

Screw-in steel insert

Screw-in polypropylene insulation anchor with steel nail.

Expansion insulation anchors in polypropylene with a steel nail coated in PP, designed to reduce heat dispersal, with screw-in insertion. Approved EAD 330196-00-0604 for substrate categories A - concrete, B - solid brick, C - hollow brick, D - lightweight concrete block, and E - autoclaved aerated concrete. Available for fastening of panels with thickness from 60 mm to 260 mm. Can be mounted with Oversize fixing disk for the application of low compressive strength heat-insulating panels. For flush or recessed insertion with suitable Dual-purpose metal hole saw.

Inserts with a length of ≥ 290 mm can only be applied with the Dual-purpose hole saw and relative Accessory for metal hole saw.



1. With European Technical Assessment (ETA), according to EAD 330196-00-0604 for substrate categories A, B, C, D and E
2. Steel nail and nylon head to ensure no heat dispersal
3. Suitable for all types of heat-insulating panels in Klimaexpert systems
4. Screw-in for flush or recessed insertion
5. Can be mounted with Oversize fixing disk for low compressive strength heat-insulating panels

Areas of application

→ Intended use:

Expansion insulation anchors in polypropylene with a steel nail and nylon head reinforced with fiberglass. Insertion by screwing with Torx imprint on the nail head, for the mechanical fastening of heat-insulating panels.

The anchor must be chosen based on the thickness of the heat-insulating panel to be fastened; the anchor must penetrate the support for at least 4 or 3.5 cm depending on the anchor (see codes). When calculating the useful fastening length, take into account the adhesive layer and any plaster.

Before mechanically fastening the panel, bond it to the substrate using a suitable adhesive&finishing product for external thermal insulation.

→ Product with European Technical Assessment (ETA), according to EAD 330196-00-0604 for application on the following substrate categories:

- concrete: Category A
- solid bricks: Category B
- hollow bricks: Category C
- lightweight concrete blocks: Category D
- autoclaved aerated concrete blocks: Category E

Instructions for use

Where required, instructions for use refer to the Italian Technical Report UNI/TR 11715 "Heat-insulating products for buildings - Design and installation of external heat-insulating systems (ETICS)".

→ System preparation (UNI/TR 11715 - paragraph 9)

Heat-insulating panels must always be anchored after being bonded to the substrate for at least 24-48 hours and in any case after the adhesive has hardened.

Insulation anchors must be positioned at bonding areas of the heat-insulating panel. For details, see the specific anchoring diagrams shown below.

→ Application

Flush mounting with dual-purpose metal hole saw (UNI/TR 11715 – paragraph 9).
For insulation anchors with a length of 110 mm to 310 mm

The type of drilling will be determined by the type of building material from which the substrate is made. Incorrect drilling options may cause a strong reduction in anchor hold and incorrect insertion.



① Drill a bore perpendicular to the substrate with a suitable tip with a diameter of \varnothing 8 mm. The bore must be at least 1 cm longer than the length of the insulation anchors.

In case of:

- Substrates in hollow bricks or other low strength materials: rotary drilling.
- Substrates in solid bricks, concrete or any dense-structure materials: roto-percussion drilling.
- To ease work, it is possible to use non-hydraulic impact screwdriver (light percussion) on low strength substrates. Roto-percussion mode must be avoided at all costs, otherwise the substrate will be damaged and holding will not be guaranteed.

In order to guarantee correct insertion without damage, always clean the bore made before inserting the insulation anchor.

② Insert the pre-assembled insulation anchor into the bore made; take care to position the head of the anchor perfectly flush with the heat-insulating panel.

- Do not force insertion; if the insulation anchor gets stuck, clean the bore.
- The length of the insulation anchor must be carefully chosen according to the thickness to be fastened; thickness of the panel, of the adhesive and of any plaster/render must be taken into account. The insulation anchor must penetrate at least 4 or 3.5 cm into the substrate depending on the insulation anchor (see codes).

Instructions for use

- ③ Fit the dual-purpose metal hole saw with SDS quick coupling on the screwdriver. Make sure that the hole saw has been fit correctly, so that the disk is facing the anchor.
- ④ Screw the nail using the screwdriver fitted with the dual-purpose hole saw. With the help of the hole saw, the nail will be brought flush with the head of the insulation anchor and consequently of the heat-insulating panel, thus avoiding problems of imperfections on the facade and guaranteeing the perfect evenness of the facade.

Notes:

- Insulation anchors with a length of ≥ 290 mm or more can only be inserted with Fresa Metallica Bivalente (dual-purpose hole saw) and relative Accessorio per Fresa (accessory for metal hole saw).
- Positioning of insulation anchors and their numbers per m^2 will be determined by the designer and site management.
- Recessed mounting with dual-purpose hole saw (UNI/TR 11715 – paragraph 9).

For insulation anchors with a length of 130 mm to 310 mm

The type of drilling will be determined by the type of building material from which the substrate is made. Incorrect drilling options may cause a strong reduction in insulation anchor hold and incorrect insertion.



- ① Drill a bore perpendicular to the substrate with a suitable tip with a diameter of $\varnothing 8$ mm. The bore must be at least 2.5 cm longer than the length of the insulation anchors.
In case of:
 - Substrates in hollow bricks or other low strength materials: rotary drilling.
 - Substrates in solid bricks, concrete or any dense-structure materials: roto-percussion drilling.

To ease work, it is possible to use non-hydraulic impact screwdriver (light percussion) on low strength substrates. Roto-percussion mode must be avoided at all costs, otherwise the substrate will be damaged and holding will not be guaranteed.

In order to guarantee correct insertion without damage, always clean the bore made before inserting the insulation anchor

- ② Insert the pre-assembled insulation anchor into the bore made; take care to position the head of the anchor perfectly flush with the heat-insulating panel.
Do not force insertion; if the insulation anchor gets stuck, clean the bore.
The length of the insulation anchor must be chosen according to the thickness to be fastened; thickness of the panel, of the adhesive and of any plaster/render must be taken into account. The insulation anchor must penetrate at least 6 or 5.5 cm into the substrate depending on the insulation anchor (see codes).
- ③ Fit the dual-purpose metal hole saw with SDS quick coupling on the screwdriver. Make sure that the hole saw has been fit correctly, so that the disk is facing the screwdriver.
- ④ Screw the nail using the screwdriver fitted with the dual-purpose hole saw. With the help of the hole saw, the nail will be screwed into the insulation anchor while the heat-insulating panel will be milled at the same time. The insulation anchor will therefore be recessed inside the panel by 1.5 cm.
- ⑤ Apply the appropriate EPS cap or MW cap to the recessed insulation anchor, depending on the heat-insulating panel. In case of very thick heat-insulating panels (≥ 14 cm), it is recommended to recess insulation anchors. This will prevent heat dispersals and imperfect facades.

Notes:

- The body of the insulation anchor is equipped with an initial part, with a diameter of $\varnothing 10$ mm and the remaining final part, of variable length, has a diameter of $\varnothing 8$ mm. The part with the largest diameter must be inserted exclusively into the heat-insulating panel.
- Insulation anchors with a length of ≥ 290 mm or more can only be inserted with Fresa Metallica Bivalente (dual-purpose hole saw) and relative Accessorio per Fresa (accessory for metal hole saw).

Instructions for use

Positioning of insulation anchors and their numbers per m^2 will be determined by the designer and site management.

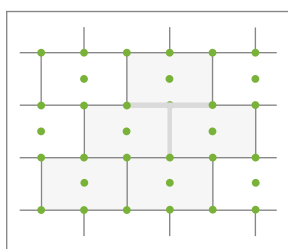
→ Indicative anchoring diagrams (UNI/TR 11715 – paragraph 9/appendix B)

The following anchoring diagrams are the most typical indication of how to apply 6 insulation anchors per m^2 depending on the type of heat-insulating panel.

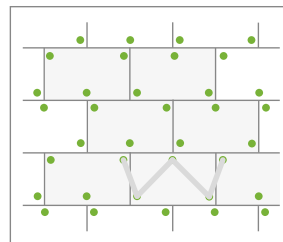
Near the edges of the building and in any case in the presence of particular wind conditions, provide for an increase in the number of insulation anchors as indicated by the Designer or the Works Management.

→ Anchoring diagrams with 6 anchors/ m^2

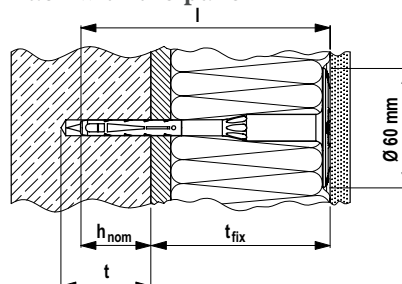
For synthetic panels such as EPS, use the “T” anchoring diagram in which an insulation anchor is placed at each slab intersection, plus an anchor at the centre of each slab.



For natural and mineral panels such as MW, use the “W” anchoring diagram, in which each slab is fixed with 3 anchors, positioned inside the panel near the edge to prevent it from breaking through.

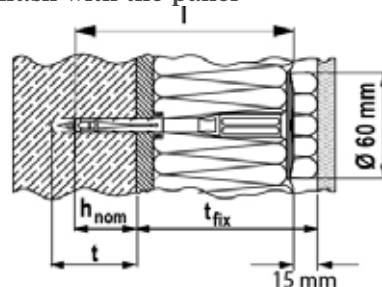


→ Detail of the insulation anchor with application flush with the panel



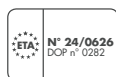
See the Technical Data table

→ Detail of the insulation anchor with application flush with the panel



See the Technical Data table

Certificates and marks



Abstract

The mechanical fixing of the heat-insulating panels will be carried out with expansion insulation anchors in polypropylene with a steel nail with screw-in insertion such as Screw-in steel anchors by Kerakoll Spa. Positioning of Universal spacer and their numbers per m^2 will be determined by the designer and site management.

Technical Data compliant with Kerakoll Quality Standard

Appearance	polypropylene insulation anchor, steel nail
Preparation	assembled
Insulation anchor colour	grey
Diameter of insulation anchor head	60 mm
Minimum bore depth (t)	50- or 45-mm flush insertion / 65- or 55-mm recessed insertion (see table below)
Bore diameter (d0)	8 mm

Flush insertion (a)

Length of insert l (mm)	Fastening thickness* t_{fix} (mm)	Minimum bore depth - t (mm)
110 ⁽¹⁾	70	50
130	90	50
145	110	45
165	130	45
185	150	45
205	170	45
225	190	45
245	210	45
265	230	45
290 ⁽²⁾	250	50
310 ⁽²⁾	270	50

Recessed insertion (b)

Length of insert l (mm)	Fastening thickness* t_{fix} (mm)	Minimum bore depth - t (mm)	Footprint Torx
110 ⁽¹⁾	-	-	T30
130	90	65	T30
145	110	55	T30
165	130	55	T30
185	150	55	T30
205	170	55	T30
225	190	55	T30
245	210	55	T30
265	230	55	T30
290 ⁽²⁾	250	65	T25
310 ⁽²⁾	270	65	T25

(*) t_{fix} = insulating panel thickness + adhesive + existing plaster/render, if any

(1) No recessed insertion available.

(2) Can only be applied with Dual-purpose metal hole saw and relative Accessory for metal hole saw

Performance**HIGH-TECH**

Permissible loads^{1) 4)} for a single insulation anchor for fastening external thermal insulation panelling composite systems (ETICS for anchors with lengths of 110, 130, 290 and 310 mm)

Substrate ³⁾	Density supporting material min (kg/dm ³)	Minimum brick compressive strength (N/mm ²)	Drilling method ²⁾	Permissible loads according to ETA (kN)
Concrete	-	C12/15	hrs	0.40
Concrete	-	C16/20	hrs	0.50
Concrete	-	C50/60	hrs	0.50
Solid clay brick Mz	1.8	20	hrs	0.50
Solid calcium silicate brick KS	1.8	12	R	0.30
Solid calcium silicate brick KS	1.8	20	R	0.50
Solid lightweight concrete block Vbl	1.4	8	R	0.17
Solid normal concrete block Vbn	2.0	12	hrs	0.25
Solid normal concrete block Vbn	2.0	20	hrs	0.40
Partially solid clay brick (vertically perforated) Hlz	1.0	12	R	0.20
Partially solid clay brick (vertically perforated) Hlz	1.6	48	R	0.50
Partially solid calcium silicate brick (vertically perforated) KSL	1.4	12	R	0.17
Partially solid calcium silicate brick (vertically perforated) KSL	1.4	20	R	0.30
Hollow block in lightweight concrete Hbl	0.9	4	R	0.17
Hollow block in lightweight concrete Hbn	1.2	4	hrs	0.17
Hollow block in lightweight concrete Hbn	1.2	6	hrs	0.25
Hollow block in lightweight concrete Hbn	1.2	8	hrs	0.30
Hollow block in lightweight concrete Hbn	1.2	10	hrs	0.40
Lightweight concrete (with lightweight aggregates) LAC	0.8	4	R	0.25
Autoclaved aerated concrete block (cellular)	0.5	4	R	0.10
Autoclaved aerated concrete block (cellular)	0.5	4	R	0.20 ⁵⁾

1. The necessary partial safety factors for material strength have been considered, as well as a partial safety factor for actions $\gamma = 1.5$

2. H = roto-percussion drilling, R = rotary drilling

3. Consult the European Technical Assessment for restrictions related to each manufacturer, for drilling patterns and for thickness of the brick shell. If the typical tensile strength of the fastening is not available, this can be determined through on-site extraction tests carried out on the material actually used.

4. Tensile actions only

5. With anchoring depth (h_{nom}) = 55 mm

Performance**HIGH-TECH**

Permissible loads^{1) 4)} for a single insulation anchor for fastening external thermal insulation panelling composite systems (ETICS for anchors with lengths of 145, 165, 185, 205, 225, 245, 265 mm)

Substrate ³⁾	Density supporting material min (kg/dm ³)	Minimum brick compressive strength (N/mm ²)	Drilling method ²⁾	Permissible loads according to ETA (kN)
Concrete	-	C12/15	hrs	0.50
Concrete	-	C16/20	hrs	0.50
Concrete	-	C50/60	hrs	0.50
Solid clay brick Mz	1.8	20	hrs	0.50
Solid calcium silicate brick KS	1.4	12	R	0.50
Solid calcium silicate brick KS	1.4	20	R	0.50
Solid lightweight concrete block Vbl	1.4	8	R	0.40
Solid normal concrete block Vbn	2.0	12	hrs	0.50
Solid normal concrete block Vbn	2.0	20	hrs	0.50
Partially solid clay brick (vertically perforated) Hlz	0.9	12	R	0.22
Partially solid clay brick (vertically perforated) Hlz	1.6	48	R	0.50
Partially solid calcium silicate brick (vertically perforated) KSL	1.4	12	R	0.50
Hollow block in lightweight concrete Hbl	0.9	4	R	0.17
Hollow block in lightweight concrete Hbn	1.2	4	hrs	0.25
Hollow block in lightweight concrete Hbn	1.2	6	hrs	0.37
Hollow block in lightweight concrete Hbn	1.2	8	hrs	0.50
Hollow block in lightweight concrete Hbn	1.2	10	hrs	0.50
Lightweight concrete (with lightweight aggregates) LAC	0.9	4	R	0.32
Autoclaved aerated concrete block (cellular)	0.5	4	R	0.22
Autoclaved aerated concrete block (cellular)	0.5	4	R	0.37 ⁵⁾

1. The necessary partial safety factors for material strength have been considered, as well as a partial safety factor for actions $\gamma = 1.5$

2. H = roto-percussion drilling, R = rotary drilling

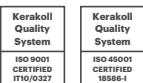
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4. Tensile actions only

5. With anchoring depth (h_{nom}) = 55 mm

Warning

- Abide by any standards and national regulations
 - keep dry, protect from moisture, UV rays and sources of heat
 - store at temperatures between -5 °C and +40 °C
 - use at temperatures between +5 °C and +30 °C
 - once applied, the insulation anchors must be protected from UV rays with a suitable finishing coat as soon as possible
- the product is an item according to the definitions of the EC Regulation No. 1907/2006 and therefore does not require a Safety Data Sheet
 - for any other issues, contact Kerakoll Technical Customer Service: + 39 0536.811.516
www.kerakoll.com/contatti



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