage (kg/m ²) | Thickness (mm) |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| Insulation products with associated methods of fixing | Mechanically fixed ETICS with anchors and supplementary adhesive (see Cl. 3.3.5 and Annex No. 3 for possible associations EPS/anchors) National application documents shall be taken into account. | | |
| | <ul style="list-style-type: none"> Insulation product: EPS according to EN 13163 see Annex No. 1 for product characteristics | / | 50 - 400 |
| | <ul style="list-style-type: none"> Supplementary adhesives: min. bonded surface: 40 % - HECK BK - cement based powder requiring addition of water - 0.26 – 0.28 l/kg - HECK K+A (grey/white) - cement based powder requiring addition of water - 0.22 – 0.26 l/kg - HECK K+A PLUS - cement based powder requiring addition of water - 0.42 – 0.42 l/kg - HECK K+A ZF 70 - ready to use paste - polymer dispersion | 3.0 - 6.0 (dry) 3.0 - 6.0 (dry) 3.0 - 6.0 (dry) cca. 4 (paste) | / / / / |
| | <ul style="list-style-type: none"> Anchors see Annex No. 3 for individual product characteristics. In addition to the following list. In addition to the following list, other anchors can be used provided that they comply with the requirements introduced in the Annex No. 3. | | |
| | <ul style="list-style-type: none"> - KOELNER TFIX-8P plastic nailed-in anchors - ejotherm STR U - ejotherm STR U 2G plastic screw-in anchors - BRAVOLL® PTH-KZ 60/8 plastic nailed-in anchors - BRAVOLL® PTH-S plastic nailed-in anchors - Koelner TFIX-8S plastic screw-in anchors - Klimas Wkret-met screw-in plug eco-drive W plastic screw-in anchors - Hilti T-Save HTS-P und HTS-M plastic nailed-in anchors - Hilti-Dämmstoff-Befestigungselement XI-FV powder actuated fastener - HTR-P plastic screw-in anchors - ejotherm NTK U plastic nailed-in anchors | ETA-13/0845 ETA-04/0023 ETA-05/0055 ETA-08/0267 ETA-11/0144 ETA-13/0107 ETA -14/0400 ETA-03/0004 ETA-16/0116 ETA-07/0026 | |

| | Components | Coverage (kg/m ²) | Thickness (mm) |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Base coat | <ul style="list-style-type: none"> • HECK K+A (grey/white) cement based powder requiring addition of water 0.24 l/kg • HECK K+A PLUS cement based powder requiring addition of water - 0.22 – 0.26 l/kg • HECK K+A ZF 70 cement based powder requiring addition of water 0.24 l/kg | <p>3.5 – 12.0 (dry mixture)</p> <p>5.4 – 9.1 (prepared mix)</p> <p>4.2 – 7.2 (prepared mix)</p> | <p>Minimal: 3.0 Maximal: 10.0</p> <p>Minimal: 3.0 Maximal: 5.0</p> <p>Minimal: 3.0 Maximal: 6.0</p> |
| Reinforcement | <ul style="list-style-type: none"> • Standard mesh applied in single layer see Annex No. 4 for product characteristics: - HECK AGG Fine - single layer application only | / | / |
| Key coat | <ul style="list-style-type: none"> - HECK UG - instructions to the installer concerning the use of the key coat remains the responsibility of the ETA holder - possible use only with HECK K+A base coat - see description of the particular finishing if the key coat can or cannot be applied - pigmented ready to use liquid | 0.12 – 0.13 l/m ² | / |
| Finishing coats | <ul style="list-style-type: none"> • Only hereafter specified combinations of base coats, key coats and finishing coats are permitted: | | |
| | <ul style="list-style-type: none"> • Powder to be mixed with water. Based on mineral binder: - Rajasil EP WD - grain structure (particle size 1.0: 2.5; 3.0; 4.0; 6.0; 8.0; 12.0 mm) - to be used with: base coat HECK K+A (no key coat) - HECK EP KR JURA - grain structure (particle size 1.5: 2.5; 3.0 mm) - to be used with: base coat HECK K+A (no key coat) - HECK ED - grain structure (particle size 0.7 mm) - Structure Kratzputz KC (1.5; 2.0; 3.0; 4 mm) - Structure Rillenputz R (1.5; 2.0; 3.0; 4 mm) - Structure Waschputz (0.5; 1.5 mm) to be used without the key coat - HECK STR - Structure Kratzputz KC (1.5, 2.0, 3.0, 4.0) - Structure Rillenputz R (3.0, 4.0) - to be used with: base coat HECK K+A key coat HECK UG allowed | <p>3.5 – 25.0</p> <p>23 - 25</p> <p>3.0 – 4.5</p> <p>3.0 – 4.5</p> <p>4.0 – 11.0</p> <p>3.0 – 4.5</p> | <p>3.0 – 12.0</p> <p>11.5 – 12.5</p> <p>regulated by the particle size</p> <p>3.0 – 8.0</p> <p>regulated by the particle size</p> |

| | Components | Coverage (kg/m²) | Thickness (mm) |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|--------------------------------|
| Finishing coats | <ul style="list-style-type: none"> - HECK K+A PLUS - particle size max. 0.7 mm - to be used with: base coat HECK K+A <i>PLUS</i> (no key coat) | 3.6 – 9.1 | 2.0 – 5.0 |
| | <ul style="list-style-type: none"> • Ready to use paste. Based on acrylic binder: - HECK SIP - Structure Kratzputz KC (1.5; 2.0; 3.0 mm) - Structure Rillenputz R (1.5; 2.0; 3.0 mm) - to be used with: base coat HECK K+A + key coat HECK UG allowed - HECK KHP - Structure Kratzputz KC (1.5; 2.0; 3.0 mm) - Structure Rillenputz R (1.5; 2.0; 3.0 mm) - Structure Modelierputz - to be used with: base coat HECK K+A + key coat HECK UG allowed base coat HECK K+A <i>ZF 70</i> (no key coat) | 2.8 – 5.0 | regulated by the particle size |
| | <ul style="list-style-type: none"> • Ready to use paste Based on water-glass-based binder: - HECK SHP - Structure Kratzputz KC (1.5; 2.0; 3.0 mm) - Structure Rillenputz R (1.5; 2.0; 3.0 mm) - to be used with: base coat HECK K+A + key coat HECK UG allowed base coat HECK K+A <i>ZF 70</i> (no key coat) | 2.0 – 4.0 | regulated by the particle size |
| Ancillary materials | Remain under the manufacturer's responsibility | | |

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

2.1 Intended use

This ETICS is intended for use as external insulation of buildings' walls. The walls are made of masonry (bricks, blocks, stones ...) or concrete (cast on site or as prefabricated panels). The characteristics of the walls shall be verified prior to use of the ETICS, especially regarding conditions for reaction to fire classification and for fixing of the ETICS either by bonding or mechanically. The ETICS is designed to give the wall to which it is applied satisfactory thermal insulation.

The ETICS is made of non load-bearing construction elements. It does not contribute directly to the stability of the wall on which it is installed, but it can contribute to durability by providing enhanced protection from the effect of weathering.

The ETICS can be used on new or existing (retrofit) vertical walls. It can also be used on horizontal or inclined surfaces which are not exposed to precipitation.

The ETICS is not intended to ensure the airtightness of the building structure.

The choice of the method of fixing depends on the characteristics of the substrate, which may need preparation (see cl. 7.2.1 of the ETAG 004) and shall be done in accordance with the national instructions.

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

2.2 Manufacturing

The European Technical Assessment is issued for the ETICS on the basis of agreed data/information, deposited with the Technical and Test Institute Prague, which identifies the ETICS that has been assessed and judged.

2.3 Design and installation

The installation instructions including special installation techniques and provisions for the qualification of the personnel are given in the manufacturer's technical documentation.

Design, installation and execution of ETICS are to be in conformity with national documents. Such documents and the level of their implementation in Member States' legislation are different. Therefore, the assessment and declaration of performance are done taking into account general assumptions introduced in the chapters 7.1 and 7.2 of ETAG 004 used as EAD, which summarize how information introduced in the ETA and related documents is intended to be used in the construction process and gives advice to all parties interested when normative documents are missing.

2.4 Packaging, transport and storage

The information on packaging, transport and storage is given in the manufacturer's technical documentation. It is the responsibility of the manufacturer(s) to ensure that this information is made known to the concerned people.

2.5 Use, maintenance and repair

The provisions made in this European Technical Assessment are based on an assumed working life of the ETICS of at least 25 years, provided that the requirements for the packaging, transport, storage, installation as well as appropriate use, maintenance and repair are met. The indication given on the working life cannot be interpreted as a guarantee given by the manufacturer or the Technical Assessment Body, but should only be regarded as a means for choosing the appropriate products in relation to the expected, economically reasonable working life of the works.

The finishing coat shall normally be maintained in order to fully preserve the ETICS performance. Maintenance includes at least:

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

Necessary repairs should be performed as soon as the need has been identified.

It is important to be able to carry out maintenance as far as possible using readily available products and equipment, without spoiling appearance. Only products which are compatible with the ETICS shall be used.

The information on use, maintenance and repair is given in the manufacturer's technical documentation. It is the responsibility of the manufacturer(s) to ensure that this information is made know to the concerned people.

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

The performances of the kit as described in this chapter are valid provided that the components of the kit comply with Annexes 1 - 5.

3.1 Safety in case of fire (BWR 2)

3.1.1 Reaction to fire (ETAG 004 - clause 5.1.2.1, EN 13501-1)

Table No. 2

| Configuration | Organic content | Flame retardant content | Euroclass according to EN 13501-1 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------|
| Adhesive | max. 7.5 % | No flame retardants for powdered products min. 10% for the paste product | / |
| Boards of expanded polystyrene EPS Maximal density of 20 kg/m ³ | / | In quantity ensuring Euroclass E according to EN 13501-1 | |
| Rendering consisting of base coat: HECK K+A finishing coat: Rajasil EP WD HECK EP KR JURA HECK ED HECK STR HECK SIP | Base coat: max. 2.5 % Finishing coat: max. 3.5 % | No flame retardant | B – s1, d0 |
| Rendering consisting of base coat: HECK K+A finishing coat: HECK KHP HECK SHP | Base coat: max. 2.5 % Finishing coat: max. 6.5 % | No flame retardant | B – s2, d0 |
| Rendering consisting of base coat: HECK K+A PLUS finishing coat: HECK K+A PLUS | Base coat: max. 4.0 % Finishing coat: max. 4.0 % | No flame retardant | B – s2, d0 |
| Rendering consisting of base coat: HECK K+A ZF 70 finishing coat: HECK KHP HECK SHP | Base coat: max. 7.5 % Finishing coat: max. 6.5 % | No flame retardant | B – s2, d0 |

Note: A European reference fire scenario has not been laid down for facades. In some Member States, the classification of ETICS according to EN 13501-1 might not be sufficient for the use in facades. An additional assessment of ETICS according to national provisions (e.g. on the basis of a large scale test) might be necessary to comply with Member State regulations, until the existing European classification system has been completed.

3.2 Hygiene, health and environment (BWR 3)

3.2.1 Water absorption (ETAG 004 - clause 5.1.3.1)

- Base coat **HECK K+A**

Water absorption after 1 hour < 1 kg/m²

Water absorption after 24 hours < 0.5 kg/m²

- Rendering system:

Table No. 3

| | | Water absorption after 24 hours | |
|----------------------------------------------------------------------------------------------------------|------------------------|---------------------------------|-------------------------|
| | | < 0.5 kg/m ² | ≥ 0.5 kg/m ² |
| Rendering system: Base coat HECK K+A + finishing coats indicated hereafter: | Rajasil EP WD | X | |
| | HECK EP KR JURA | X | |
| | HECK ED | | X |
| | HECK STR | X | |
| | HECK SIP | X | |
| | HECK KHP | X | |
| | HECK SHP | X | |

Base coat **HECK K+A PLUS**

Water absorption after 1 hour < 1 kg/m²

Water absorption after 24 hours < 0.5 kg/m²

- Rendering system:

Table No. 4

| | | Water absorption after 24 hours | |
|---------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------|-------------------------|
| | | < 0.5 kg/m ² | ≥ 0.5 kg/m ² |
| Rendering system: Base coat HECK K+A PLUS + finishing coats indicated hereafter: | HECK K+A PLUS | X | |
| | | | |

Base coat **HECK K+A ZF 70**

Water absorption after 1 hour < 1 kg/m²

Water absorption after 24 hours < 0.5 kg/m²

- Rendering system:

Table No. 5

| | | Water absorption after 24 hours | |
|----------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------|-------------------------|
| | | < 0.5 kg/m ² | ≥ 0.5 kg/m ² |
| Rendering system: Base coat HECK K+A ZF 70 + finishing coats indicated hereafter: | HECK KHP | X | |
| | HECK SHP | X | |

3.2.2 Watertightness (ETAG 004 - clause 5.1.3.2)

3.2.2.1 Hygrothermal behaviour

Pass (without defects).

3.2.2.2 Freeze–thaw behaviour

Freeze-thaw resistant - according to the water absorption test result.

Finishing coats that proved to have water absorption value, in accordance with the water absorption test, after 24 hours lower than 0.5 kg/m² were assessed as freeze-thaw resistant.

Finishing coats that proved to have water absorption value, in accordance with water absorption test, after 24 hours higher than 0.5 kg/m² were subjected to the freeze-thaw test and are assessed as freeze-thaw resistant.

Pass (without defects, satisfactory bond strength).

3.2.3 Impact resistance (ETAG 004 - clause 5.1.3.3)

Table No. 6

| Rendering system: base coat HECK K+A (min. 4 mm) + reinforcement and finishing coats indicated hereafter: | Single standard mesh |
|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Rajasil EP WD (min. 10 mm) | Category I |
| HECK EP KR JURA (min. 10 mm) | Category I |
| HECK ED (min. 4 mm) | Category II |
| HECK STR (min. 2 mm) | Category II |
| HECK SIP (min. 1.5 mm) | Category I |
| HECK KHP (min. 1.5 mm) | Category I |
| HECK SHP (min. 2.0 mm) | Category I |

Table No. 7

| Rendering system: base coat HECK K+A PLUS (min. 4 mm) + reinforcement and finishing coats indicated hereafter: | Single standard mesh |
|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| HECK K+A PLUS (min. 3 mm) | Category II |

Table No. 8

| Rendering system: base coat HECK K+A ZF 70 + reinforcement and finishing coats indicated hereafter: | Single standard mesh |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| HECK KHP (total rendering thickness min. 6 mm) | Category II |
| HECK SHP (total rendering thickness min. 6 mm) | Category II |

3.2.4 Water vapour permeability (ETAG 004 - clause 5.1.3.4)

Table No. 9

| Rendering system: base coat HECK K+A + reinforcement and finishing coats indicated hereafter | Equivalent air thickness s_d |
|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| Rajasil EP WD (max. 10 mm) | ≤ 0.4 m |
| HECK EP KR JURA (max. 10 mm) | ≤ 0.4 m |
| HECK ED (max. 4 mm) | ≤ 0.1 m |
| HECK STR (max. 4 mm) | ≤ 0.2 m |
| HECK SIP (max. 3 mm) | ≤ 0.2 m |
| HECK KHP (max. 3 mm) | ≤ 0.3 m |
| HECK SHP (max. 3 mm) | ≤ 0.3 m |

Table No. 10

| Rendering system: base coat HECK K+A PLUS + reinforcement and finishing coats indicated hereafter | Equivalent air thickness s_d |
|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| HECK K+A PLUS (max. 4 mm) | ≤ 0.1 m |

Table No. 11

| Rendering system: base coat HECK K+A ZF 70 + reinforcement and finishing coats indicated hereafter | Equivalent air thickness s_d |
|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| HECK KHP (max. 6 mm) | ≤ 0.6 m |
| HECK SHP (max. 6 mm) | ≤ 0.6 m |

**3.2.5 Release of dangerous substances
(ETAG 004 - clause 5.1.3.5, EOTA TR034)**

Kit not assessed according to EOTA TR 034.

3.3 Safety and accessibility in use (BWR 4)

**3.3.1 Bond strength between base coat and insulation product
(ETAG 004 - clause 5.1.4.1.1)**

- Initial state: bond strength ≥ 0.080 MPa and a cohesive failure in the insulation product
- After hygrothermal cycles: bond strength ≥ 0.080 MPa and cohesive failure in the insulation product
- After freeze-thaw cycles: test not required (see Cl. 3.2.1 of this ETA)

**3.3.2 Bond strength between adhesive and substrate / insulation product
(ETAG 004 - clauses 5.1.4.1.2, 5.1.4.1.3)**

Table No. 12

| | | Initial state | 48 hrs. immersion in water + 2 hrs. 23°C/50% RH | 48 hrs. immersion in water + 7 days 23°C/50% RH |
|-------------------------------------------------------------------------------------------------|----------------------------|-----------------|-------------------------------------------------|-------------------------------------------------|
| HECK BK HECK K+A (grey/white) HECK K+A PLUS HECK K+A ZF 70 | Concrete | ≥ 0.25 MPa | ≥ 0.08 MPa | ≥ 0.25 MPa |
| | Expanded polystyrene (EPS) | ≥ 0.08 MPa | ≥ 0.03 MPa | ≥ 0.08 MPa |

3.3.3 Bond strength after ageing (ETAG 004 - clauses 5.1.7.1)

- After ageing by hygrothermal cycles: bond strength ≥ 0.08 MPa and cohesive failure in the insulation product
- After freeze-thaw cycles: test not required (see Cl. 3.2.2.2 of this ETA)/ bond strength ≥ 0.080 MPa and cohesive failure in the insulation product

3.3.4 Fixing strength (ETAG 004 - clause 5.1.4.2)

Test not required (no limitation of ETICS length).

3.3.5 Wind load resistance (ETAG 004 - clause 5.1.4.3)

- **ETICS with profiles**

Table No. 13

| | | |
|-----------------------------|-----------------------------------------------|----------------------------------------------------------------------------------------|
| Profiles description | Dimensions | See Annex No. 5 |
| | Fixing of the profiles | Horizontal profiles fixed every 300 mm and 494 mm long vertical connection profiles |
| Anchor description | Trade name | See Table No. 1 |
| EPS characteristics | Dimensions | 500 mm × 500 mm |
| | Thickness (mm) | ≥ 60 |
| | Tensile strength perpendicular to faces (kPa) | ≥ 150 |
| Maximal load | Defined by static foam block test | min. value: 0.95 kN mean value: 1.10 kN |

- **ETICS with anchors**

Table No. 14

| | | | | |
|----------------------------|------------------------------------------------------|--------------------|--------------------------------------------------------------------|----------------------|
| Anchor description | Trade name | | See Annex No. 3 | |
| | | | Surface assembly | Countersunk assembly |
| | Plate diameter (mm) | | 60 or more | |
| EPS characteristics | Thickness (mm) | | ≥ 60 | ≥ 100 |
| | Tensile strength perpendicular to faces (kPa) | | ≥ 100 | ≥ 100 |
| Maximal load | Anchors placed at the body of the insulation product | R_{panel} | min. value: 0.51 kN mean value: 0.52 kN | |
| | Anchors placed at joints of the insulation product | R_{joint} | min. value: 0.40 kN mean value: 0.43 kN | |

Table No. 15

| | | | |
|----------------------------|------------------------------------------------------|--------------------|--------------------------------------------------------------------|
| Anchor description | Trade name | | Hilti HTH (ETA-15/0464) |
| | Assembly method | | Special assembly |
| | Plate diameter (mm) | | 60 |
| EPS characteristics | Thickness (mm) | | ≥ 100 |
| | Tensile strength perpendicular to faces (kPa) | | ≥ 151.9 in dry condition |
| Maximal load | Anchors placed at the body of the insulation product | R_{panel} | min. value: 0.64 kN mean value: 0.68 kN |
| | Anchors placed at joints of the insulation product | R_{joint} | min. value: 0.54 kN mean value: 0.60 kN |

Table No. 16

| | | | |
|----------------------------|------------------------------------------------------|--------------------|--------------------------------------------------------------------|
| Anchor description | Trade name | | See Annex No. 3 |
| | Assembly method | | Surface assembly |
| | Plate diameter (mm) | | 60 |
| EPS characteristics | Thickness (mm) | | ≥ 60 |
| | Tensile strength perpendicular to faces (kPa) | | ≥ 80 |
| Maximal load | Anchors placed at the body of the insulation product | R_{panel} | min. value: 0.35 kN mean value: 0.36 kN |
| | Anchors placed at joints of the insulation product | R_{joint} | min. value: 0.30 kN mean value: 0.31 kN |

3.3.6 Render strip tensile test

No performance assessed.

3.4 Protection against noise (BWR 5)

3.4.1 Airborne sound insulation

No performance assessed.

3.5 Energy economy and heat retention (BWR 6)

3.5.1 Thermal resistance

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

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

Where:

- $\chi_p \times n$ has only to be taken into account if it is greater than 0.04 W/(m².K)
- U_c global (corrected) thermal transmittance of the covered wall (W/ (m².K))
- n number of anchors (through insulation product) per 1 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:
- = 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
($\chi_p \times n$ negligible for $n < 20$)
 - = 0.004 W/K for anchors with a galvanized steel screw with the head covered by a plastic material
($\chi_p \times n$ negligible for $n < 10$)
 - = negligible for anchors with plastic nails (reinforced or not with glass fibres ...)
- U thermal transmittance of the current part of the covered wall (excluding thermal bridges) (W/ (m².K)) determined as follows:

$$U_c = \frac{1}{R_i + R_{render} + R_{substrate} + R_{se} + R_{si}}$$

Where:

- R_i thermal resistance of the insulation product (according to declaration in reference to EN 13163) in (m².K)/W
- R_{render} thermal resistance of the rendering system (about 0.02 in (m².K)/W) or determined by test according to EN 12667 or EN 12664
- $R_{substrate}$ thermal resistance of the substrate of the building (concrete, brick ...) in (m².K)/W
- R_{se} external superficial thermal resistance in (m².K)/W
- R_{si} internal superficial thermal resistance in (m².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.

3.6 Sustainable use of natural resources (BWR 7)

No performance assessed.

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

According to the European Commission decision 97/556/EC amended by the European Commission decision 2001/596/EC, the AVCP systems 1 and 2+ are valid (further described in Annex V to Regulation (EU) No. 305/2011).

Table No. 17

| Product(s) | Intended use(s) | Level(s) or class(es) (Reaction to fire) | System(s) |
|---------------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------|
| External thermal insulation composite systems/kits (ETICS) with rendering | 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 to E) ⁽³⁾ , F | 2+ |
| | 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 EAD:

In order to help the Notified Body to make an evaluation of conformity, the Technical Assessment Body issuing the ETA shall supply the information detailed below. This information together with the requirements given in EC Guidance Paper B will generally form the basis on which the factory production control (FPC) is assessed by the Notified Body.

This information shall initially be prepared or collected by the Technical Assessment Body and shall be agreed with the manufacturer. The following gives guidance on the type of information required:

1) ETA

Where confidentiality of information is required, this ETA makes reference to the manufacturer's technical documentation which contains such information.

2) Basic manufacturing process

The basic manufacturing process is described in sufficient detail to support the proposed FPC methods.

The different components of the ETICS are generally manufactured using conventional techniques. Any critical process or treatment of the components which affects performance are highlighted in the manufacturer's documentation.

3) Product and materials specifications

The manufacturer's documentation includes:

- detailed drawings (possibly including manufacturing tolerances),
- incoming (raw) materials specifications and declarations,
- references to European and/or international standards,
- technical data sheets.

4) Control Plan (as a part of FPC)

The manufacturer and the Technical and Test Institute for Construction Prague have agreed a Control Plan which is deposited with the Technical and Test Institute for Construction Prague in documentation which accompanies the ETA. The Control Plan specifies the type and frequency of checks/tests conducted during production and on the final product. This includes the checks conducted during manufacture on properties that cannot be inspected at a later stage and for checks on the final product.

Products not manufactured by the ETICS manufacturer shall also be tested according to the Control Plan. It must be demonstrated to the Notified Body that the FPC system contains elements securing that the ETICS manufacturer takes products conforming to the Control Plan from his supplier(s).

Where materials/components are not manufactured and tested by the supplier in accordance with agreed methods, then where appropriate they shall be subject to suitable checks/tests by the ETICS manufacturer referring to the Control Plan once again.

In cases where the provisions of the European Technical Assessment and its Control Plan are no longer fulfilled, the Notified Body shall withdraw the certificate and inform the Technical and Test Construction Institute Prague without delay.

Issued in Prague on 30/04/2018

By

Ing. Mária Schaan

Head of the Technical Assessment Body

Annexes:

- | | |
|-------------|-------------------------------------------------------------------------------------------------------------|
| Annex No. 1 | Insulation product characteristics (all types of the system fixation) |
| Annex No. 2 | Insulation product characteristics (only mechanically fixed system with anchors and supplementary adhesive) |
| Annex No. 3 | Anchors, description of individual product characteristics contained in the ETA |
| Annex No. 4 | Description of glass fibre mesh |
| Annex No. 5 | PVC profiles |

**Annex No. 1 Insulation product characteristics
(all types of the system fixation)**

| Description and characteristics | | Regulation | Declared characteristics of EPS boards | |
|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|------------|------------------------------------------------|-------------------------------------------|
| | | | Class, level according to EN 13163 | Value |
| Reaction to fire | | EN 13501 | E | Apparent density $\leq 20 \text{ kg/m}^3$ |
| Thermal resistance | | EN 12667 | Defined in CE mark in accordance with EN 13163 | |
| Thickness | | EN 823 | T(1) | $\pm 1 \text{ mm}$ |
| Length | | EN 822 | L(2) | $\pm 2 \text{ mm}$ |
| Width | | | W(1) | $\pm 1 \text{ mm}$ |
| Squareness | | EN 824 | S(2) | $\pm 2 \text{ mm/m}$ |
| Flatness | | EN 825 | P(3) | 3 mm |
| Surface | | ETAG 004 | Cut surface (homogenous, without coating) | |
| Dimensional stability | Under defined temperature and humidity conditions | EN 1604 | DS(70,-)1 | 1% |
| | | | DS(70,90)1 | 1% |
| | Under constant laboratory conditions | EN 1603 | DS(N)2 | 0.2% |
| Short term water absorption at partial immersion | | EN 1609 | --- | $< 1 \text{ kg/m}^2$ |
| Diffusion factor (μ) | | EN 13163 | MU 20 – 40 MU 30 – 70 | 20 - 70 |
| Tensile strength perpendicular to the faces of insulation product (bonded or mechanically fixed with anchors system) | | EN 1607 | TR100 | $\geq 100 \text{ kPa}$ |
| Tensile strength perpendicular to the faces of insulation product (system mechanically fixed with profiles) | | | TR150 | $\geq 150 \text{ kPa}$ |
| Shear strength | | EN 12090 | SS20 | $\geq 20 \text{ kPa}$ |
| Shear modulus of elasticity | | | GM1000 | $\geq 1000 \text{ kPa}$ |

Note: Classes and levels for individual characteristics comply with EN 13163: 2012+A1:2015. Only insulation products of the same or better declared characteristics, as stated in the table above, can be used in this ETICS.

Reaction to fire E has to be proved for every insulation product also at 10 mm products thickness.

**Annex No. 2 Insulation product characteristics
(only mechanically fixed system with anchors and
supplementary adhesive)**

| Description and characteristics | | Regulation | Declared characteristics of EPS boards | |
|-------------------------------------------------------------------|---------------------------------------------------|------------|------------------------------------------------|-------------------------------------------|
| | | | Class, level according to EN 13163 | Value |
| Reaction to fire | | EN 13501 | E | Apparent density $\leq 20 \text{ kg/m}^3$ |
| Thermal resistance | | EN 12667 | Defined in CE mark in accordance with EN 13163 | |
| Thickness | | EN 823 | T(1) | $\pm 1 \text{ mm}$ |
| Length | | EN 822 | L(2) | $\pm 2 \text{ mm}$ |
| Width | | | W(1) | $\pm 1 \text{ mm}$ |
| Squareness | | EN 824 | S(2) | $\pm 2 \text{ mm/m}$ |
| Flatness | | EN 825 | P(3) | 3 mm |
| Surface | | ETAG 004 | Cut surface (homogenous, without coating) | |
| Dimensional stability | Under defined temperature and humidity conditions | EN 1604 | DS(70,-)1 | 1% |
| | | | DS(70,90)1 | 1% |
| | Under constant laboratory conditions | EN 1603 | DS(N)2 | 0.2% |
| Short term water absorption at partial immersion | | EN 1609 | --- | $< 1 \text{ kg/m}^2$ |
| Diffusion factor (μ) | | EN 13163 | MU 20 – 40 MU 30 – 70 | 20 - 70 |
| Tensile strength perpendicular to the faces of insulation product | | EN 1607 | TR80 | $\geq 80 \text{ kPa}$ |
| Shear modulus of elasticity | | EN 12090 | GM300 | $\geq 300 \text{ kPa}$ |

Note: Classes and levels for individual characteristics comply with EN 13163: 2012+A1:2015. Only insulation products of the same or better declared characteristics, as stated in the table above, can be used in this ETICS.

Reaction to fire E has to be proved for every insulation product also at 10 mm products thickness.

Annex No. 3 Anchors, description of individual product characteristics contained in the ETA

| Bonded or mechanically fixed and bonded system with anchors | | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------------------------------|--------------------------------|-----------------------------------|
| Trade name, additional data | Plate diameter (mm) | Characteristic pull-out resistance | Plate stiffness (kN/mm) | Load at plate rupture (kN) |
| Surface assembly | | | | |
| KOELNER TFIX-8P - RAWLPLUG S.A. - possible additional plates: KWL 140 KWL 110 KWL 090 | 60 | See ETA-13/0845 | 0.30 | 1.38 |
| ejotherm STR U ejotherm STR U 2G - EJOT Baubefestigungen GmbH - possible additional plates: SBL 140 plus VT 90 | 60 | See ETA-04/0023 | 0.60 | 2.08 |
| BRAVOLL® PTH-KZ 60/8 - ITW Construction Products CZ s.r.o. - possible additional plates: BRAVOLL® IT PTH 100 BRAVOLL® IT PTH 140 | 60 | See ETA-05/0055 | 0.70 | 2.10 |
| BRAVOLL® PTH-S - ITW Construction Products CZ s.r.o. - possible additional plates: BRAVOLL® IT PTH 100 BRAVOLL® IT PTH 140 | 60 | See ETA-08/0267 | 0.90 | 2.60 |
| KOELNER TFIX-8S - RAWLPLUG S.A. - possible additional plates: KWL 140 KWL 110 KWL 090 | 60 | See ETA-11/0144 | 0.60 | 2.04 |
| Hilti T-Save HTS-P und HTS-M - HILTI Aktiengesellschaft - possible additional plates: HDT 90 HDT 140 | 60 | See ETA-14/0400 | 0.60 | 1.60 |

| Bonded or mechanically fixed and bonded system with anchors | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------------------------------|--------------------------------|-----------------------------------|
| Trade name, additional data | Plate diameter (mm) | Characteristic pull-out resistance | Plate stiffness (kN/mm) | Load at plate rupture (kN) |
| Hilti-Dämmstoff-Befestigungselement XI-FV - HILTI Aktiengesellschaft - possible additional plates: T90 HDT90 HDT 140 | 60 | See ETA-03/0004 | 0.40 | 1.60 |
| HTR-P - HILTI Aktiengesellschaft - possible additional plates: HDT 90 HDT 140 | 60 | See ETA-16/0116 | 0.60 | 1.40 |
| ejotherm NTK U - EJOT Baubefestigungen GmbH - possible additional plates: SBL 140 plus VT 90 | 60 | See ETA-07/0026 | 0.50 | 1.44 |
| Countersunk assembly | | | | |
| ejotherm STR U ejotherm STR U 2G - EJOT Baubefestigungen GmbH - possible additional plate: VT 90 plus 2G | 60 | See ETA-04/0023 | 0.60 | 2.08 |
| BRAVOLL® PTH-KZ 60/8 - ITW Construction Products CZ s.r.o. - possible additional plates: BRAVOLL® ZT 100 BRAVOLL® ZP | 60 | See ETA-05/0055 | 0.70 | 2.10 |
| Klimas Wkret-met screw-in plug eco-drive W - Klimas Wkret-met Sp. z o.o. | 60 | See ETA-13/0107 | 0.60 | 2.80 |
| Hilti T-Save HTS-P und HTS-M - HILTI Aktiengesellschaft | | See ETA-14/0400 | 0.60 | 1.60 |

| Mechanically fixed system with profiles | |
|-----------------------------------------|------------------------------------|
| Trade name | Characteristic pull-out resistance |
| ejothem SK U | ETA-02/0018 |
| WS 8 L | ETA-02/0019 |
| WS 8 N | ETA-03/0019 |
| ejothem SDK U | ETA-04/0023 |
| IsoFux ND-8Z | ETA-04/0032 |
| SDF-K plus, SDF-S plus | ETA-04/0064 |
| ejothem NK U | ETA-05/0009 |

In addition to this list, anchors assessed in accordance with EAD 330196-00-0604 or ETAG 014 can be used provided that such anchors meet the following requirements:

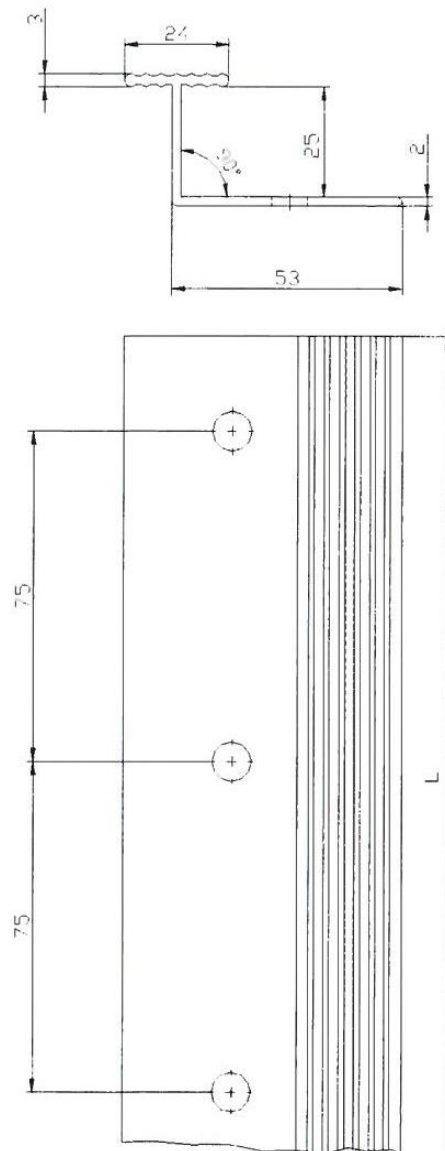
| | Requirements | |
|---------------------------------|--------------------------------------------------------------------------------|-------------|
| Plate diameter | ≥ 60 mm | |
| Plate stiffness | Surface assembly: | ≥ 0.3 kN/mm |
| | Countersunk assembly: | ≥ 0.6 kN/mm |
| Rupture force of anchor's plate | ≥ Higher of figures R_{panel} and R_{joint} in relevant table in Cl. 3.3.5 | |

Annex No. 4 Description of glass fibre mesh

| | Description | Strength after ageing | |
|----------------------|---------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------------------------------------|
| | Standard fibre mesh applied in one or two layers with aperture size | Absolute strength after ageing (N/mm) | Relative residual strength after ageing, of the strength in the as-delivered state (%) |
| HECK AGG Fine | 4.0 × 4.0 mm | ≥ 20 | ≥ 50 |

Annex No. 5 PVC profiles

Horizontal profil – "HECK Halteleiste PVC" (dimensions in millimetres)



Vertical connection profil "HECK Verbindungsleiste PVC" (dimensions in millimetres)

