



European Technical Assessment **ETA-15/0312 - version 1** of 07/04/2016

GENERAL PART

Technical Assessment Body issuing the European Technical Assessment:

Centre Scientifique et Technique du Bâtiment (CSTB)

Trade name of the construction product:

Granol'therm Impact

Product family to which the construction product belongs:

Product Area Code: 04
External Thermal Insulation Composite System with rendering (ETICS)

Manufacturer:

Cantillana SA/NV
Pontstraat 84
BE – 9831 Deurle
BELGIUM

Manufacturing plant(s):

Cantillana SA/NV
Pontstraat 84
BE – 9831 Deurle
BELGIUM

This European Technical Assessment contains:

16 pages including 3 Annexes which form an integral part of this assessment

Annex 4 contains confidential information and is not included in the European Technical Assessment when that assessment is publicly available

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

European Technical Approval Guideline No 004 (ETAG 004), edition 2013, used as European Assessment Document (EAD)

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SPECIFIC PART

1. Technical description of the product

The External Thermal Insulation Composite System “**Granol’therm Impact**”, subject to this European Technical Assessment (hereinafter ETA) and called ETICS in the following text, is a kit designed and installed in accordance with the Manufacturer’s instructions, deposited with the CSTB. The ETICS comprises the components listed in the following table, which are factory-produced by the Manufacturer or a supplier. The ETICS is made up on site from these components.

The ETICS also includes ancillary materials which are defined in clause 3.2.2.5 of the ETAG 004¹. They shall be used in accordance with the Manufacturer’s instructions.

The ETICS is described according to its method of fixing, as defined in clause 2.2 of the ETAG 004.

| Method of fixing | Component | Coverage (kg/m ²) | Thickness (mm) |
|---|--|-------------------------------|----------------|
| Bonded ETICS (purely bonded or bonded with supplementary anchors) | Insulation product | | |
| | Expanded polystyrene (EPS) boards, see Annex 1 | | 20 to 300 |
| | Adhesive | | |
| | Granol’therm G : grey powder requiring addition of about 26% in weight water, consisting of cement binder, siliceous and calcareous sand and specific additives. | about 3.0 [powder] | — |
| | Supplementary anchors for insulation product | | |
| | Plastic anchors, see Annex 2 | — | — |
| Mechanically fixed ETICS with anchors and supplementary adhesive | Insulation product | | |
| | Expanded polystyrene (EPS) boards, see Annex 1 | | 60 to 300 |
| | Supplementary adhesives | | |
| | Granol’therm G : grey powder requiring addition of about 26% in weight water, consisting of cement binder, siliceous and calcareous sand and specific additives. | 3.0 to 4.0 [powder] | — |
| | Granol’therm KB : grey powder requiring addition of about 26% in weight water, consisting of cement binder, siliceous and calcareous sand and specific additives. | 3.0 to 4.0 [powder] | — |
| | Anchors for insulation product | | |
| | Plastic anchors, see Annex 2 | — | — |

¹ ETAG 004 is available on the EOTA website: www.eota.eu.

| Method of fixing | Component | Coverage (kg/m ²) | Thickness (mm) |
|------------------------|--|--|---------------------------------------|
| Every method of fixing | Base coat | | |
| | Granol'therm ARMAX: ready-to-use paste without cement consisting of acrylic copolymer binder in watery dispersion, calcium carbonate and silica as particles, fibres and specific additives. | about 5.0 | Mean: 3.5 [dry] Minimal: 3.0 [dry] |
| | Meshes | | |
| | Glass fibre meshes (standard and reinforced), see Annex 3 | | |
| | Finishing coats | | |
| | Ready-to-use pastes, acrylic binder: - Granol KR 0.5 mm (particle size 0.5 mm) - Granol KR 1 mm (particle size 1.0 mm) - Granol KR 1.5 mm (particle size 1.5 mm) - Granol KR 2 mm (particle size 2.0 mm) - Granol RP 2 mm (particle size 2.0 mm) - Granol RP 2.5 mm (particle size 2.5 mm) | 2.0 2.3 2.7 3.4 3.0 3.5 | Regulated by particle size |
| | Ready-to-use pastes, acrylic binder: - Granol Design (two layers) | 1.3 + 1.3 | 1.0 |
| | Ready-to-use pastes, acrylic binder: - Granol Freestyle | 1.0 | 0.5 to 1.0 |
| | Ready-to-use pastes, acrylic binder: - Granol RS KR 0.5 mm (particle size 0.5 mm) - Granol RS KR 1 mm (particle size 1.0 mm) - Granol RS KR 1.5 mm (particle size 1.5 mm) - Granol RS KR 2 mm (particle size 2.0 mm) | 2.0 2.3 2.7 3.4 | Regulated by particle size |
| | Ready-to-use pastes, acrylic binder: - Granol'Flex 1 mm (particle size 1.0 mm) - Granol'Flex 1.5 mm (particle size 1.5 mm) - Granol'Flex 2 mm (particle size 2.0 mm) | 2.7 3.4 3.7 | Regulated by particle size |
| | Ready-to-use paste, acrylic binder with coloured marble aggregates: Decor | 4.0 to 5.0 | 2.0 |
| | Ready-to-use paste, acrylosiloxane binder: - Granosil KR 0.5 mm (particle size 0.5 mm) - Granosil KR 1 mm (particle size 1.0 mm) - Granosil KR 1.5 mm (particle size 1.5 mm) - Granosil KR 2 mm (particle size 2.0 mm) - Granosil RP 2 mm (particle size 2.0 mm) - Granosil RP 2.5 mm (particle size 2.5 mm) | 2.0 2.3 2.7 3.4 3.0 3.5 | Regulated by particle size |

| Method of fixing | Component | Coverage (kg/m ²) | Thickness (mm) |
|--|--|--|----------------------------|
| Every method of fixing | Ready-to-use paste, acrylosiloxane binder: | | |
| | - Granosil RS KR 0.5 mm (particle size 0.5 mm) | 2.0 | Regulated by particle size |
| | - Granosil RS KR 1 mm (particle size 1.0 mm) | 2.3 | |
| | - Granosil RS KR 1.5 mm (particle size 1.5 mm) | 2.7 | |
| | - Granosil RS KR 2 mm (particle size 2.0 mm) | 3.4 | |
| | Ready-to-use paste, acrylic binder - associated with synthetic cladding: | Granol'blend AM: 2.6 Granol'Blend FV/EV: 64 pieces/m ² | about 4.0 |
| Ready-to-use paste, siloxane binder: | | | |
| - Granosilan KR 0.5 mm (particle size 0.5 mm) | 2.0 | Regulated by particle size | |
| - Granosilan KR 1 mm (particle size 1.0 mm) | 2.3 | | |
| - Granosilan KR 1.5 mm (particle size 1.5 mm) | 2.7 | | |
| - Granosilan KR 2 mm (particle size 2.0 mm) | 3.4 | | |

The ETICS is designed to give the walls to which it is applied satisfactory thermal insulation. The minimum thermal resistance of the ETICS shall be higher than 1.0 m².K/W.

The components are protected from moisture during transport and storage by means of appropriate packaging, unless other measures are foreseen by the Manufacturer for this purpose.

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

This ETICS is intended to be used as thermal insulation of buildings' external walls made of masonry (bricks, blocks, stones, etc.) or concrete (cast on site or as prefabricated panels).

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

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

The ETICS is not intended to ensure the airtightness of the walls.

The provisions made in this ETA are based on an assumed working life of at least 25 years, provided that the construction works are subject to appropriate design, execution, maintenance and repair. The indications given as to the working life cannot be interpreted as a guarantee given by the Manufacturer or the Technical Assessment Body, but should only be regarded as a means for choosing the appropriate products in relation to the expected economically reasonable working life of the works.

Design, execution, maintenance and repair of the construction works shall take into account principles given in chapter 7 of the ETAG 004 and shall be done in accordance with national instructions.

3. Performances of the product and references to the methods used for their assessment

Performances of the ETICS, related to the basic requirements for construction works (hereinafter BWR), were determined according to chapters 4, 5 and 6 of the ETAG 004.

These performances, given in the following paragraphs, are valid as long as the components are the ones described in § 1 and Annexes 1 to 4 of this ETA.

3.1 Mechanical resistance and stability (BWR 1)

Not relevant.

3.2 Safety in case of fire (BWR 2)

Reaction to fire:

| Configuration | Declared organic content ⁽¹⁾ | Declared flame retardant content ⁽¹⁾ | Class according to EN 13501-1 |
|--|---|--|-------------------------------|
| <ul style="list-style-type: none"> • Adhesive: <ul style="list-style-type: none"> - Granol'therm G • Supplementary adhesives: <ul style="list-style-type: none"> - Granol'therm G - Granol'therm KB • Insulation product: <ul style="list-style-type: none"> EPS boards, reaction to fire Class E, thickness ≤300 mm, density ≤ 18 kg/m³ • Base coat: <ul style="list-style-type: none"> Granol'therm ARMAX • Meshes: <ul style="list-style-type: none"> - R 131 A 101 C+ - R 131 A 102 C+ - Granol'therm AGF (03-1 C+) • Finishing coat: <ul style="list-style-type: none"> Granol'blend AM + Granol'blend FV/EV | <p>Base coat: 9.7%</p> <p>Finishing coat: 7.0 to 10.5%</p> | <p>Base coat: 23.9%</p> <p>Finishing coat: 0.0%</p> | B – s1, d0 |
| <ul style="list-style-type: none"> • Adhesive: <ul style="list-style-type: none"> - Granol'therm G • Supplementary adhesives: <ul style="list-style-type: none"> - Granol'therm G - Granol'therm KB • Insulation product: <ul style="list-style-type: none"> EPS boards, reaction to fire Class E, thickness ≤300 mm, density ≤ 18 kg/m³ • Base coat: <ul style="list-style-type: none"> Granol'therm ARMAX • Meshes: <ul style="list-style-type: none"> - R 131 A 101 C+ - R 131 A 102 C+ - Granol'therm AGF (03-1 C+) • Finishing coats: <ul style="list-style-type: none"> Granol KR / RP / RS KR Granosil KR / RP / RS KR Granosilan KR Granol Freestyle Decor | <p>Base coat: 9.7%</p> <p>Finishing coats: 5.9 to 10.7%</p> | <p>Base coat: 23.9%</p> <p>Finishing coats: 0.0%</p> | B – s2, d0 |

⁽¹⁾ Percentage declared by the Manufacturer, relative to the dried weight of the component as delivered.

⁽²⁾ No performance determined.

| Configuration | Declared organic content ⁽¹⁾ | Declared flame retardant content ⁽¹⁾ | Class according to EN 13501-1 |
|--|--|--|-------------------------------|
| <ul style="list-style-type: none"> • Adhesive: <ul style="list-style-type: none"> - Granol'therm G • Supplementary adhesives: <ul style="list-style-type: none"> - Granol'therm G - Granol'therm KB • Insulation product: <ul style="list-style-type: none"> EPS boards, reaction to fire Class E, thickness ≤300 mm, density ≤ 18 kg/m³ • Base coat: <ul style="list-style-type: none"> Granol'therm ARMAX • Meshes: <ul style="list-style-type: none"> - R 131 A 101 C+ - R 131 A 102 C+ - Granol'therm AGF (03-1 C+) • Finishing coat: <ul style="list-style-type: none"> Granol Design | Base coat: 9.7% Finishing coat: 13.2% | Base coat: 23.9% Finishing coat: 0.0% | C – s2, d0 |

⁽¹⁾ Percentage declared by the Manufacturer, relative to the dried weight of the component as delivered.

Note: a European reference fire scenario has not been laid down for façades. In some Member States, the classification of ETICS according to EN 13501-1 might not be sufficient for the use in façades. 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 States regulations, until the existing European classification system has been completed.

3.3 Hygiene, health and the environment (BWR 3)

3.3.1 Water absorption – capillarity test

3.3.1.1 Water absorption of the base coat

- After 1 hour: water absorption < 1 kg/m²
- After 24 hours: water absorption < 0.5 kg/m²

3.3.1.2 Water absorption of the rendering system

| Rendering system: Base coat + finishing coat indicated below | Water absorption after 24 hours | |
|---|---------------------------------|-------------------------|
| | < 0.5 kg/m ² | ≥ 0.5 kg/m ² |
| <ul style="list-style-type: none"> - Granol KR / Granol RP - Granosil KR / Granosil RP - Granol'Flex - Granol Design - Granol Freestyle - Granosilan KR - Granol RS KR - Granosil RS KR - Granol'blend AM + Granol'blend FV/EV | X | |
| - Decor | | X |

3.3.2 Watertightness

3.3.2.1 Hygrothermal behaviour

Heat-rain and heat-cold cycles have been performed on a rig. The ETICS is assessed as resistant to hygrothermal cycles.

3.3.2.2 Freeze-thaw behaviour

Water absorptions of both the base coat and the rendering systems (except for **Decor** finishing coat) are less than 0.5 kg/m² after 24 hours. The ETICS is therefore assessed as resistant to freeze-thaw, with all finishing coat except Decor.

Freeze-thaw behaviour of the rendering system with **Decor** finishing coat: NPD.

3.3.3 Impact resistance

| Rendering system: Base coat + finishing coat indicated below | Use category | | |
|---|----------------------|----------------------|---------------------------------|
| | single standard mesh | double standard mesh | reinforced mesh + standard mesh |
| Granol KR / Granol RP | Category I | | |
| Granosil KR / Granosil RP | | | |
| Decor | | | |
| Granol'Flex | | | |
| Granol Design | | | |
| Granol Freestyle | | | |
| Granosilan KR | | | |
| Granol RS KR | Category II | Category I | |
| Granosil RS KR | | | |
| Granol'blend AM + Granol'blend FV/EV | | | |

3.3.4 Water vapour permeability – resistance to water vapour diffusion

| Rendering system: Base coat + finishing coat indicated below | Equivalent air thickness s_d (m) |
|---|--|
| Granol KR Granol RP | ≤ 2.0 (Test result obtained with Granol KR 2 mm: 1.3) |
| Granol'Flex | ≤ 2.0 (Test result obtained with Granol'Flex 1 mm: 1.1) |
| Granol Design | ≤ 2.0 (Test result obtained : 1.4) |
| Granol Freestyle | ≤ 2.0 (Test result obtained : 1.2) |
| Granosil KR Granosil RP | ≤ 1.0 Test result obtained with Granosil KR 2 mm: 1.0) |
| Decor | ≤ 1.0 (Test result obtained : 0.7) |
| Granosilan KR | ≤ 1.0 (Test result obtained with Granosilan KR 2 mm: 0.4) |
| Granol RS KR | ≤ 1.0 (Test result obtained with Granol RS KR 2 mm: 0.5) |
| Granosil RS KR | ≤ 1.0 (Test result obtained with Granosil RS KR 2 mm: 0.7) |
| Granol'blend AM + Granol'blend FV/EV | ≤ 1.0 (Test result obtained : 1.0) |

3.3.5 Release of dangerous substances

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

A written declaration was submitted by the Manufacturer.

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 provisions). In order to meet the provisions of the Regulation (EU) No 305/2011, these requirements need also to be complied with, when and where they apply.

3.4 Safety and accessibility in use (BWR 4)

3.4.1 Bond strength

3.4.1.1 Bond strength of the base coat onto insulation product

- Initial state: bond strength ≥ 0.08 MPa
- After hygrothermal cycles: bond strength ≥ 0.08 MPa
- After freeze-thaw cycles: test not performed (see § 3.3.2.2 of this ETA).

3.4.1.2 Bond strength of the adhesive onto substrate and insulation product

Granol'therm G:

| | Bond strength (MPa) after: | | |
|--------------------|----------------------------|--|---|
| | Initial state | 48 h immersion water + 2 h at 23°C-50% RH | 48 h immersion water + 7 days at 23°C-50% RH |
| Concrete | ≥ 0.25 | ≥ 0.08 | ≥ 0.25 |
| Insulation product | ≥ 0.08 | ≥ 0.03 | ≥ 0.08 |

The ETICS can so be installed on the substrate with application of the adhesive on the following minimal surfaces:

| | Tensile strength perpendicular to the faces of EPS | | |
|-----------------------|--|-----------|-----------|
| | ≥ 100 kPa | ≥ 120 kPa | ≥ 150 kPa |
| Granol'therm G | 40% | | |

3.4.2 Fixing strength (transverse displacement)

Test not required because the ETICS fulfils the following criteria:

$$E.d < 50,000 \text{ N/mm}$$

E modulus of elasticity of the base coat without mesh (MPa)

d mean dried thickness of the base coat (mm)

3.4.3 Resistance to wind load

3.4.3.1 Resistance to wind load of mechanically-fixed ETICS using anchors

| | | | | |
|---|--|--------------|--------------|--------------|
| Anchors | Plate diameter (mm) | ≥ 60 | | |
| | Plate stiffness (kN/mm) | ≥ 0.3 | | |
| Insulation product | Type | EPS boards | | |
| | Tensile strength perpendicular to the face (kPa) | ≥ 120 | | |
| | Thickness (mm) | ≥ 60 | ≥ 80 | ≥ 100 |
| Maximum load (Pull-through test) | Anchors not placed at the panel joints: R_{panel} (N) | Minimal: 506 | Minimal: 649 | Minimal: 658 |
| | | Average: 512 | Average: 657 | Average: 688 |
| | Anchors placed at the panel joints: R_{joint} (N) | Minimal: 429 | Minimal: 554 | Minimal: 611 |
| | | Average: 455 | Average: 570 | Average: 616 |

| | | | | |
|---|--|--------------|--------------|--------------|
| Anchors | Plate diameter (mm) | ≥ 60 | | |
| | Plate stiffness (kN/mm) | ≥ 0.6 | | |
| Insulation product | Type | EPS boards | | |
| | Tensile strength perpendicular to the face (kPa) | ≥ 120 | | |
| | Thickness (mm) | ≥ 60 | ≥ 80 | ≥ 100 |
| Maximum load (Pull-through test) | Anchors not placed at the panel joints: R_{panel} (N) | Minimal: 509 | Minimal: 707 | Minimal: 949 |
| | | Average: 520 | Average: 720 | Average: 968 |
| | Anchors placed at the panel joints: R_{joint} (N) | Minimal: 433 | Minimal: 610 | Minimal: 806 |
| | | Average: 464 | Average: 617 | Average: 821 |

For the use of anchors mounted countersunk, the above indicated values apply for insulation thickness greater or equal to 80 mm and plate diameter equal to 60 mm.

Anchors which can be used are described in Annex 2 of this ETA.

| | | |
|---|---|--|
| Anchor | Trade name | Hilti D 8-FV |
| | Helix dimensions (mm) | Large diameter: 65 Small diameter: 58 Height: 40 |
| Insulation product | Type | EPS boards |
| | Tensile strength perpendicular to the face (kPa) | ≥ 100 |
| | Thickness (mm) | ≥ 100 |
| Maximum load (Pull-through test) | Anchors not placed at the panel joints: R_{panel} (N) | Minimal: 480 |
| | | Average: 510 |

Anchor Hilti D 8-FV can only be used as mounted countersunk.

| | | |
|---|---|--|
| Anchor | Trade name | Granol'therm SV II (Termoz SV II Ecotwist) |
| | Helix dimensions (mm) | Diameter: 66 Height: 27 |
| Insulation product | Type | EPS boards |
| | Tensile strength perpendicular to the face (kPa) | ≥ 100 |
| | Thickness (mm) | ≥ 100 |
| Maximum load (Pull-through test) | Anchors not placed at the panel joints: R_{panel} (N) | Minimal: 510 |
| | | Average: 520 |
| | Anchors placed at the panel joints: R_{joint} (N) | Minimal: 390 |
| | | Average: 430 |

Anchor Granol'therm SV II (termoz SV II ecotwist) can only be used as mounted countersunk.

The design wind load resistance of the ETICS fixed with anchors is determined as follows:

$$R_d = \frac{R_{panel} \cdot n_{panel} + R_{joint} \cdot n_{joint}}{\gamma}$$

n_{panel} number of anchors not placed at the panel joints, per m²

n_{joint} number of anchors placed at the panel joints, per m²

γ national safety factor

3.4.4 Width of crack – Render Strip Tensile Test

No performance was determined for the ETICS.

3.5 Protection against noise (BWR 5)

No performance was determined for the ETICS.

3.6 Energy economy and heat retention (BWR 6)

Thermal resistance and thermal transmittance are defined in clause 5.1.6 of the ETAG 004.

3.7 Sustainable use of natural resources (BWR 7)

No performance was determined for the ETICS.

3.8 Aspects of durability and serviceability

Bond strength after ageing:

| Rendering system: Base coat + finishing coat indicated below | Bond strength (MPa) |
|---|---------------------|
| <ul style="list-style-type: none"> - Granol KR , Granol RP - Granosil KR, Granosil RP - Decor - Granol'Flex - Granol Design - Granol Freestyle - Granol RS KR - Granosil RS KR - Granosilan KR - Granol'blend AM + Granol'blend FV/EV | <p>≥ 0.08</p> |

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

According to Decision 97/556/EC (Decision of the Commission of 14 July 1997, L 229 of 20.8.1997, p. 15), as amended by Decision 2001/596/EC (Decision of the Commission of 8 January 2001, L 209 of 2.8.2001, p. 33)², the systems of AVCP given in the following table apply:

| Product | Intended use | Levels or classes (Reaction to fire) | System |
|--|--|--|--------|
| External Thermal Insulation Composite Systems with rendering | in external walls subject to fire regulation | A1 ⁽¹⁾ , A2 ⁽¹⁾ , B ⁽¹⁾ or C ⁽¹⁾ | 1 |
| | | - A1 ⁽²⁾ , A2 ⁽²⁾ , B ⁽²⁾ , C ⁽²⁾ - D, E, F - (A1 to E) ⁽³⁾ | 2+ |
| | in external walls not subject to fire regulation | any | 2+ |

⁽¹⁾ Products/materials for which as clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material).

⁽²⁾ Products/materials not covered by footnote 1.

⁽³⁾ Products/materials that do not require to be tested for reaction to fire (e.g. Products/materials of Classes A1 according to Commission Decision 96/603/EC).

The systems of AVCP are described in Annex V of Regulation (EU) No 305/2011, as amended by Delegated Regulation (EU) No 568/2014.

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at the CSTB.

The control plan is given in Annex 4. As the control plan contains confidential information, Annex 4 is not included in the published parts of this ETA.

Issued in Marne-la-Vallée on 07/04/2016

by

Charles BALOCHE, Technical Manager of the CSTB

² Decisions are published in the *Official Journal of the European Union (OJEU)*, see www.new.eu-lex.europa.eu/oj/direct-access.html.

Factory-prefabricated, uncoated boards made of expanded polystyrene (EPS) according to EN 13163 and having characteristics described in the following table. The surface of the boards is homogeneous and without “skin”. Coverage (kg/m²) depends on both thickness of the board and density of EPS.

| | | |
|--|--|---------------------------|
| Reaction to fire / EN 13501-1 | | Class E |
| Thermal resistance / EN 13163 | | Defined in the CE marking |
| Dimensional tolerances | Thickness / EN 823 | ± 1.0 mm [T2] |
| | Length / EN 822 | ± 2.0 mm [L2] |
| | Width / EN 822 | ± 2.0 mm [W2] |
| | Squareness / EN 824 | ± 2% [S2] |
| | Flatness / EN 825 | ≤ 5 mm [P5] |
| Dimensional stability | Under specified temperature and humidity / EN 1604: 48 h at 70°C | ≤ 1% [DS (70,-)1] |
| | Under specified temperature and humidity / EN 1604: 48 h at 70°C and 90% RH | ≤ 1% [DS(70,90)1] |
| | Under laboratory condition / EN 1603 | ± 0.2% [DS(N)2] |
| Water absorption (partial immersion) / EN 1609 – method A | | < 1 kg/m ² |
| Water vapour diffusion resistance factor (μ) / EN 12086 | | 20 to 60 |
| Tensile strength perpendicular to the faces in dry conditions / EN 1607 | | ≥ 100 kPa |
| Shear strength / EN 12090 | | ≥ 0.02 N/mm ² |
| Shear modulus / EN 12090 | | ≥ 1.0 N/mm ² |
| Dynamic stiffness / EN 29052-1 | | No performance determined |
| Air flow resistance / EN 29053 | | Not relevant |

ETICS Granol’therm Impact

Insulation product for bonded ETICS or mechanically-fixed ETICS with anchors

ANNEX 1

of ETA-15/0312 - version 1

Anchors with ETA according to European Technical Approval Guideline No 014 (hereinafter ETAG 014). The anchors are composed of a plastic expansion sleeve with a plate having diameter of 60 mm and a plastic or metallic nail or screw. Use categories and characteristic resistances in the substrate are given in each anchor's ETA. Validity of the anchor's ETA shall be checked before using the anchor.

| Trade name | ETA reference | Mounting ⁽¹⁾ | Plate stiffness (kN/mm) |
|---|---------------|-------------------------|-------------------------|
| Fischer TERMOZ 8 U, 8 UZ | ETA-02/0019 | a | ≥ 0.3 |
| Fischer TERMOZ 8 N, 8 NZ | ETA-03/0019 | a | |
| Granol'therm NTK U (Ejotharm NTK U) | ETA-07/0026 | a | |
| Fischer TERMOZ PN 8 | ETA-09/0171 | a | |
| Granol'therm CN 8 (Fischer TERMOZ CN 8) | ETA-09/0394 | a | |
| Hilti SDK-FV 8 | ETA-07/0302 | a | |
| Koelner TFIX-8M | ETA-07/0336 | a | ≥ 0.6 |
| Granol'therm STR U (Ejotharm STR U), Granol'therm STR U 2G (Ejotharm STR U 2G) | ETA-04/0023 | a, b | |
| Granol'therm H1 eco (Ejot H1 eco) | ETA-11/0192 | a | |
| Granol'therm H3 (Ejot H3) | ETA-14/0130 | a | |
| Granol'therm CS 8 (Fischer TERMOZ CS 8) | ETA-14/0372 | a, b | |
| Granol'therm NT U (Ejotharm NT U) | ETA-05/0009 | a | |
| Isofux NDS8Z, NDS90Z | ETA-07/0129 | a | |
| Isofux NDM8Z, NDM90Z | | a | |
| Hilti SX-FV | ETA-03/0005 | a | |
| Hilti D 8-FV | ETA-07/0288 | b | |
| Granol'therm SV II (Fischer Termoz SV II ecotwist) | ETA-12/0208 | b | — |

⁽¹⁾ a: surface mounting; b: countersunk mounting.

Additionally, every anchor with an ETA according to ETAG 014 and having the following characteristics can be used:

- plate diameter ≥ 60 mm;
- plate stiffness ≥ 0.3 kN/mm according to EOTA Technical Report No 026;
- load resistance of the plate ≥ 1.0 kN according to EOTA Technical Report No 026.

These characteristics, the use categories and the characteristic resistances in the substrate shall be taken from the corresponding anchor's ETA.

| | |
|---------------------------------------|--|
| ETICS Granol'therm Impact | ANNEX 2 of ETA-15/0312 - version 1 |
| Anchors for insulation product | |

Glass fibre meshes:

- standard mesh: with mesh size between 3 and 6 mm;
- reinforced mesh: implemented in addition to the standard mesh, to improve the impact resistance.

| Trade name | Mass per unit area (g/m ²) | Residual strength after ageing (N/mm) | | Relative residual strength after ageing (%) ⁽¹⁾ | |
|-----------------------------------|--|---------------------------------------|------|--|------|
| | | Warp | Weft | Warp | Weft |
| Standard meshes | | | | | |
| Granol'therm AGF (03-1 C+) | 160 | ≥ 20 | ≥ 20 | ≥ 50 | ≥ 50 |
| R 131 A 101 C+ | 167 | ≥ 20 | ≥ 20 | ≥ 50 | ≥ 50 |
| R 131 A 102 C+ | 161 | ≥ 20 | ≥ 20 | ≥ 50 | ≥ 50 |
| Reinforced mesh | | | | | |
| Granol'therm PZG (03-14) | 530 | ≥ 20 | ≥ 20 | ≥ 40 | ≥ 40 |

⁽¹⁾ Percentage of the strength in the as-delivered state.

ETICS Granol'therm Impact

Glass fibre meshes

ANNEX 3

of ETA-15/0312 - version 1