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**TECHNICKÝ A SKÚŠOBNÝ ÚSTAV STAVEBNÝ**  
BUILDING TESTING AND RESEARCH INSTITUTE

**ČLEN EOTA**  
EOTA MEMBER

**European Technical Approval**

**ETA – 12/0378**

(English translation prepared by TSÚS – Original version in Slovak language)

**Trade name:**

*Obchodný názov:*

**Baumit StarSystem EPS**

**Holder of approval:**

*Držiteľ osvedčenia:*

**Baumit Beteiligungen GmbH  
Wopfing 156  
A-2754 Waldegg  
Austria**

**Generic type and use  
of construction product:**

*Typ a účel použitia  
stavebného výrobku:*

**External Thermal Insulation Composite System with rendering on  
expanded polystyrene boards for the use as external insulation to  
the walls of buildings**

*Vonkajší tepelnoizolačný kompozitný systém s omietkou na báze dosiek  
z expandovaného polystyrénu na použitie ako vonkajšia tepelná ochrana  
stien budov*

**Validity**

*Platnosť*

**from:**

*od:*

**28. 06. 2013**

**to:**

*do:*

**30. 09. 2017**

**Manufacturing plant:**

*Miesto výroby:*

**Baumit Beteiligungen GmbH  
Wopfing 156  
A-2754 Waldegg  
Austria**

**This European Technical  
Approval contains:**

*Toto európske technické  
osvedčenie obsahuje:*

**41 pages including 1 annex**

*41 strán vrátane 1 prílohy*

**This European Technical  
Approval replaces:**

*Toto európske technické  
osvedčenie nahrádza:*

**ETA-12/0378 with validity from 19. 04. 2013 to 30. 09. 2017**

*ETA-12/0378 s platnosťou od 19. 04. 2013 do 30. 09. 2017*



**European Organisation for Technical Approvals**  
**Európska organizácia pre technické osvedčovanie**

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  - Guideline for European Technical Approval of „External Thermal Insulation Composite Systems with rendering“ ETAG No. 004, edition 2011.
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<sup>1</sup> Official Journal of the European Communities No. L40, 11.2.1989, p. 12.

<sup>2</sup> Official Journal of the European Communities No. L220, 30.8.1993, p. 1.

<sup>3</sup> Official Journal of the European Union No. L284, 31.10.2003, p. 1.

<sup>4</sup> Official Journal of the European Communities No. L17, 20.1.1994, p. 34.

## **II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL**

### **1 Definition of products and intended use**

The External Thermal Insulation Composite System, "Baumit StarSystem EPS" called ETICS in the following text, is designed and installed in accordance with the ETA-holder's design and installation instructions, deposited with Building Testing and Research Institute. The ETICS comprises the following components, which are factory-produced by the ETA-holder or a supplier. The holder is ultimately responsible for the ETICS.

This ETICS can be sold under the trade name "Baumit StarSystem EPS" with trade names of components which are also given in the Annex 1.

## 1.1 Definition of the construction product (kit)

|  | <b>Components</b><br>(see Clause 2.3 for further description, characteristics and performances of the components)  | <b>Coverage</b><br>kg/m <sup>2</sup>  | <b>Thickness</b><br>mm |
|--|--|---|------------------------|
| Insulation materials with associated methods of fixing | <p>Bonded ETICS with supplementary anchors. According to ETA-holder's prescription the minimal bonded surface shall be 20 %. National application documents shall be taken into account).</p> <ul style="list-style-type: none"> <li>• <b>Insulation product:</b><br/>Expanded polystyrene boards (see Clause 2.3.1 of ETA)</li> <li>• <b>Adhesives:</b> <ul style="list-style-type: none"> <li>- <b>Baumit StarContact/Baumit KlebeSpachtel</b><br/>Preparation: mixing of 6 l to 7 l water / 25 kg powder<br/>Composition: cement, sands, additives</li> <li>- <b>Baumit StarContact KBM-Fix/Baumit KlebeSpachtel KBM-Fix/Baumit StarContact light</b><br/>Preparation: mixing of 9 l to 10 l water / 25 kg powder<br/>Composition: white cement, lime, mineral light aggregates, silicate sands, additives</li> <li><b>Baumit StarContact white/Baumit StarContact KBM/Baumit KlebeSpachtel KBM</b><br/>Preparation: mixing of 6 l water / 25 kg powder<br/>Composition: white cement, lime, organic bonding agents, sands, additives</li> <li><b>Baumit NivoFix/Baumit PaneloFix/ Baumit WDVS-Kleber</b><br/>Preparation: mixing of 9 l to 10 l water / 25 kg powder<br/>Composition: white cement, lime, mineral light aggregates, silicate sands, additives</li> <li><b>Baumit StarContact forte/Baumit DiskschichtKlebespachtel</b><br/>Preparation: mixing of 6 l to 8 l water / 25 kg powder<br/>Composition: cement, lime, organic binders, sands, perlite, additives</li> </ul> </li> <li>• <b>Supplementary anchors</b> <ul style="list-style-type: none"> <li>- See list of anchors in table in Clause 2.3.2 of ETA.</li> </ul> </li> </ul> | <p>/</p> <p>4,0 to 5,5<br/>(powder)</p> <p>3,0 to 4,0<br/>(powder)</p> <p>4,0 to 5,0<br/>(powder)</p> <p>5,0<br/>(powder)</p> <p>5,0<br/>(powder)</p> | 20 to 200              |

|  |   |                     |            |
|--|---|---------------------|------------|
|  | <p>Mechanically fixed ETICS with anchors and supplementary adhesive (see Clause 2.2.8.3) for possible associations EPS/anchors). According to ETA-holder's prescription the minimal bonded surface shall be at least 20 %. National application documents shall be taken into account.</p> <ul style="list-style-type: none"> <li> <b>Insulation products</b><br/> Expanded polystyrene boards (see Clause 2.3.1 of ETA) </li> <li> <b>Supplementary adhesives</b> <ul style="list-style-type: none"> <li> <b>Baumit StarContact/Baumit KlebeSpachtel</b><br/> Preparation: mixing of 6 l to 7 l water / 25 kg powder<br/> Composition: cement, sands, additives </li> <li> <b>Baumit StarContact KBM-Fix/Baumit KlebeSpachtel KBM-Fix/Baumit StarContact white/Baumit StarContact light</b><br/> Preparation: mixing of 9 l to 10 l water / 25 kg powder<br/> Composition: white cement, lime, mineral light aggregates, silicate sands, additives </li> <li> <b>Baumit StarContact white/Baumit StarContact KBM/Baumit KlebeSpachtel KBM</b><br/> Preparation: mixing of 6 l water / 25 kg powder<br/> Composition: white cement, lime, organic bonding agents, sands, additives </li> <li> <b>Baumit NivoFix/Baumit PaneloFix/ Baumit WDVS-Kleber</b><br/> Preparation: mixing of 9 l to 10 l water / 25 kg powder<br/> Composition: white cement, lime, mineral light aggregates, silicate sands, additives </li> <li> <b>Baumit StarContact forte/Baumit DiskschichtKlebespachtel</b><br/> Preparation: mixing of 6 l to 8 l water / 25 kg powder<br/> Composition: cement, lime, organic binders, sands, perlite, additives </li> </ul> </li> <li> <b>Anchors</b><br/> <ul style="list-style-type: none"> <li>See list of anchors in table in Clause 2.3.2 of ETA.</li> </ul> </li> </ul> | /                   | 50 to 200  |
| Base coat used onto insulation product of both EPS-EN 13163-TR100 and EPS-EN 13163-TR150 | <ul style="list-style-type: none"> <li> <b>Baumit StarContact/Baumit KlebeSpachtel</b><br/> Preparation: mixing of 6 l to 7 l water / 25 kg powder<br/> Composition: cement, sands, additives </li> </ul>   | 4,0 to 5,0 (powder) | 3,0 to 4,0 |
|  | <ul style="list-style-type: none"> <li> <b>Baumit StarContact KBM-Fix/Baumit KlebeSpachtel KBM-Fix/Baumit StarContact light</b><br/> Preparation: mixing of 9 l to 10 l water / 25 kg powder<br/> Composition: white cement, lime, mineral light aggregates, silicate sands, additives </li> </ul>  | 4,0 to 5,0 (powder) | 3,0 to 4,0 |
|  | <ul style="list-style-type: none"> <li> <b>Baumit StarContact white/Baumit StarContact KBM/Baumit KlebeSpachtel KBM</b><br/> Preparation: mixing of 6 l water / 25 kg powder<br/> Composition: white cement, lime, organic bonding agents, sands, additives </li> </ul>   | 4,0 to 5,0 (powder) | 3,0 to 4,0 |

|   |  |                     |            |
|---|--|---------------------|------------|
| Base coat used only onto insulation product of EPS-EN 13163-TR150 | <ul style="list-style-type: none"> <li>• <b>Baumit StarContact forte / Baumit DiskschichtKlebespachtel</b><br/>Preparation: mixing of 6 l to 8 l water / 25 kg powder<br/>Composition: cement, lime, organic binders, sands, perlite, additives</li> </ul> | 5,0 to 8,0 (powder) | 5,0        |
|   | <ul style="list-style-type: none"> <li>• <b>Baumit EasyFlex / Baumit Spachtelmasse zementfrei / Baumit Spachtelmasse zementfrei SPM 58</b><br/>Preparation: ready to use<br/>Composition: organic binders, aramid fibres, sands, additives</li> </ul>      | 3,0 to 3,5 (paste)  | 3,0 to 4,0 |
|   | <ul style="list-style-type: none"> <li>• <b>Baumit SilverFlex / Baumit FaserSpachtel</b><br/>Preparation: ready to use<br/>Composition: organic binders, aramid fibres, sands, additives</li> </ul>  | 3,0 to 3,5 (paste)  | 3,0 to 4,0 |
|   |  | 5,0 to 6,05 (paste) | 5,0        |
| Glass fibre mesh  | <ul style="list-style-type: none"> <li>• Standard glass fibre mesh: (glass fibres mesh with mesh size approx. 4 mm and 4 mm, mass per unit area: min. 145 g/m<sup>2</sup>):<br/><b>Baumit Textilglasgitter / Baumit StarTex/Baumit ProTex</b></li> </ul>   | /                   | /          |
| Key coats   | <ul style="list-style-type: none"> <li>• <b>Baumit UniPrimer/Baumit UniversalGrund:</b><br/>ready to use pigmented liquid</li> </ul>   | 0,20 to 0,25        |            |
|   | <ul style="list-style-type: none"> <li>• <b>Baumit PremiumPrimer / Baumit Premium Primer DG27/Baumit DecorGrundierung DG 27:</b><br/>ready to use pigmented liquid</li> </ul>  | 0,25                |            |
| Finishing coats   | <ul style="list-style-type: none"> <li>• Ready to use pastes – silicate binder<br/>Baumit SilikatTop/Baumit SilikatPutz (particles size 1,5/2,0/3,0 mm), floated structure (particles size 2,0/3,0 mm), ribbed structure</li> </ul>                        | 2,5 to 4,2          |            |
|   | <ul style="list-style-type: none"> <li>• Ready to use pastes – silicate binder<br/>Baumit NanoporTop/Baumit NanoporPutz (particles size 1,5/2,0/3,0 mm), floated structure</li> </ul>  | 2,5 to 4,2          |            |
|   | <ul style="list-style-type: none"> <li>• Ready to use pastes – silicone binder<br/>Baumit SilikonTop/Baumit SilikonPutz (particles size 1,5/2,0/3,0 mm), floated structure (particles size 2,0/3,0 mm), ribbed structure</li> </ul>                        | 2,5 to 4,2          |            |
|   | <ul style="list-style-type: none"> <li>• Ready to use pastes – silicone binder<br/>Baumit SiliporTop / Baumit SiliporPutz (particles size 1,5/2,0/3,0 mm), floated structure (particles size 2,0/3,0 mm), ribbed structure</li> </ul>                      | 2,5 to 4,2          |            |
|   | <ul style="list-style-type: none"> <li>• Ready to use pastes – acrylic binder<br/>Baumit GranoporTop/Baumit GranoporPutz (particles size 1,5/2,0/3,0 mm), floated structure (particles size 2,0/3,0 mm), ribbed structure</li> </ul>                       | 2,5 to 4,1          |            |
|   | <ul style="list-style-type: none"> <li>• Ready to use pastes – acrylic binder<br/>Baumit StyleTop/Baumit ArtlineTop/Baumit ArtlinePutz (particles size 1,5/2,0/3,0 mm), floated structure (particles size 2,0/3,0 mm), ribbed structure</li> </ul>         | 2,5 to 4,1          |            |
|   | <ul style="list-style-type: none"> <li>• Powder product mixed with water – acrylic binder<br/>Baumit Fascina Special/Baumit Edelputz Spezial (particles size 1,5/2,0/3,0 mm), floated structure</li> </ul>   | 2,5 to 4,0          |            |

|                     |   |            |  |
|---------------------|---|------------|--|
|                     | <ul style="list-style-type: none"> <li>Ready to use pastes – silicone and acrylic binder<br/>Baumit CreativTop<br/>(particles size 0,2 (S-Fine)/1,0 (Fine)/3,0 (Trend)/<br/>4,0 mm (Max)), modelling and floated structure</li> </ul> | 2,9 to 6,2 |  |
| Ancillary materials | Descriptions in accordance with Clause 3.2.2.5 of the ETAG 004.<br>Remain under the ETA-holder responsibilities.  |            |  |

## 1.2 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) with a reaction to fire classification A1 or A2-s2, d0 according to EN 13501-1 or A1 according to the EC decision 96/603/EC as amended. The ETICS is designed to give the wall to which it is applied satisfactory thermal protection.

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 could need preparation (see Clause 7.2.1 of the ETAG No. 004) and shall be done in accordance with the national instructions.

The provisions made in this European Technical Approval (ETA) are based on an assumed intended working life of at least 25 years, provided that the conditions laid down in Clauses 4.2, 5.1 and 5.2 for the packaging, transport, storage and installation as well as appropriate use, maintenance and repair are met. The indications given as to the working life cannot be interpreted as a guarantee given by the manufacturer or the Approval 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.

## 2 Characteristics of the product and methods of verification

### 2.1 General

The identification tests and the assessment of the fitness for use of this ETICS according to the Essential Requirements were carried out in compliance with the "ETA Guidance No. 004" concerning External Thermal Insulation Composite Systems with rendering (called ETAG No. 004 in this ETA).

### 2.2 ETICS characteristics

#### 2.2.1 Reaction to fire

The reaction to fire was determined according to ETAG 004, Clause 5.1.2.1. The product as defined under Clause 1.1 reached the following classification stated in Tables 1 to Table 5.

**Table 1 – Classification of reaction to fire for ETICS**

| <b>Configuration 1</b>   | <b>Max. organic content</b>   | <b>Flame retardant content</b>            | <b>Euroclass according to EN 13501-1</b> |
|--|---|---|--|
| Adhesives:<br>Baunit StarContact<br>Baunit StarContact KBM-Fix<br>Baunit StarContact white<br>Baunit NivoFix   | Base coat:<br>3,3 % $\pm$ 0,6 abs<br><br>Finishing coat:<br>(10,9 $\pm$ 10) % | Base coat: 0 %<br><br>Finishing coat: 0 % | B-s2, d0                                 |
| EPS 80 (EPS-EN 13163-TR150)<br>thickness from 50 mm to 200 mm<br>reaction to fire: E<br>density (17,6 $\pm$ 0,13) kg/m <sup>2</sup>  |   |   |  |
| Base coats:<br>Baunit StarContact<br>Baunit StarContact KBM-Fix<br>Baunit StarContact white  |   |   |  |
| Glass fibre mesh:<br>Baunit TextilglassGitter<br>mass per unit area from<br>145 g/m <sup>2</sup> + 8 % to 160 g/m <sup>2</sup> + 8%  |   |   |  |
| Key coats:<br>Baunit UniversalGrund<br>Baunit PremiumPrimer  |   |   |  |
| Finishing coats:<br>Baunit SilikatTop<br>Baunit NanoporTop<br>Baunit SilikonTop<br>Baunit Silipor Top<br>Baunit GranoporTop<br>Baunit StyleTop<br>Baunit Fascina Special<br>Baunit CreativTop<br>(types Trend and Max) |   |   |  |



**Table 2 – Classification of reaction to fire for ETICS**

| <b>Configuration 2</b>   | <b>Max. organic content</b>   | <b>Flame retardant content</b>            | <b>Euroclass according to EN 13501-1</b> |
|--|---|---|--|
| Adhesives:<br>Baunit StarContact<br>Baunit StarContact KBM-Fix<br>Baunit StarContact white<br>Baunit NivoFix   | Base coat:<br>$3,3 \% \pm 0,6 \text{ abs}$<br><br>Finishing coat:<br>$(10,9 \pm 10) \%$ | Base coat: 0 %<br><br>Finishing coat: 0 % | B-s1, d0                                 |
| EPS 70 (EPS-EN 13163-TR100)<br>thickness from 50 mm to 200 mm<br>reaction to fire: E<br>density $(13,8 \pm 0,2) \text{ kg/m}^2$  |   |   |  |
| Base coats:<br>Baunit StarContact<br>Baunit StarContact KBM-Fix<br>Baunit StarContact white  |   |   |  |
| Glass fibre mesh:<br>Baunit TextilglassGitter<br>mass per unit area: $145 \text{ g/m}^2 + 8 \%$  |   |   |  |
| Key coats:<br>Baunit UniversalGrund<br>Baunit PremiumPrimer  |   |   |  |
| Finishing coats:<br>Baunit SilikatTop<br>Baunit NanoporTop<br>Baunit SilikonTop<br>Baunit Silipor Top<br>Baunit GranoporTop<br>Baunit StyleTop<br>Baunit Fascina Special<br>Baunit CreativTop<br>(types Fine and S Fine) |   |   |  |

**Table 3 – Classification of reaction to fire for ETICS**

| <b>Configuration 3</b>   | <b>Max. organic content</b>   | <b>Flame retardant content</b>        | <b>Euroclass according to EN 13501-1</b> |
|--|---|---------------------------------------|--|
| Adhesives:<br>Baunit StarContact<br>Baunit StarContact KBM-Fix<br>Baunit StarContact white<br>Baunit NivoFix<br>Baunit StarContact Forte<br>EPS from 50 mm to 200 mm<br>Base coat:<br>Baunit StarContact forte<br>Key coats:<br>Baunit UniversalGrund<br>Baunit PremiumPrimer<br>Finishing coats:<br>Baunit SilikatTop<br>Baunit NanoporTop<br>Baunit SilikonTop<br>Baunit Silipor Top<br>Baunit GranoporTop<br>Baunit StyleTop<br>Baunit Fascina Special<br>Baunit CreativTop | Base coat:<br>$2,8 \% \pm 0,6 \text{ abs}$<br>Finishing coat:<br>$(10,9 \pm 10) \%$ | Base coat: 0 %<br>Finishing coat: 0 % | NPD<br>(No performance determined)       |

**Table 4 – Classification of reaction to fire for ETICS**

| <b>Configuration 4</b>   | <b>Max. organic content</b>   | <b>Flame retardant content</b>        | <b>Euroclass according to EN 13501-1</b> |
|--|---|---------------------------------------|--|
| Adhesives:<br>Baunit StarContact<br>Baunit StarContact KBM-Fix<br>Baunit StarContact white<br>Baunit NivoFix<br>EPS from 50 mm to 200 mm<br>Base coat:<br>Baunit SilverFlex<br>Baunit EasyFlex<br>Key coats:<br>Baunit UniversalGrund<br>Baunit PremiumPrimer<br>Finishing coats:<br>Baunit SilikatTop<br>Baunit NanoporTop<br>Baunit SilikonTop<br>Baunit Silipor Top<br>Baunit GranoporTop<br>Baunit StyleTop<br>Baunit Fascina Special<br>Baunit CreativTop | Base coat:<br>$9,8 \% \pm 0,6 \text{ abs}$<br>Finishing coat:<br>$(10,9 \pm 10) \%$ | Base coat: 0 %<br>Finishing coat: 0 % | B-s1,d0                                  |

**Mounting and fixing:**

The assessment of reaction to fire for configuration 1 is based on tests with maximal insulation layer thickness of SBI/200 mm, STN EN ISO 11925-2 and insulation material density  $(17,6 \pm 0,13) \text{ kg/m}^2$  and a render system with maximum organic content  $(3,3 \% \pm 0,6 \text{ abs})$  for base coat and  $(10,9 \pm 10) \%$  for finishing coat and thicknesses 1,5 mm and 4,0 mm.

The assessment of reaction to fire for configuration 2 is based on tests with maximal insulation layer thickness of SBI/200 mm, STN EN ISO 11925-2 and insulation material density  $(13,8 \pm 0,2) \text{ kg/m}^2$  and a render system with maximum organic content  $(3,3 \% \pm 0,6 \text{ abs})$  for base coat and  $(10,9 \pm 10) \%$  for finishing coat and thickness 3,0 mm.

The assessment of reaction to fire for configuration 4 is based on tests with maximal insulation layer thickness of SBI/200 mm, STN EN ISO 11925-2 and insulation material density  $17,6 \text{ kg/m}^2$  and a render system with maximum organic content  $(9,8 \% \pm 0,6 \text{ abs})$  for base coat and  $(10,9 \pm 10) \%$  for finishing coat and thicknesses 1, 5 mm and 4,0 mm.

For the SBI configuration this ETICS is mounted directly to a calcium silicate plasterboard substrate of reaction to fire classification A2-s1, d0 with a minimum density of  $800 \text{ kg/m}^2 \pm 10 \text{ kg/m}^2$ .

The installation of the ETICS was carried out by the manufacturer (holder of approval) following the manufacturer's specifications (instruction sheet) using a single layer of the glass fibre mesh all over the test specimen (no overlapping glass fibre mesh).

The test specimens were prefabricated and did not include any joints. The panel edges were rendered except the upper and bottom edges.

Anchors were not included in the tested ETICS as they have no influence on the test result.

Please note that in some member states the classification on the basis of SBI test is not accepted. Additional tests might be required e.g. large scale tests to demonstrate compliance with a member state's fire regulation.

Further the edges of the ETICS always have to be protected against fire.

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.

## 2.2.2 Water absorption (capillarity test)

Table 5 – Water absorption of base coats

|           |                            | Water absorption after 24 hours |                         |
|-----------|----------------------------|---------------------------------|-------------------------|
|           |                            | < 0,5 kg/m <sup>2</sup>         | ≥ 0,5 kg/m <sup>2</sup> |
| Base coat | Baumit StarContact         | x                               |                         |
|           | Baumit StarContact KBM-Fix | x                               |                         |
|           | Baumit StarContact white   | x                               |                         |
|           | Baumit StarContact forte   | x                               |                         |
|           | Baumit EasyFlex            | x                               |                         |
|           | Baumit SilverFlex          | x                               |                         |

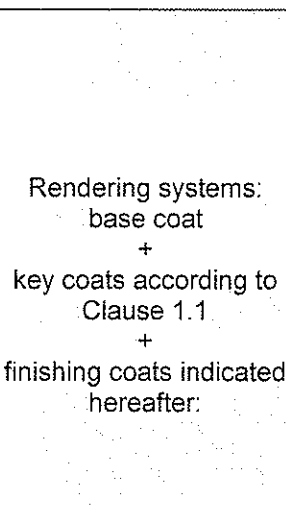
**Table 6 – Water absorption of rendering coats**

| Base coat<br>Baumit StarContact  |                        | Water absorption after 24 hours |                         |
|--|------------------------|---------------------------------|-------------------------|
|  |                        | < 0,5 kg/m <sup>2</sup>         | ≥ 0,5 kg/m <sup>2</sup> |
| Rendering systems:<br>base coat<br>+<br>key coats according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baumit SilikatTop      |                                 | x                       |
|  | Baumit NanoporTop      | x                               |                         |
|  | Baumit SilikonTop      | x                               |                         |
|  | Baumit SiliporTop      | x                               |                         |
|  | Baumit GranoporTop     | x                               |                         |
|  | Baumit StyleTop        | x                               |                         |
|  | Baumit Fascina Special | x                               |                         |
|  | Baumit CreativTop      | x                               |                         |

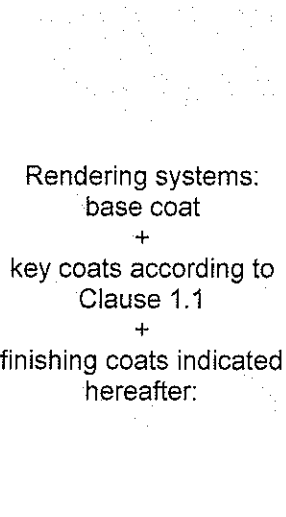
**Table 7 – Water absorption of rendering coats**

| Base coat<br>Baumit StarContact KBM-Fix  |                        | Water absorption after 24 hours |                         |
|--|------------------------|---------------------------------|-------------------------|
|  |                        | < 0,5 kg/m <sup>2</sup>         | ≥ 0,5 kg/m <sup>2</sup> |
| Rendering systems:<br>base coat<br>+<br>key coats according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baumit SilikatTop      |                                 | x                       |
|  | Baumit NanoporTop      | x                               |                         |
|  | Baumit SilikonTop      | x                               |                         |
|  | Baumit SiliporTop      | x                               |                         |
|  | Baumit GranoporTop     | x                               |                         |
|  | Baumit StyleTop        | x                               |                         |
|  | Baumit Fascina Special | x                               |                         |
|  | Baumit CreativTop      | x                               |                         |

**Table 8 – Water absorption of rendering coats**

| Base coat<br>Baumit StarContact white  |                        | Water absorption after 24 hours |                         |
|--|------------------------|---------------------------------|-------------------------|
|  |                        | < 0,5 kg/m <sup>2</sup>         | ≥ 0,5 kg/m <sup>2</sup> |
|  Rendering systems:<br>base coat<br>+<br>key coats according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baumit SilikatTop      |                                 | x                       |
|  | Baumit NanoporTop      | x                               |                         |
|  | Baumit SilikonTop      | x                               |                         |
|  | Baumit SiliporTop      | x                               |                         |
|  | Baumit GranoporTop     | x                               |                         |
|  | Baumit StyleTop        | x                               |                         |
|  | Baumit Fascina Special | x                               |                         |
|  | Baumit CreativTop      | x                               |                         |

**Table 9 – Water absorption of rendering coats**

| Base coat<br>Baumit StarContact forte  |                        | Water absorption after 24 hours |                         |
|--|------------------------|---------------------------------|-------------------------|
|  |                        | < 0,5 kg/m <sup>2</sup>         | ≥ 0,5 kg/m <sup>2</sup> |
|  Rendering systems:<br>base coat<br>+<br>key coats according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baumit SilikatTop      |                                 | x                       |
|  | Baumit NanoporTop      | x                               |                         |
|  | Baumit SilikonTop      | x                               |                         |
|  | Baumit SiliporTop      | x                               |                         |
|  | Baumit GranoporTop     | x                               |                         |
|  | Baumit StyleTop        | x                               |                         |
|  | Baumit Fascina Special | x                               |                         |
|  | Baumit CreativTop      | x                               |                         |

**Table 10 – Water absorption of rendering coats**

| Base coat<br>Baumit EasyFlex   |                        | Water absorption after 24 hours |                         |
|--|------------------------|---------------------------------|-------------------------|
|  |                        | < 0,5 kg/m <sup>2</sup>         | ≥ 0,5 kg/m <sup>2</sup> |
| Rendering systems:<br>base coat<br>+<br>key coats according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baumit SilikatTop      | x                               |                         |
|  | Baumit NanoporTop      | x                               |                         |
|  | Baumit SilikonTop      | x                               |                         |
|  | Baumit SiliporTop      | x                               |                         |
|  | Baumit GranoporTop     | x                               |                         |
|  | Baumit StyleTop        | x                               |                         |
|  | Baumit Fascina Special | x                               |                         |
|  | Baumit CreativTop      | x                               |                         |

**Table 11 – Water absorption of rendering coats**

| Base coat<br>Baumit SilverFlex   |                        | Water absorption after 24 hours |                         |
|--|------------------------|---------------------------------|-------------------------|
|  |                        | < 0,5 kg/m <sup>2</sup>         | ≥ 0,5 kg/m <sup>2</sup> |
| Rendering systems:<br>base coat<br>+<br>key coats according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baumit SilikatTop      | x                               |                         |
|  | Baumit NanoporTop      | x                               |                         |
|  | Baumit SilikonTop      | x                               |                         |
|  | Baumit SiliporTop      | x                               |                         |
|  | Baumit GranoporTop     | x                               |                         |
|  | Baumit StyleTop        | x                               |                         |
|  | Baumit Fascina Special | x                               |                         |
|  | Baumit CreativTop      | x                               |                         |

### 2.2.3 Hygrothermal behaviour

- Hygrothermal cycles have been performed on a rig.

None of the following defects occurred during the testing:

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

The ETICS is so **assessed resistant to hygrothermal cycles**.

## 2.2.4 Freeze/thaw behaviour

- The water absorptions of base coat used in this ETICS are less than 0,5 kg/m<sup>2</sup> after 24 hours but nevertheless the corresponding configuration(s) of the ETICS have been assessed as **freeze/thaw resistant** according to simulated method (5.1.3.2.2 of ETAG 004).
- The water absorptions of rendering systems using base coats with all finishing coats except Baunit SilikatTop are less than 0,5 kg/m<sup>2</sup> after 24 hours and so **the corresponding configuration(s) of the ETICS are assessed as freeze/thaw resistant**.
- The water absorption of rendering system using base coats with finishing coat Baunit SilikatTop is more than 0,5 kg/m<sup>2</sup> after 24 hours, therefore the ETICS has been assessed as **freeze/thaw resistant** according to simulated method (5.1.3.2.2 of ETAG 004).

## 2.2.5 Impact resistance

- The resistance to hard body impacts (3 Joules and 10 Joules) and to perforation lead to the following use categories.

**Table 12 – Use categories for ETICS according to impact resistance**

| Baunit StarContact + EPS board (EN 13163-TR100)  |                        | Single standard mesh | Double standard mesh |
|--|------------------------|----------------------|----------------------|
| Rendering systems:<br>base coat<br>+<br>key coats according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baunit SilikatTop      | Category II          | Category I           |
|  | Baunit NanoporTop      |                      |                      |
|  | Baunit SilikonTop      |                      |                      |
|  | Baunit SiliporTop      |                      |                      |
|  | Baunit GranoporTop     |                      |                      |
|  | Baunit StyleTop        |                      |                      |
|  | Baunit Fascina Special |                      |                      |
|  | Baunit CreativTop      |                      |                      |

**Table 13 – Use categories for ETICS according to impact resistance**

| Baunit StarContact KBM-Fix + EPS board (EN 13163-TR100)  |                        | Single standard mesh | Double standard mesh |
|--|------------------------|----------------------|----------------------|
| Rendering systems:<br>base coat<br>+<br>key coats according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baunit SilikatTop      | Category II          | Category I           |
|  | Baunit NanoporTop      |                      |                      |
|  | Baunit SilikonTop      |                      |                      |
|  | Baunit SiliporTop      |                      |                      |
|  | Baunit GranoporTop     |                      |                      |
|  | Baunit StyleTop        |                      |                      |
|  | Baunit Fascina Special |                      |                      |
|  | Baunit CreativTop      |                      |                      |

**Table 14 – Use categories for ETICS according to impact resistance**

| Baumit StarContact white + EPS board (EN 13163-TR100)  |                        | Single standard mesh | Double standard mesh |
|--|------------------------|----------------------|----------------------|
| <p>Rendering systems:<br/>base coat<br/>+<br/>key coats according to<br/>Clause 1.1<br/>+<br/>finishing coats indicated<br/>hereafter:</p> | Baumit SilikatTop      | Category II          | Category I           |
|  | Baumit NanoporTop      |                      |                      |
|  | Baumit SilikonTop      |                      |                      |
|  | Baumit SiliporTop      |                      |                      |
|  | Baumit GranoporTop     |                      |                      |
|  | Baumit StyleTop        |                      |                      |
|  | Baumit Fascina Special |                      |                      |
|  | Baumit CreativTop      |                      |                      |

**Table 15 – Use categories for ETICS according to impact resistance**

| Baumit StarContact forte + EPS board (EN 13163-TR100)  |                        | Single standard mesh | Double standard mesh |
|--|------------------------|----------------------|----------------------|
| <p>Rendering systems:<br/>base coat<br/>+<br/>key coats according to<br/>Clause 1.1<br/>+<br/>finishing coats indicated<br/>hereafter:</p> | Baumit SilikatTop      | Category II          | Category I           |
|  | Baumit NanoporTop      |                      |                      |
|  | Baumit SilikonTop      |                      |                      |
|  | Baumit SiliporTop      |                      |                      |
|  | Baumit GranoporTop     |                      |                      |
|  | Baumit StyleTop        |                      |                      |
|  | Baumit Fascina Special |                      |                      |
|  | Baumit CreativTop      |                      |                      |



**Table 16 – Use categories for ETICS according to impact resistance**

| Baumit EasyFlex + EPS board (EN 13163-TR100)   |                        | Single standard mesh | Double standard mesh |
|--|------------------------|----------------------|----------------------|
| Rendering systems:<br>base coat<br>+<br>key coats according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baumit SilikatTop      | Category II          | Category I           |
|  | Baumit NanoporTop      |                      |                      |
|  | Baumit SilikonTop      |                      |                      |
|  | Baumit SiliporTop      |                      |                      |
|  | Baumit GranoporTop     |                      |                      |
|  | Baumit StyleTop        |                      |                      |
|  | Baumit Fascina Special |                      |                      |
|  | Baumit CreativTop      |                      |                      |

**Table 17 – Use categories for ETICS according to impact resistance**

| Baumit SilverFlex + EPS board (EN 13163-TR100)   |                        | Single standard mesh | Double standard mesh |
|--|------------------------|----------------------|----------------------|
| Rendering systems:<br>base coat<br>+<br>key coats according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baumit SilikatTop      | Category II          | Category I           |
|  | Baumit NanoporTop      |                      |                      |
|  | Baumit SilikonTop      |                      |                      |
|  | Baumit SiliporTop      |                      |                      |
|  | Baumit GranoporTop     |                      |                      |
|  | Baumit StyleTop        |                      |                      |
|  | Baumit Fascina Special |                      |                      |
|  | Baumit CreativTop      |                      |                      |

## 2.2.6 Water vapour permeability

**Table 18 – Water vapour permeability of rendering systems**

| Baumit StarContact  |                        | Equivalent air thickness<br>m  |
|---|------------------------|--|
| Rendering systems:<br>base coat<br>+<br>key coat according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baumit SilikatTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit SilikatTop, floated structure,<br>particles size 3,0 mm: 0,33)      |
|   | Baumit NanoporTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit NanoporTop, floated structure,<br>particles size 3,0 mm: 0,24)      |
|   | Baumit SilikonTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit SilikonTop, floated structure,<br>particles size 3,0 mm: 0,66)      |
|   | Baumit SiliporTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit SiliporTop, floated structure,<br>particles size 3,0 mm: 0,59)      |
|   | Baumit GranoporTop     | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit GranoporTop, floated structure,<br>particles size 3,0 mm: 0,95)     |
|   | Baumit StyleTop        | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit StyleTop, floated structure,<br>particles size 3,0 mm: 0,47)        |
|   | Baumit Fascina Special | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit Fascina special, floated structure,<br>particles size 3,0 mm: 0,20) |
|   | Baumit CreativTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit CreativTop, floated structure,<br>particles size 4,0 mm: 0,26)      |

**Table 19 – Water vapour permeability of rendering systems**

| Baumit StarContact KBM-Fix  |                        | Equivalent air thickness<br>m  |
|---|------------------------|--|
| Rendering systems:<br>base coat<br>+<br>key coat according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baumit SilikatTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit SilikatTop, floated structure,<br>particles size 3,0 mm: 0,32)      |
|   | Baumit NanoporTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit NanoporTop, floated structure,<br>particles size 3,0 mm: 0,28)      |
|   | Baumit SilikonTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit SilikonTop, floated structure,<br>particles size 3,0 mm: 0,47)      |
|   | Baumit SiloporTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit SiloporTop, floated structure,<br>particles size 3,0 mm: 0,40)      |
|   | Baumit GranoporTop     | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit GranoporTop, floated structure,<br>particles size 3,0 mm: 0,73)     |
|   | Baumit StyleTop        | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit StyleTop, floated structure,<br>particles size 3,0 mm: 0,36)        |
|   | Baumit Fascina Special | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit Fascina special, floated structure,<br>particles size 3,0 mm: 0,19) |
|   | Baumit CreativTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit CreativTop, floated structure,<br>particles size 4,0 mm: 0,31)      |

**Table 20 – Water vapour permeability of rendering systems**

| Baumit StarContact white  |                        | Equivalent air thickness<br>m  |
|---|------------------------|--|
| Rendering systems:<br>base coat<br>+<br>key coat according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baumit SilikatTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit SilikatTop, floated structure,<br>particles size 3,0 mm: 0,29)      |
|   | Baumit NanoporTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit NanoporTop, floated structure,<br>particles size 3,0 mm: 0,24)      |
|   | Baumit SilikonTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit SilikonTop, floated structure,<br>particles size 3,0 mm: 0,49)      |
|   | Baumit SiloporTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit SiloporTop, floated structure, particles<br>size 3,0 mm: 0,46)      |
|   | Baumit GranoporTop     | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit GranoporTop, floated structure,<br>particles size 3,0 mm: 0,66)     |
|   | Baumit StyleTop        | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit StyleTop, floated structure,<br>particles size 3,0 mm: 0,38)        |
|   | Baumit Fascina Special | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit Fascina special, floated structure,<br>particles size 3,0 mm: 0,25) |
|   | Baumit CreativTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit CreativTop, floated structure,<br>particles size 4,0 mm: 0,32)      |

**Table 21 – Water vapour permeability of rendering systems**

| Baumit StarContact forte  |                        | Equivalent air thickness<br>m  |
|---|------------------------|--|
| Rendering systems:<br>base coat<br>+<br>key coat according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baumit SilikatTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit SilikatTop, floated structure,<br>particles size 3,0 mm: 0,36)      |
|   | Baumit NanoporTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit NanoporTop, floated structure,<br>particles size 3,0 mm: 0,33)      |
|   | Baumit SilikonTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit SilikonTop, floated structure,<br>particles size 3,0 mm: 0,52)      |
|   | Baumit SiliporTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit SiliporTop, floated structure,<br>particles size 3,0 mm: 0,48)      |
|   | Baumit GranoporTop     | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit GranoporTop, floated structure,<br>particles size 3,0 mm: 0,63)     |
|   | Baumit StyleTop        | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit StyleTop, floated structure,<br>particles size 3,0 mm: 0,63)        |
|   | Baumit Fascina Special | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit Fascina special, floated structure,<br>particles size 3,0 mm: 0,23) |
|   | Baumit CreativTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit CreativTop, floated structure,<br>particles size 4,0 mm: 0,41)      |

**Table 22 – Water vapour permeability of rendering systems**

| Baumit EasyFlex   |                        | Equivalent air thickness<br>m  |
|---|------------------------|--|
| Rendering systems:<br>base coat<br>+<br>key coat according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baumit SilikatTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit SilikatTop, floated structure,<br>particles size 3,0 mm: 0,44)      |
|   | Baumit NanoporTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit NanoporTop, floated structure,<br>particles size 3,0 mm: 0,47)      |
|   | Baumit SilikonTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit SilikonTop, floated structure,<br>particles size 3,0 mm: 0,90)      |
|   | Baumit SiliporTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit SiliporTop, floated structure,<br>particles size 3,0 mm: 0,88)      |
|   | Baumit GranoporTop     | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit GranoporTop, floated structure,<br>particles size 3,0 mm: 1,30)     |
|   | Baumit StyleTop        | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit StyleTop, floated structure,<br>particles size 3,0 mm: 0,64)        |
|   | Baumit Fascina Special | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit Fascina special, floated structure,<br>particles size 3,0 mm: 0,39) |
|   | Baumit CreativTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit CreativTop, floated structure,<br>particles size 4,0 mm: 0,32)      |

**Table 23 – Water vapour permeability of rendering systems**

| Baumit SilverFlex   |                        | Equivalent air thickness<br>m  |
|---|------------------------|--|
| Rendering systems:<br>base coat<br>+<br>key coat according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baumit SilikatTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit SilikatTop, floated structure,<br>particles size 3,0 mm: 0,49)      |
|   | Baumit NanoporTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit NanoporTop, floated structure,<br>particles size 3,0 mm: 0,46)      |
|   | Baumit SilikonTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit SilikonTop, floated structure,<br>particles size 3,0 mm: 0,85)      |
|   | Baumit SiliporTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit SiliporTop, floated structure,<br>particles size 3,0 mm: 0,80)      |
|   | Baumit GranoporTop     | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit GranoporTop, floated structure,<br>particles size 3,0 mm: 1,19)     |
|   | Baumit StyleTop        | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit StyleTop, floated structure,<br>particles size 3,0 mm: 0,66)        |
|   | Baumit Fascina Special | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit Fascina special, floated structure,<br>particles size 3,0 mm: 0,41) |
|   | Baumit CreativTop      | $\leq 2,0$<br>(test results obtained with finishing coat<br>Baumit CreativTop, floated structure,<br>particles size 4,0 mm: 0,33)      |

## 2.2.7 Dangerous substances

A written declaration was submitted by the ETA-holder.

In addition to the specific clauses relating to dangerous substances contained in this ETA, there may be other requirements applicable to the ETICS falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provision). In order to meet the provisions of the Construction Product Directive, these requirements need also to be complied with, when and where they apply.

## 2.2.8 Safety in use

### 2.2.8.1 Bond strength

- Base coat Baunit StarContact onto EPS (EN 13163 – TR100)

**Table 24 – Bond strength of base coat onto insulation product**

| Conditionings                             |   |  |
|---|---|--|
| Initial state                             | After the hygrothermal cycles<br>(on the rig) | After the freeze/thaw cycles<br>(on samples) |
| > 0,08 MPa                                | < 0,08 MPa*                                   | > 0,08 MPa                                   |
| * Failure occurred in insulation product. |   |  |

- Base coat Baunit StarContact KBM-Fix onto EPS (EN 13163 – TR100)

**Table 25 – Bond strength of base coat onto insulation product**

| Conditionings |   |  |
|---------------|---|--|
| Initial state | After the hygrothermal cycles<br>(on the rig) | After the freeze/thaw cycles<br>(on samples) |
| > 0,08 MPa    | > 0,08 MPa                                    | > 0,08 MPa                                   |

- Base coat Baunit StarContact white (EN 13163 – TR100)

**Table 26 – Bond strength of base coat onto insulation product**

| Conditionings |   |  |
|---------------|---|--|
| Initial state | After the hygrothermal cycles<br>(on the rig) | After the freeze/thaw cycles<br>(on samples) |
| > 0,08 MPa    | > 0,08 MPa                                    | > 0,08 MPa                                   |

- Base coat Baunit StarContact forte (EN 13163 – TR100)

**Table 27 – Bond strength of base coat onto insulation product**

| Conditionings                       |  |  |
|-------------------------------------|--|--|
| Initial state<br>(EN 13163 – TR100) | After the hygrothermal cycles<br>(on the rig) (EN 13163 – TR150) | After the freeze/thaw cycles<br>(on samples) |
| > 0,08 MPa                          | > 0,08 MPa   | > 0,08 MPa                                   |

- Base coat Baunit EasyFlex (EN 13163 – TR100)

**Table 28 – Bond strength of base coat onto insulation product**

| Conditionings                       |  |  |
|-------------------------------------|--|--|
| Initial state<br>(EN 13163 – TR100) | After the hygrothermal cycles<br>(on the rig) (EN 13163 – TR150) | After the freeze/thaw cycles<br>(on samples) |
| > 0,08 MPa                          | > 0,08 MPa   | Not performed                                |



- Base coat Baunit SilverFlex (EN 13163 – TR100 or TR150)

**Table 29 – Bond strength of base coat onto insulation product**

| Conditionings                       |  |  |
|-------------------------------------|--|--|
| Initial state<br>(EN 13163 – TR100) | After the hygrothermal cycles<br>(on the rig) (EN 13163 – TR150) | After the freeze/thaw cycles<br>(on samples) |
| > 0,08 MPa                          | > 0,08 MPa   | Not performed                                |

- Adhesives onto substrate and EPS (EN 13163 – TR100 or TR150) (safety in use of the bonded ETICS)

**Table 30 – Bond strength of adhesive onto substrate and EPS (EN 13163 – TR100 or TR150)**

|                            |                                     | Conditionings |  |  |
|----------------------------|-------------------------------------|---------------|--|--|
|                            |                                     | Initial state | 48 h immersion<br>in water + 2 h<br>23 °C/50% RH | 48 h immersion<br>in water +<br>7 days<br>23 °C/50% RH |
| Baunit StarContact         | Concrete                            | ≥ 0,25 MPa    | ≥ 0,08 MPa                                       | ≥ 0,25 MPa   |
|                            | Insulation product<br>EPS –TR100    | ≥ 0,08 MPa    | ≥ 0,03 MPa                                       | ≥ 0,08 MPa   |
|                            | Insulation product<br>EPS –TR150    | ≥ 0,08 MPa    | ≥ 0,03 MPa                                       | ≥ 0,08 MPa   |
| Baunit StarContact KBM-Fix | Concrete                            | ≥ 0,25 MPa    | ≥ 0,08 MPa                                       | ≥ 0,25 MPa   |
|                            | Insulation product<br>EPS –TR100    | ≥ 0,08 MPa    | ≥ 0,03 MPa                                       | ≥ 0,08 MPa   |
|                            | Insulation product<br>EPS –TR150    | ≥ 0,08 MPa    | –  | –  |
| Baunit StarContact white   | Concrete                            | ≥ 0,25 MPa    | ≥ 0,08 MPa                                       | ≥ 0,25 MPa   |
|                            | Insulation product<br>EPS –TR100    | ≥ 0,08 MPa    | ≥ 0,03 MPa                                       | ≥ 0,08 MPa   |
|                            | Insulation product<br>EPS –TR150    | ≥ 0,08 MPa    | –  | –  |
| Baunit NivoFix             | Concrete                            | ≥ 0,25 MPa    | ≥ 0,08 MPa                                       | ≥ 0,25 MPa   |
|                            | Insulation product<br>EPS –TR100    | ≥ 0,08 MPa    | ≥ 0,03 MPa                                       | ≥ 0,08 MPa   |
| Baunit StarContact forte   | Concrete                            | ≥ 0,25 MPa    | ≥ 0,08 MPa                                       | ≥ 0,25 MPa   |
|                            | Insulation product<br>EPS –TR100    | ≥ 0,08 MPa    | ≥ 0,03 MPa                                       | ≥ 0,08 MPa   |
| Baunit StarContact         | Special anchor<br>Baunit Klebeanker | ≥ 0,25 MPa    | ≥ 0,08 MPa                                       | ≥ 0,25 MPa   |

\*Failure occurred in the insulation product.

The minimum bonded surface  $S$ , which shall exceed 20 %, is calculated as follows:  
 $S (\%) = [0,03 \times 100]/B$

where:

$B$  is minimum mean failure resistance of the adhesive to the insulation product in dry conditions expressed in MPa;

0,03 MPa corresponds to the minimum requirements.

The ETICS shall be installed on the substrate with application of the adhesive on the following minimal surface (% of total) according to Tables 31, 32 and 33.

**Table 31 – Minimum admissible bonded surface area for bonded ETICS**

| Tensile strength perpendicular to the faces of the insulation product | Minimum admissible bonded surface area for bonded ETICS |
|---|---|
| $\geq 100$ kPa (EPS-EN 13163-TR100)                                   | 40 %  |

**Table 32 – Minimum admissible bonded surface area for bonded ETICS**

| Tensile strength perpendicular to the faces of the insulation product | Minimum admissible bonded surface area for bonded ETICS valid for adhesives Baunit NivoFix and Baunit StarContact forte |
|---|---|
| $\geq 150$ kPa (EPS-EN 13163-TR150)                                   | 40 %  |

**Table 33 – Minimum admissible bonded surface area for bonded ETICS**

| Tensile strength perpendicular to the faces of the insulation product | Minimum admissible bonded surface area for bonded ETICS valid for adhesives Baunit StarContact, Baunit StarContact KBM-Fix, Baunit StarContact white |
|---|--|
| $\geq 150$ kPa (EPS-EN 13163-TR150)                                   | 20 %   |

## 2.2.8.2 Fixing strength (displacement test)

Test not required because the ETICS fulfills the following criteria:

- The bonded area exceeds 20 % in case of mechanically fixed systems with supplementary adhesive.
- $E \times d = 10\,503 \text{ N/mm} < 50\,000 \text{ N/mm}$ , where  $E$  is modulus of elasticity of the base coat **Baunit StarContact** without glass fibre mesh and  $d$  is mean dried thickness of the base coat.
- $E \times d = 8\,457 \text{ N/mm} < 50\,000 \text{ N/mm}$ , where  $E$  is modulus of elasticity of the base coat **Baunit StarContact KBM-Fix** without glass fibre mesh and  $d$  is mean dried thickness of the base coat.
- $E \times d = 9\,666 \text{ N/mm} < 50\,000 \text{ N/mm}$ , where  $E$  is modulus of elasticity of the base coat **Baunit StarContact white** without glass fibre mesh and  $d$  is mean dried thickness of the base coat.
- $E \times d = 19\,395 \text{ N/mm} < 50\,000 \text{ N/mm}$ , where  $E$  is modulus of elasticity of the base coat **Baunit StarContact Forte** without glass fibre mesh and  $d$  is mean dried thickness of the base coat.
- $E \times d = 933 \text{ N/mm} < 50\,000 \text{ N/mm}$ , where  $E$  is modulus of elasticity of the base coat **Baunit EasyFlex** without glass fibre mesh and  $d$  is mean dried thickness of the base coat.
- $E \times d = 1\,053 \text{ N/mm} < 50\,000 \text{ N/mm}$ , where  $E$  is modulus of elasticity of the base coat **Baunit SilverFlex** without glass fibre mesh and  $d$  is mean dried thickness of the base coat.

### 2.2.8.3 Wind load resistance

Safety in use of mechanically fixed ETICS using anchors

The following values only apply for the combination (anchor's trade name) / (EPS board's characteristics) mentioned in the first lines of each table.

**Table 34 – Failure loads of combination of anchors described in below table and insulation product - EPS-EN 13163-TR100**

|   |   |  |   |              |
|---|---|--|---|--------------|
| <b>Anchors for which the following failure loads apply</b>                                  |   | Trade name                                       | Hilti insulation anchor SD-FV 8<br>Hilti ETICS-ANCHOR D-FV<br>Hilti ETICS-ANCHOR D-FV T<br>Hilti Dämmstoffelement XI-FV<br>Hilti SX-FV<br>EJOT SDM-T plus<br>EJOT SDF-K plus<br>ejotherm NT U<br>ejotherm NK U<br>ejotherm NTK U<br>ejot H1 eco<br>ejotherm STR U<br>ejotherm STR U 2G<br>Koelner TFIX-8M<br>Koelner TFIX 8S<br>Koelner TFIX 8ST<br>IsoFux ND8LZ<br>IsoFux NDT8LZ<br>IsoFux ND8LZ K |              |
|   |   | Plate diameter (mm)                              | ≥ 60  |              |
| Characteristic of the insulation product panels for which the following failure loads apply |   | Thickness (mm)                                   | ≥ 60  |              |
|   |   | Tensile strength perpendicular to the face (kPa) | ≥ 100   |              |
| Failure loads (N)   | Anchors not placed at the panel joint (pull – through test) | $R_{\text{panel}}$                               | Minimum:  | <b>450</b>   |
|   |   |  | Average:  | <b>510</b>   |
|   | Anchors placed at the panel joint (static foam block test)  | $R_{\text{joint}}$                               | Minimum:  | <b>337,5</b> |
|   |   |  | Average:  | <b>380</b>   |

**Table 35 – Failure loads of combination of anchors described in below table and insulation product - EPS-EN 13163-TR100**

|   |   |  |             |            |
|---|---|--|-------------|------------|
| <b>Anchors for which the following failure loads apply</b>                                  |   | Trade name                                       | Hilti D8-FV |            |
|   |   | Plate diameter (mm)                              | ≥ 60        |            |
| Characteristic of the insulation product panels for which the following failure loads apply |   | Thickness (mm)                                   | ≥ 100       |            |
|   |   | Tensile strength perpendicular to the face (kPa) | ≥ 100       |            |
| Failure loads (N)   | Anchors not placed at the panel joint (pull – through test) | $R_{\text{panel}}$                               | Minimum:    | <b>510</b> |
|   |   |  | Average:    | <b>540</b> |
|   | Anchors placed at the panel joint (static foam block test)  | $R_{\text{joint}}$                               | Minimum:    | <b>430</b> |
|   |   |  | Average:    | <b>470</b> |

**Table 36 – Failure loads of combination of anchors described in below table and insulation product - EPS-EN 13163-TR100**

|   |   |  |  |
|---|---|--|--|
| <b>Anchors for which the following failure loads apply</b>                                  |   | Trade name                                       | fischer TERMOZ 8U<br>fischer TERMOZ 8 N<br>fischer TERMOZ KS 8<br>fischer Termoz CN<br>fischer Termofix CF 8<br>fischer Termoz 8 NZ<br>Baumit nailed-in Anchor SD8<br>fischer Termoz 8 SV<br>fischer Termoz 8 UZ<br>fischer Termoz PN 8<br>KEW InsuFix TSD-V<br>KEW InsuFix TSBD 8 |
|   |   | Plate diameter (mm)                              | ≥ 60   |
| Characteristic of the insulation product panels for which the following failure loads apply |   | Thickness (mm)                                   | ≥ 60   |
|   |   | Tensile strength perpendicular to the face (kPa) | ≥ 100  |
| Failure loads (N)   | Anchors not placed at the panel joint (pull – through test) | $R_{\text{panel}}$                               | Minimum: <b>560</b><br>Average: <b>571</b>   |
|   | Anchors placed at the panel joint (static foam block test)  | $R_{\text{joint}}$                               | Minimum: <b>493</b><br>Average: <b>503</b>   |

**Table 37 – Failure loads of combination of anchors described in below table and insulation product- EPS-EN 13163-TR100**

|   |   |  |   |
|---|---|--|---|
| <b>Anchors for which the following failure loads apply</b>                                  |   | Trade name                                       | Bravolli PTH-KZ 60/8-La<br>Bravolli PTH-KZL 60/8-La<br>Bravolli PTH 60/8-La<br>Bravolli PTH-L 60/8-La<br>Bravolli PTH-S 60/8<br>Bravolli PTH-SL 60/8<br>Bravolli PTH-SX |
|   |   | Plate diameter (mm)                              | ≥ 60  |
| Characteristic of the insulation product panels for which the following failure loads apply |   | Thickness (mm)                                   | ≥ 50  |
|   |   | Tensile strength perpendicular to the face (kPa) | ≥ 100   |
| Failure loads (N)   | Anchors not placed at the panel joint (pull – through test) | $R_{\text{panel}}$                               | Minimum: <b>502</b><br>Average: <b>514</b>  |
|   | Anchors placed at the panel joint (static foam block test)  | $R_{\text{joint}}$                               | Minimum: <b>322</b><br>Average: <b>359</b>  |

**Table 38 – Failure loads of combination of anchors described in below table and insulation product – EPS-EN 13163-TR100**

|   |   |  |  |
|---|---|--|--|
| <b>Anchors for which the following failure loads apply</b>                                  |   | Trade name                                       | SPIT ISO<br>SPIT ISOPLUS                   |
|   |   | Plate diameter (mm)                              | ≥ 50                                       |
| Characteristic of the insulation product panels for which the following failure loads apply |   | Thickness (mm)                                   | ≥ 50                                       |
|   |   | Tensile strength perpendicular to the face (kPa) | ≥ 100                                      |
| Failure loads (N)   | Anchors not placed at the panel joint (pull – through test) | $R_{\text{panel}}$                               | Minimum: <b>407</b><br>Average: <b>421</b> |
|   | Anchors placed at the panel joint (pull – through test)     | $R_{\text{joint}}$                               | Minimum: <b>363</b><br>Average: <b>373</b> |

**Table 39 – Failure loads of combination of anchors described in below table and insulation product - EPS**

|   |  |  |  |
|---|--|--|--|
| <b>Anchors for which the following failure loads apply</b>                                  |  | Trade name                                       | Baumit KlebeAnker/<br>Baumit StarTrack     |
|   |  | Plate diameter (mm)                              | ≥ 60                                       |
| Characteristic of the insulation product panels for which the following failure loads apply |  | Thickness (mm)                                   | ≥ 70                                       |
|   |  | Tensile strength perpendicular to the face (kPa) | ≥ 150                                      |
| Failure loads (N)   | Anchors not placed at the panel joint (static foam block test – 4 anchors placed at the centre of the panel) | $R_{\text{panel}}$                               | Minimum: <b>500</b><br>Average: <b>614</b> |

The wind load resistance of the ETICS  $R_d$  is calculated as follows:

$$R_d = [R_{\text{panel}} \times n_{\text{panel}} + R_{\text{joint}} \times n_{\text{joint}}] / \gamma$$

where

$n_{\text{panel}}$  is number (per m<sup>2</sup>) of anchors not placed at the panel joint;  
 $n_{\text{joint}}$  is number (per m<sup>2</sup>) of anchors placed at the panel joint;  
 $\gamma$  is national safety factor.

## 2.2.9 Thermal resistance

The additional thermal resistance provided by the ETICS ( $R_{ETICS}$ ) to the substrate wall is calculated from the thermal resistance of the insulation product ( $R_D$ ), determined in accordance with Clause 5.2.6.1 ETAG 004, and from the tabulated  $R_{render}$  value of the render system ( $R_{render}$  is about 0,02 m<sup>2</sup>·K/W),

$$R_{ETICS} = R_D + R_{render} \text{ [m}^2\cdot\text{K/W]}$$

as described in:

EN ISO 6946, Building components and building elements – Thermal resistance and thermal transmittance – Calculation method

EN 12524, Building materials and products – Hygrothermal properties – Tabulated design values

If the thermal resistance can not be calculated, it can be measured on the complete ETICS as described:

EN 1934, Thermal performance of buildings – Determination of thermal resistance by hot box method using heat flow meter – Masonry

The thermal bridges caused by mechanical fixing devices influence the thermal transmittance of the entire wall and shall be taken into account using the following calculation:

$$U_c = U + \Delta U \text{ [W/m}^2\cdot\text{K]}$$

where:

$U_c$  corrected thermal transmittance of the entire wall, including thermal bridges

$U$  thermal transmittance of the entire wall, including ETICS, without thermal bridges (W/m<sup>2</sup>·K)

$$U = 1 / [R_{ETICS} + R_{substrate} + R_{se} + R_{si}]$$

$R_{substrate}$  thermal resistance of the substrate wall [m<sup>2</sup>·K/W]

$R_{se}$  external surface thermal resistance [m<sup>2</sup>·K/W]

$R_{si}$  internal surface thermal resistance [m<sup>2</sup>·K/W]

$\Delta U$  correction term of the thermal transmittance for mechanical fixing devices =  $\chi_p \cdot n$  (for anchors)

$\chi_p$  point thermal transmittance of the anchor [W/K]. See EOTA Technical Report 25. If not specified in ETA for the relevant anchors, the following values apply:

= 0,002 W/K for anchors with a stainless steel screw with the head covered by plastic material and for anchors with an air gap at the head of the screw

= 0,004 W/K for anchors with a galvanized steel screw with the head covered by a plastic material

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

$n$  number of anchors per m<sup>2</sup>

The influence of thermal bridges can also be calculated as described in:

EN ISO 10211, Thermal bridges in building – Heat flows and surface temperatures – Detailed calculations

It should be calculated according to this standard if there are more than 16 anchors per m<sup>2</sup> foreseen. The  $\chi_p$  – values given by manufacturer do not apply in this case.

## 2.2.10 Aspect of durability and serviceability

### 2.2.10.1 Bond strength after ageing

**Table 40 – Bond strength of rendering systems after ageing**

| Baumit StarContact   |                        | After 7 days<br>immersion in water<br>+ 7 days<br>23 °C/50% RH<br>(on samples) | After freeze/thaw<br>cycles |
|--|------------------------|--|-----------------------------|
| Rendering systems:<br>base coat<br>+<br>key coats according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baumit SilikatTop      | ≥ 0,08 MPa   | ≥ 0,08 MPa                  |
|  | Baumit NanoporTop      |  | Not required                |
|  | Baumit SilikonTop      |  |                             |
|  | Baumit SiliporTop      |  |                             |
|  | Baumit GranoporTop     |  |                             |
|  | Baumit StyleTop        |  |                             |
|  | Baumit Fascina Special |  |                             |
|  | Baumit CreativTop      |  |                             |

**Table 41 – Bond strength of rendering systems after ageing**

| Baumit StarContact KBM-Fix   |                        | After 7 days<br>immersion in water<br>+ 7 days<br>23 °C/50% RH<br>(on samples) | After freeze/thaw<br>cycles |
|--|------------------------|--|-----------------------------|
| Rendering systems:<br>base coat<br>+<br>key coats according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baumit SilikatTop      | ≥ 0,08 MPa   | ≥ 0,08 MPa                  |
|  | Baumit NanoporTop      |  | Not required                |
|  | Baumit SilikonTop      |  |                             |
|  | Baumit SiliporTop      |  |                             |
|  | Baumit GranoporTop     |  |                             |
|  | Baumit StyleTop        |  |                             |
|  | Baumit Fascina Special |  |                             |
|  | Baumit CreativTop      |  |                             |

**Table 42 – Bond strength of rendering systems after ageing**

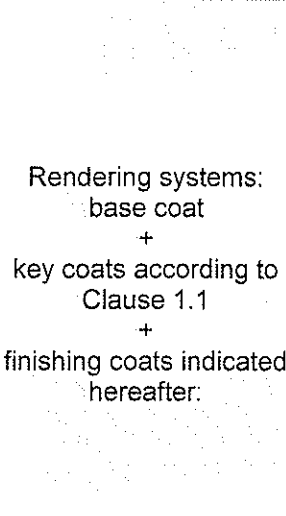
| Baumit StarContact white   |                        | After 7 days<br>immersion in water<br>+ 7 days<br>23 °C/50% RH<br>(on samples) | After freeze/thaw<br>cycles |
|--|------------------------|--|-----------------------------|
| Rendering systems:<br>base coat<br>+<br>key coats according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baumit SilikatTop      | ≥ 0,08 MPa   | ≥ 0,08 MPa                  |
|  | Baumit NanoporTop      |  | Not required                |
|  | Baumit SilikonTop      |  |                             |
|  | Baumit SiliporTop      |  |                             |
|  | Baumit GranoporTop     |  |                             |
|  | Baumit StyleTop        |  |                             |
|  | Baumit Fascina Special |  |                             |
|  | Baumit CreativTop      |  |                             |

**Table 43 – Bond strength of rendering systems after ageing**

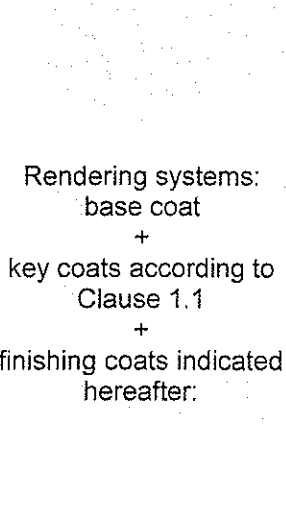
| Baumit StarContact forte   |                        | After 7 days<br>immersion in water<br>+ 7 days<br>23 °C/50% RH<br>(on samples) | After freeze/thaw<br>cycles |
|--|------------------------|--|-----------------------------|
| Rendering systems:<br>base coat<br>+<br>key coats according to<br>Clause 1.1<br>+<br>finishing coats indicated<br>hereafter: | Baumit SilikatTop      | ≥ 0,08 MPa   | ≥ 0,08 MPa                  |
|  | Baumit NanoporTop      |  | Not required                |
|  | Baumit SilikonTop      |  |                             |
|  | Baumit SiliporTop      |  |                             |
|  | Baumit GranoporTop     |  |                             |
|  | Baumit StyleTop        |  |                             |
|  | Baumit Fascina Special |  |                             |
|  | Baumit CreativTop      |  |                             |



**Table 44 – Bond strength of rendering systems after ageing**

| Baumit EasyFlex  |                        | After 7 days<br>immersion in water<br>+ 7 days<br>23 °C/50% RH<br>(on samples) | After freeze/thaw<br>cycles |
|--|------------------------|--|-----------------------------|
|  <p>Rendering systems:<br/>base coat<br/>+<br/>key coats according to<br/>Clause 1.1<br/>+<br/>finishing coats indicated<br/>hereafter:</p> | Baumit SilikatTop      | ≥ 0,08 MPa   | Not required                |
|  | Baumit NanoporTop      |  |                             |
|  | Baumit SilikonTop      |  |                             |
|  | Baumit SiliporTop      |  |                             |
|  | Baumit GranoporTop     |  |                             |
|  | Baumit StyleTop        |  |                             |
|  | Baumit Fascina Special |  |                             |
|  | Baumit CreativTop      |  |                             |

**Table 45 – Bond strength of rendering systems after ageing**

| Baumit SilverFlex  |                        | After 7 days<br>immersion in water<br>+ 7 days<br>23 °C/50% RH<br>(on samples) | After freeze/thaw<br>cycles |
|--|------------------------|--|-----------------------------|
|  <p>Rendering systems:<br/>base coat<br/>+<br/>key coats according to<br/>Clause 1.1<br/>+<br/>finishing coats indicated<br/>hereafter:</p> | Baumit SilikatTop      | ≥ 0,08 MPa   | Not required                |
|  | Baumit NanoporTop      |  |                             |
|  | Baumit SilikonTop      |  |                             |
|  | Baumit SiliporTop      |  |                             |
|  | Baumit GranoporTop     |  |                             |
|  | Baumit StyleTop        |  |                             |
|  | Baumit Fascina Special |  |                             |
|  | Baumit CreativTop      |  |                             |

## 2.3 Components' characteristics

### 2.3.1 Insulation product

Expanded polystyrene panels for fully or partially bonded ETICS with supplementary mechanical fixings, and mechanically fixed with supplementary adhesive.

Factory-prefabricated, uncoated boards with right edges, made of expanded polystyrene (EPS) according to EN 13163 and having the description and characteristics defined in table below.

**Table 46 – Characteristics of EPS**

| Description and characteristics   | EPS panels (EPS 70 and EPS 80)  |  |
|---|---|--|
|   | for bonded ETICS  | for mechanically fixed ETICS with anchors                              |
| Reaction to fire /STN EN 13501-1  | Euroclass E<br>(thickness 50 mm to 200 mm, density 13,5 kg/m <sup>3</sup> to 18 kg/m <sup>3</sup> )   |  |
| Thermal resistance ((m <sup>2</sup> .K)/W)                              | Defined in the CE marking in reference to EN 13163, Thermal insulation products for buildings – Factory made products of expanded polystyrene |  |
| Thickness (mm) / EN 823   | EPS - EN 13163 – <b>T2</b>  |  |
| Length (mm) / EN 822  | EPS - EN 13163 – <b>L1</b><br>EPS - EN 13163 – <b>L2</b>  |  |
| Width (mm) / EN 822   | EPS - EN 13163 – <b>W2</b>  |  |
| Squareness (mm) / EN 824  | EPS - EN 13163 – <b>S1</b><br>EPS - EN 13163 – <b>S2</b>  |  |
| Flatness (mm) / EN 825  | EPS - EN 13163 – <b>P3</b><br>EPS - EN 13163 – <b>P4</b>  |  |
| Surface condition   | Cut surface (homogeneous and without "skin")  |  |
| Dimensional stability under   | specified temperature and humidity / EN 1604  | EPS - EN 13163 – <b>DS(70,-)1</b><br>EPS - EN 13163 – <b>DS(70,-)2</b> |
|   | laboratory condition / EN 1603  | EPS - EN 13163 – <b>DS(N)2</b>   |
| Compressive stress or compressive strength (kPa) / EN 826               | EPS - EN 13163 – <b>CS(10)70</b> (EPS 70)<br>EPS - EN 13163 – <b>CS(10)80</b> (EPS 80)  |  |
| Tensile strength perpendicular to the faces in dry conditions / EN 1607 | ≥ 100 kPa, EPS - EN 13163 – <b>TR100</b> (EPS 70)<br>≥ 150 kPa and <200 kPa, EPS - EN 13163 – <b>TR150</b> (EPS 80)                           |  |
| Short term water absorption by partial immersion / EN 1609              | < 0,5 kg/m <sup>3</sup>   |  |
| Water vapour diffusion resistance factor ( $\mu$ ) / EN 12086           | ≥ 20<br>≤ 60  |  |
| Shear strength (N/mm <sup>2</sup> ) / EN 12090                          | ≥ 0,02 MPa  | –  |
| Shear modulus (N/mm <sup>2</sup> ) / EN 12090                           | ≥ 1,0 MPa   | –  |

### 2.3.2 Anchors

Anchors for insulating product:

**Table 47 – Anchors used in the ETICS**

| Trade name  | Plate diameter<br>mm | Characteristic resistance<br>in substrate stated in |
|---|----------------------|---|
| Baumit SD 8   | 60                   | ETA-06/0248   |
| Bravoll PTH-KZ<br>Bravoll PTH-KZL<br>Bravoll PTH<br>Bravoll PTH-L | 60                   | ETA-05/0055   |
| Bravoll PTH-S 60/8-La<br>Bravoll PTH-SL 60/8-La                   | 60                   | ETA-08/0267   |
| Bravoll PTH SX  | 60                   | ETA-10/0028   |
| Ejotherm STR U<br>Ejotherm STR U 2G                               | 60                   | ETA-04/0023   |
| EJOT Schraubdübel ejotherm ST U                                   | 60                   | ETA-02/0018   |
| EJOT Schraubdübel ejotherm ST U<br>mit Dübelkopf VT 90            | 60                   | ETA-02/0018   |
| EJOT SDM-T plus and SDF-K plus                                    | 60                   | ETA-04/0064   |
| Ejot H1 eco   | 60                   | ETA-11/0192   |
| EJOT ejotherm NTK U*  | 60                   | ETA-07/0026   |
| ejotherm NT U<br>ejotherm NK U                                    | 60                   | ETA-05/0009   |
| Fischer Schlagdübel Termoz 8 N<br>Fischer Termoz 8 NZ             | 60                   | ETA-03/0019   |
| Fischer TERMOFIX CF 8   | 60                   | ETA-07/0287   |
| Fischer Termoz 8 UZ<br>Fischer Termoz 8 U                         | 60                   | ETA-02/0019   |
| Fischer Termoz KS 8   | 60                   | ETA-04/0414   |
| Fischer Termoz PN8*   | 60                   | ETA-09/0171   |
| Fischer Termoz 8 SV   | 60                   | ETA-06/0180   |
| Fischer Termoz CN 8   | 60                   | ETA-09/0394   |
| Hilti D8-FV   | 60                   | ETA-07/0288   |
| Hilti SD-FV 8 with doublehead HDT-<br>FV90                        | 60                   | ETA-03/0028   |
| Hilti ETICS-Anchor D-FV<br>Hilti ETICS-Anchor D-FV T              | 60                   | ETA-05/0039   |
| Hilti SX-FV   | 60                   | ETA-03/0005   |
| Hilti XI-FI   | 60                   | ETA-03/0004   |
| Hilti SD-FV 8   | 60                   | ETA-03/0028   |
| IsoFux ND8SZ<br>IsoFux NDT8LZ<br>IsoFux ND8LZ K                   | 60                   | ETA-04/0032   |
| KOELNER TFIX-8M   | 60                   | ETA-06/0191   |

|  |          |    |             |
|--|----------|----|-------------|
| KOELNER TFIX 8S<br>KOELNER TFIX 8ST  | 60       |    | ETA-11/0144 |
| KEW InsuFix TSD-V  | 60       |    | ETA-08/0315 |
| KEW InsuFix TSBD 8   | 60       |    | ETA-08/0314 |
| SPIT ISO   | 50 to 60 | 90 | ETA-04/0076 |
| SPIT ISOPLUS   | 60       |    | ETA-09/0245 |
| Baumit Klebeanker / Baumit StarTrack/<br>KlebeAnker JJ A8+<br>(This anchor is for load transmission of the<br>adhesives Baumit StarContact and Baumit<br>StarContact white into the substrate and is<br>used only with EPS-TR150)        | 60       |    | ETA-06/0015 |
| Baumit Klebeanker / Baumit StarTrack/<br>KlebeAnker Duplex JJ A8S<br>(This anchor is for load transmission of the<br>adhesives Baumit StarContact and Baumit<br>StarContact white into the substrate and is<br>used only with EPS-TR150) | 60       |    | ETA-12/0064 |

### 2.3.3 Render

The mean value of the crack width of the base coats with the glass fibres mesh Baumit StarTex (4 mm × 4 mm) has not been tested (no performance determined).

### 2.3.4 Glass fibre mesh

Table 48 – The characteristics of glass fibre meshes

|  | Alkalis resistance                     |      |  |      |
|--|--|------|--|------|
|  | Residual strength after ageing<br>N/mm |      | Relative residual resistance:<br>% (after ageing) of the strength<br>in the as delivered state |      |
|  | Warp                                   | Weft | Warp   | Weft |
| Baumit TextilglasGitter<br>/Baumit StarTex/<br>Baumit ProTex<br><br>Glass fibre mesh with mesh<br>size approx. 4 mm and 4 mm | ≥ 20                                   |      | ≥ 50   |      |

### **3 Evaluation and attestation of Conformity and CE marking**

#### **3.1 System of attestation of conformity**

According to the decision 97/556/EC of the European Commission, the system 2+ of attestation of conformity applies.

In addition, according to the decision 2001/596/EC of the European Commission, the systems 1 and 2+ of attestation of conformity apply with regard to reaction to fire.

Concerning the Euroclass B, C and F for the reaction to fire of the ETICS, the system of attestation of conformity, regarding other characteristics than reaction to fire, is system 2+. This system is described in the Council Directive 89/106/EEC Annex III, 2 (ii), First possibility as follows:

Declaration of conformity of the ETICS by the manufacturer on the basis of:

- a) Tasks of the manufacturer:
  - Initial-type testing of the ETICS and the components;
  - Factory Production Control;
  - Testing of samples taken at the factory in accordance with a prescribed Control plan<sup>5</sup>.
- b) Tasks of the Notified Body:
  - Certification of factory production control based on:
    - Initial inspection of factory and factory production control;
    - Continuous surveillance, assessment and approval of factory production control.

Concerning the Euroclass B, C for the reaction to fire of the ETICS, the system of attestation of conformity, regarding reaction to fire characteristic, is system 1. This system 1 is described in the Council Directive 89/106/EEC Annex III, 2 (i), as follows:

Certification of conformity of the ETICS by a Notified Body on the basis of:

- c) Tasks for the manufacturer:
  - Factory Production Control;
  - Further testing of samples taken at the factory by the manufacturer in accordance with a prescribed Control plan.
- d) Tasks for the Notified Body:
  - Initial type-testing of the ETICS and the components;
  - Initial inspection of factory and factory production control;
  - Continuous surveillance, assessment and approval of factory production control.

#### **3.2 Responsibilities**

##### **3.2.1 Task of the manufacturer**

###### **3.2.1.1 Factory production control**

The manufacturer shall exercise permanent internal control of production. All elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall insure that the product is in conformity with this European Technical Approval.

The manufacturer may only use components stated in the technical documentation of this European Technical Approval including Control plan.

For the components of the ETICS which ETA-holder does not manufacture by himself, he shall make sure that the factory production control carried out by the other manufactures gives the guaranty of the components compliance with the European Technical Approval.

The factory production control and the provisions taken by the ETA-holder for components not produced by himself shall be in accordance with the Control plan relating to this European Technical Approval which is part of the technical documentation of this European Technical Approval. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited at Building Testing and Research Institute.

<sup>5</sup> The control plan is a confidential part of the European Technical Approval and only handed over to the notified body or bodies involved in the procedure of attestation of conformity. See Clause 3.2.2.

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the Control plan.

### **3.2.1.2 Other tasks of manufacturer**

The manufacturer shall, on basis of a contract, involve a body (bodies) which is (are) notified for the tasks referred in Clause 3.1 in the field of ETICS in order to undertake the actions laid down in Clause 3.3. For this purpose, the Control plan referred to in Clauses 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the Notified Bodies or Bodies involved.

For initial type testing (in case of system 2+), the results of the tests performed as part of the assessment for the European Technical Approval can be used unless there are changes in the production line or plant. In such cases, the necessary initial-type testing has to be agreed between Building Testing and Research Institute and the Notified Bodies involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provision of this European Technical Approval. The initial-type testing mentioned above could be taken over by the manufacturer for this declaration.

### **3.2.2 Tasks of Notified Bodies**

The Notified Body (Bodies) shall perform the:

- initial type-testing of the product (in case of system 1)

The results of the tests performed as part of the assessment for the European Technical Approval can be used unless there are changes in the production line or plant. In such cases the necessary initial type-testing has to be agreed between Building Testing and Research Institute and the Notified Bodies involved.

- initial inspection of factory and of factory production control

The Notified Body (Bodies) shall ascertain that, in accordance with the Control plan, the factory (in particular the employees and the equipment) and the factory production control are suitable to ensure continuous and orderly manufacturing of the components according to the specifications mentioned in Clause 2 of this ETA.

- continuous surveillance, assessment and approval of factory production control

The Notified Body (Bodies) shall visit the factory at least one a year for a surveillance of this manufacturer having FPC system complying with EN ISO 9001 covering the manufacturing of the ETICS components. It has to be verified that the system of factory production control and the specified automated manufacturing process are maintained taking into account the Control plan.

These tasks shall be performed in accordance with the provisions laid down in the Control plan of this European Technical Approval.

The Notified Body (Bodies) shall retain the essential points of its (their) actions referred to above and state results obtained and conclusions drawn in (a) written report (reports).

- In the case of Attestation of Conformity system 1:

The Notified Body (Bodies) involved by the manufacturer shall issue an EC certificate of conformity of the product stating the conformity with the provisions of this European Technical Approval.

- In the case of Attestation of Conformity system 2+:

The Notified Body (Bodies) involved by the manufacturer shall issue an EC certificate of conformity of the product stating the conformity with the provisions of this European Technical Approval.

In cases where the provisions of the European Technical Approval and its Control plan are no longer fulfilled, the Notified Body shall withdraw the certificate of conformity and inform Approval Body Building Testing and Research Institute without delay.

### **3.3 CE marking**

The CE marking shall be affixed either on the product itself, on a label attached to it, on its packaging or on the commercial documents accompanying the components of the ETICS. The letters «CE» shall be followed by the identification number of the Notified Body involved and be accompanied by the following additional information:

- the name or identification mark and address of the ETA-holder;
- the last two digits of the year in which the CE marking was affixed;
- the number of the EC certificate of conformity of factory production control (system 2+);
- the number of the EC certificate of conformity of the ETICS (system 1);
- the number of the European Technical Approval;
- the ETICS trade name;
- the number of the ETAG.

## **4 Assumptions under which the fitness of the product for the intended use was favourably assessed**

### **4.1 Manufacturing**

The European Technical Approval is issued for the ETICS on the basis of agreed data/information, deposited with Approval Body Building Testing and Research Institute, which identifies the ETICS that has been assessed and judged. Changes to the ETICS or production process, which could result in this deposited data/information being incorrect, should be notified to Approval Body Building Testing and Research Institute before the changes are introduced. The Approval Body Building Testing and Research Institute will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alternations to the ETA shall be necessary.

### **4.2 Installation**

#### **4.2.1 General**

It is the responsibility of the ETA-holder to guarantee that the information about design and installation of this ETICS are easily accessible to the concerned people. This information can be given using reproductions of the respective parts of the European Technical Approval. Besides, all the data concerning the execution shall be clearly indicated on the packaging and/or the enclosed instruction sheets using one or several illustrations.

In any case, the user shall comply with the national regulations and particularly concerning fires and wind load resistance.

Only the components described in Clause 1.1 with the characteristics according to Clause 2 this ETA can be used for the ETICS.

The requirements given in ETAG 004, Chapter 7, as well as the information of Clauses 4.2.2 and 4.2.3, have to be considered.

#### **4.2.2 Design**

- To bond the ETICS, the minimal bonded surface and the method of bonding shall comply with characteristics of the ETICS (see Clause 2.2.8.1 of this ETA) as well as the national regulations. The minimal bonded surface shall be at least 40 %.
- To mechanically fix the ETICS, the choice and the rate of the fixings shall be determined concerning:

- the design wind load suction and the national regulations (taking into account the national safety factors, the design rules, ...)
- the characteristic resistance of the anchors into the considered substrate (see installation parameters – effective anchorage depth, characteristic resistance in the ETA of the anchor,
- the safety in use of the ETICS (cf. Clause 2.2.8) according to the method of fixing.

#### **4.2.3 Execution**

The recognition and preparation of the substrate as well as the generalities about the execution of the ETICS shall be carried out in compliance with:

- Chapter 7 of the ETAG 004 with, in case of bonded ETICS, imperative removal of any existing organic finishes;
- national regulations in effect.

The particularities in execution linked to the different methods of fixing and the application of the rendering system shall be handled in accordance with ETA-holder prescriptions. In particular it is suitable to comply with the quantities of rendering applied, the thickness regularity and the drying periods between two layers.

### **5 Indications to the manufacturers**

#### **5.1 Packaging, transport and storage**

Packaging of the components has to be such that the products are protected from moisture during transport and storage, unless other measures are foreseen by the manufacturer for this purpose.

The components have to be protected against damage.

It is the responsibility of the manufacturer(s) to ensure that these provisions are easily accessible to the concerned people.

#### **5.2 Use, maintenance and repair**

The finishing coat shall normally be maintained in order to fully preserve the ETICS' s performances.

Maintenance includes at least:

- the 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 done rapidly.

It is important to be able to carry out maintenance as far as possible using readily available products and equipment, without spoiling appearance.

It is responsibility of the manufacturer(s) to ensure that these provisions are easily accessible to the concerned people.

  
prof. Ing. Zuzana Sternová, PhD.  
Head of Approval Body



|                              |                                      |  |                                 |                                       |
|------------------------------|--------------------------------------|--|---------------------------------|---------------------------------------|
| Adhesives                    | Baumit StarContact                   |  | Baumit KlebeSpachtel            |                                       |
|                              | Baumit Starcontact light             | Baumit StarContact KBM-Fix                                   |                                 | Baumit KlebeSpachtel KBM-Fix          |
|                              | Baumit StarContact white             | Baumit StarContact KBM                                       |                                 | Baumit KlebeSpachtel KBM              |
|                              | Baumit NivoFix                       | Baumit PaneloFix   |                                 | Baumit WDVS-Kleber                    |
|                              | Baumit StarContact forte             |  | Baumit DickschichtKlebespachtel |                                       |
|                              | Baumit KlebeSpachtel grob            |  | Baumit KlebeSpachtel spritzbar  |                                       |
| Insulation board             | Baumit Fassadendämmplatte EPS-F      |  | Baumit ProTherm                 |                                       |
|                              | Baumit Fassadendämmplatte EPS-F plus |  | Baumit StarTherm                |                                       |
| Special anchor               | Baumit KlebeAnker                    |  | Baumit StarTrack                |                                       |
| Base coats                   | Baumit StarContact                   |  | Baumit KlebeSpachtel            |                                       |
|                              | Baumit Starcontact light             | Baumit StarContact KBM-Fix                                   |                                 | Baumit KlebeSpachtel KBM-Fix          |
|                              | Baumit StarContact white             | Baumit StarContact KBM                                       |                                 | Baumit KlebeSpachtel KBM              |
|                              | Baumit StarContact forte             |  | Baumit DickschichtKlebespachtel |                                       |
|                              | Baumit KlebeSpachtel grob            |  | Baumit KlebeSpachtel spritzbar  |                                       |
|                              | Baumit Spachtelmasse zementfrei      | Baumit EasyFlex  |                                 | Baumit Spachtelmasse zementfrei SPM58 |
|                              | Baumit FaserSpachtel                 |  | Baumit SilverFlex               |                                       |
| Glass fibre mesh             | Baumit Textilglasgitter              | Baumit StarTex   | Baumit ProTex                   |                                       |
| Key coats                    | Baumit UniversalGrund                |  | Baumit UniPrimer                |                                       |
|                              | Baumit PremiumPrimer                 | Baumit PremiumPrimer DG 27                                   |                                 | Baumit DecorGrundierung DG 27         |
| Finishing coats              | Baumit GranoporTop                   |  | Baumit GranoporPutz             |                                       |
|                              | Baumit SilikonTop                    |  | Baumit SilikonPutz              |                                       |
|                              | Baumit CreativTop                    |  |                                 |                                       |
|                              | Baumit StyleTop                      | Baumit ArtlineTop  |                                 | Baumit ArtlinePutz                    |
|                              | Baumit NanoporTop                    |  | Baumit NanoporPutz              |                                       |
|                              | Baumit SilikatTop                    |  | Baumit SilikatPutz              |                                       |
|                              | Baumit SiliporTop                    |  | Baumit SiliporPutz              |                                       |
|                              | Baumit Fascina Special               | Baumit Classico Special                                      | Baumit Edelputz Spezial         | Baumit ScheibenPutz SEP               |
|                              | Baumit CreativTop                    |  |                                 |                                       |
| Baumit StarSystem EPS        |                                      | Annex 1<br><br>of European Technical Approval<br>ETA-12/0378 |                                 |                                       |
| Trade name of the components |                                      |  |                                 |                                       |