

EPS insulation boards.

High flexibility and strong expertise
for a great insulation.

radiant heating
& cooling
components

OEM



EPS PROCESSING

EPS plant Verolanuova (Italy): 16.000 m² of production area • Different technologies: skinning, thermoforming, melting • Own thermoforming patent • In-house product prototyping

EPS is a highly versatile material for molding a wide variety of finished parts. Our customers enjoy a wider product portfolio, significantly reduced processes costs, improved performance and advanced environmental benefits.

We are constantly developing new material grades and molding techniques, all in support of extending the range of applications. The final transformation of nob boards is the skinning or coupling with thermoformed PS Foils, that can vary from a thickness of 0.16 mm to 1 mm. In the realisation of the flat boards, the panels are hot melted with different foils or materials.

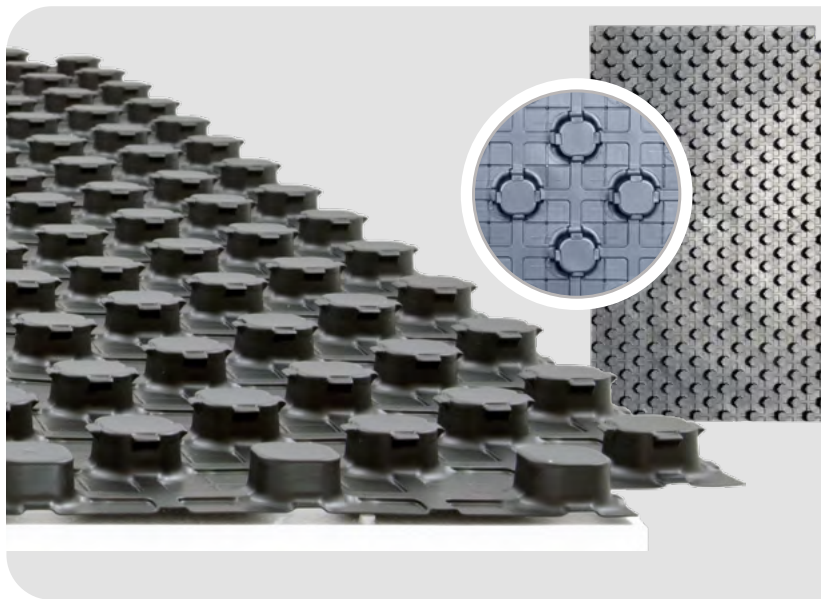
This allows to make different products, all from one single plant based in Verolanuova (Italy).





TF 90°

DYNAMIC THICKNESS ADJUSTMENT



Highly versatile

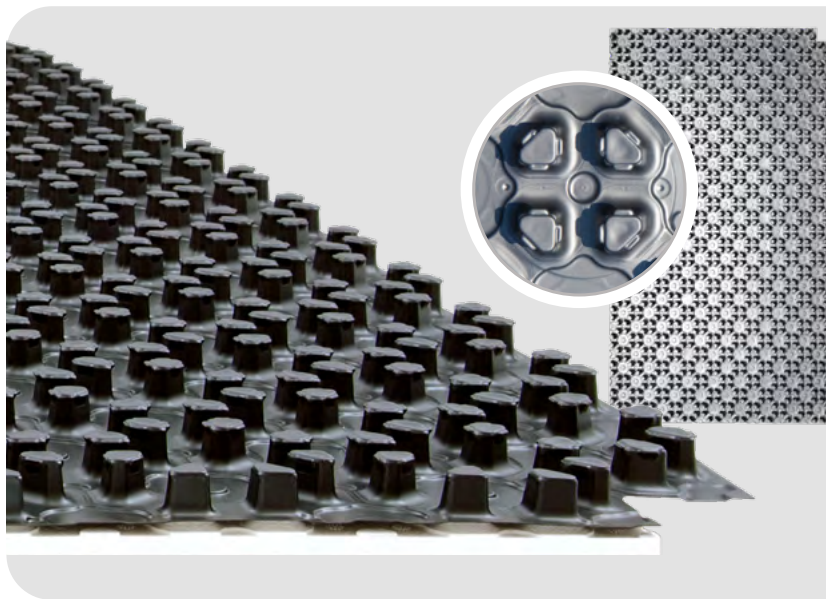
Nob panel with thermoformed element especially designed nobs guarantee perfect fixing, the element is equipped on two sides with extra rows of nobs which allow a keyed and frictional connection preventing penetration of screed into the construction. Based on the high inherent stability the panel is well walk-on-able; made of expanded polystyrene grades EPS.

- Pipe 14-17 mm
- Pipe distance 5 cm
- ≡ Pipe laying 90°
- Foil 0.6 -1.0
- Suitable for cement and self-levelling screed

| DESCRIPTION | PS foil | | Thermoforming boards TF 90° – DEO | | | | Acoustic b. DES |
|---------------------------------------|-------------------------|------------------|-----------------------------------|------------------|------------------|------------------|-----------------|
| | TF 1 | TF 10 | TF 20 | TF 30 | TF 40 | TF 30-2 | |
| Code | 1190001000 | 1190206010 | 1190156020 | 1190156030 | 1190156040 | 1190108030 | |
| Board size (length x width) | mm 1450 x 850 | 1450 x 850 | 1450 x 850 | 1450 x 850 | 1450 x 850 | 1450 x 850 | |
| Effective board size (L x w) | mm 1400 x 800 | 1400 x 800 | 1400 x 800 | 1400 x 800 | 1400 x 800 | 1400 x 800 | |
| Effective board surface | m ² 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | |
| Thickness base insulation | mm - | 10 | 20 | 30 | 40 | 30-2 | |
| Nob height | mm 21.5 | 21.5 | 21.5 | 21.5 | 21.5 | 21.5 | |
| Total thickness | mm 22.5 | 31.5 | 41.5 | 51.5 | 61.5 | 51.5 | |
| Tube diameter | mm 14-17 | 14-17 | 14-17 | 14-17 | 14-17 | 14-17 | |
| Compressive strength (10/Y) | kPa - | 200 | 150 | 150 | 150 | 50 | |
| PS foil thickness | mm 1 | 0.6 | 0.6 | 0.6 | 0.6 | 0.8 | |
| Colour of the PS foil | Col. black | black | black | black | black | black | |
| Pipe spacing | mm 50 | 50 | 50 | 50 | 50 | 50 | |
| Heat conduction λ [EN 12667] | W/mK - | 0.034 | 0.034 | 0.034 | 0.034 | 0.040 | |
| Th. resistance R [EN 12939] | m ² K/W - | 0.40 | 0.70 | 0.95 | 1.25 | 0.75 | |
| Impact sound reduction L _w | dB - | - | - | - | - | > 28 | |
| Stiffness group to EN 13163 | SD - | - | - | - | - | SD 20 | |
| Fire class [EN 13501-1] | Foil F | EPS - E / Foil F | EPS - E / Foil F | EPS - E / Foil F | EPS - E / Foil F | EPS - E / Foil F | |
| Boards per box | nr. 18 | 18 | 12 | 10 | 7 | 10 | |
| Board surface per box | m ² 20.16 | 20.16 | 13.44 | 11.2 | 7.84 | 11.2 | |
| Box size | cm 152 x 88 x 25.5 | 152 x 88 x 43 | 152 x 88 x 43 | 152 x 88 x 43 | 152 x 88 x 39 | 152 x 88 x 43 | |
| Boxes per pallet | nr 12 | 6 | 6 | 6 | 7 | 6 | |
| Surface per pallet (h 300 cm) | m ² 241.92 | 120.96 | 80.64 | 67.20 | 54.88 | 67.20 | |
| Full truck (13.6 ldm) | m ² 5.564.16 | 2.782.08 | 1.854.72 | 1.545.60 | 1.262.24 | 1.545.60 | |

Thermoformed nob board

TFS 45°



45° pipe laying

Nob panel with thermoformed element especially designed nobs allows installation of the pipe also in diagonal direction 45°, the element is equipped on two sides with extra rows of nobs which allow a keyed and frictional connection preventing penetration of screed into the construction. Based on the high inherent stability the panel is well walk-on-able; made of expanded polystyrene grades EPS.

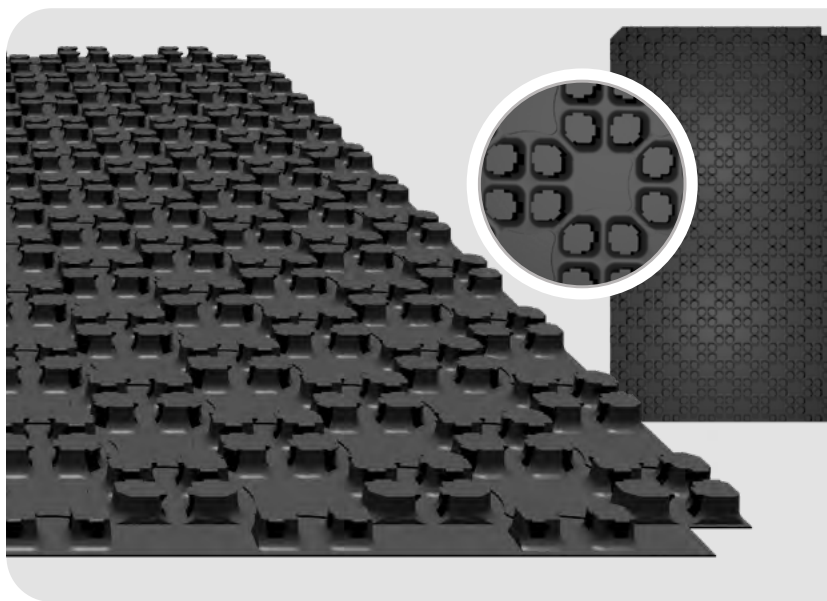
- Pipe 14-17 mm
- Pipe distance 5 cm
- ≡ Pipe laying 45°
- Foil 0.6 -1.0
- Suitable for cement and self-levelling screed

| DESCRIPTION | PS foil | | Thermoforming boards TFS 45° - DEO | | | |
|--|-------------------------|------------------|------------------------------------|------------------|--|--|
| | TFS 1 | TFS 10 | TFS 20 | TFS 30 | | |
| Code | 1145000000 | 1145206010 | 1145156020 | 1145156030 | | |
| Board size (length x width) | mm 1450 x 850 | 1450 x 850 | 1450 x 850 | 1450 x 850 | | |
| Effective board size (length x width) | mm 1400 x 800 | 1400 x 800 | 1400 x 800 | 1400 x 800 | | |
| Effective board surface | m ² 1.12 | 1.12 | 1.12 | 1.12 | | |
| Thickness base insulation | mm - | 10 | 20 | 30 | | |
| Nob height | mm 18.5 | 18.5 | 18.5 | 18.5 | | |
| Total thickness | mm 19.5 | 28.5 | 38.5 | 48.5 | | |
| Tube diameter | mm 14-17 | 14-17 | 14-17 | 14-17 | | |
| Compressive strength (10/Y) | kPa - | 200 | 150 | 150 | | |
| PS foil thickness | mm 1 | 0.6 | 0.6 | 0.6 | | |
| Colour of the PS foil | Col. black | black | black | black | | |
| Pipe spacing 45°/90° | mm 50/71 | 50/71 | 50/71 | 50/71 | | |
| Heat conduction λ (EN 12667) | W/mK - | 0.034 | 0.034 | 0.034 | | |
| Thermal resistance R (EN 12939) | m ² K/W - | 0.35 | 0.65 | 0.95 | | |
| Impact sound reduction L _w | dB - | - | - | - | | |
| Stiffness group to EN 13163 | SD - | - | - | - | | |
| Fire class (EN 13501-1) | Foil F | EPS - E / Foil F | EPS - E / Foil F | EPS - E / Foil F | | |
| Boards per box | nr 16 | 16 | 11 | 8 | | |
| Board surface per box | m ² 17.92 | 17.92 | 12.32 | 8.96 | | |
| Box size | cm 148 x 87 x 19 | 148 x 87 x 35 | 148 x 87 x 35 | 148 x 87 x 35 | | |
| Boxes per pallet | nr 14 | 8 | 8 | 8 | | |
| Board surface per pallet (h 300 cm) | m ² 250.88 | 143.36 | 98.56 | 71.68 | | |
| Board surface per full truck (120 m ³) | m ² 6.522.88 | 3.440.64 | 2.365.44 | 1.720.32 | | |

Enetec reserves the right to change products and specifications without notice.

Thermoformed nob foil

MINI TFS



Small thickness. Great performance.

The Mini TF sheeting element is easy to lay on existing screed or insulations. Suitable for pipes \varnothing 10-12 mm. Allowing for straight and diagonal pipe laying.

- Only 19 mm floor height
- Quick installation
- Ideal for renovations
- Easy installation

○ Pipe 10-12 mm ■ Pipe distance 5 cm ▨ Pipe laying 45° ■ Foil 1.0 ■ Suitable for self-levelling screed

| DESCRIPTION | MINI TF |
|--|-------------------------|
| Board size (length x width) | mm 1125 x 625 |
| Effective board size (length x width) | mm 1100 x 600 |
| Nob height | mm 13 |
| Tube diameter | mm 10-12 |
| PS foil thickness | mm 1 |
| Pipe spacing | mm 50 |
| Boards per box | nr 28 |
| Board surface per box | m ² 0.66 |
| Box size | cm 113.5 x 66 x 24 |
| Boxes per pallet | nr 10 |
| Board surface per pallet (h 300 cm) | m ² 184.8 |
| Board surface per full truck (120 m ³) | m ² 6.652.80 |

| ARTICLE | DESCRIPTION |
|------------|-------------------------------|
| 1145000010 | Mini TFS - Foil |
| 1145000020 | Mini TFS - Foil self-adhesive |

According to rooms by D.M. 17-01-2018 of categories A, B1, B2 (living areas, including hospitals and hotels, office space) * Proof of pointly concentrated loads $Q_k = 2$ kN

Certified laboratory (NTC2018)

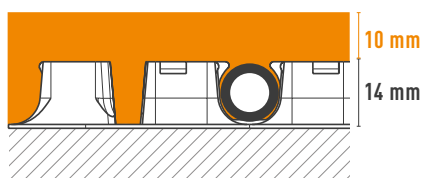


Mini TFS self-adhesive + Self-levelling mortar Knauf NE 499

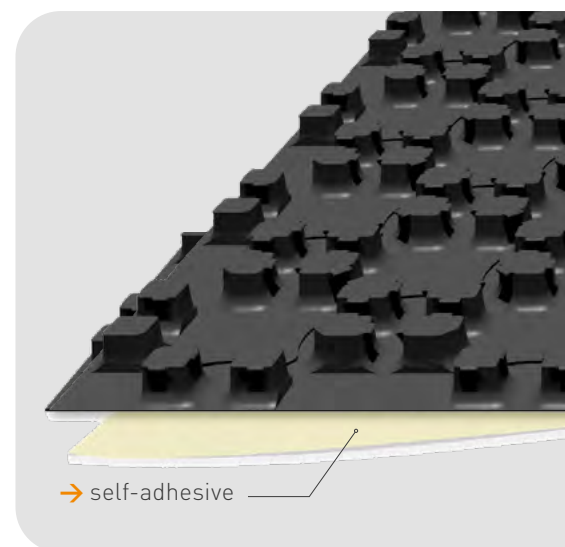



| *point load [kN] | | Mini TFS Pipe \varnothing 10 mm | Mini TFS Pipe \varnothing 12 mm |
|------------------|-------------|-----------------------------------|-----------------------------------|
| ≤ 2 | Covering | 5 mm | 5 mm |
| | Tot. height | 19 mm | 19 mm |

Mini TFS + Self-levelling mortar Knauf NE 425

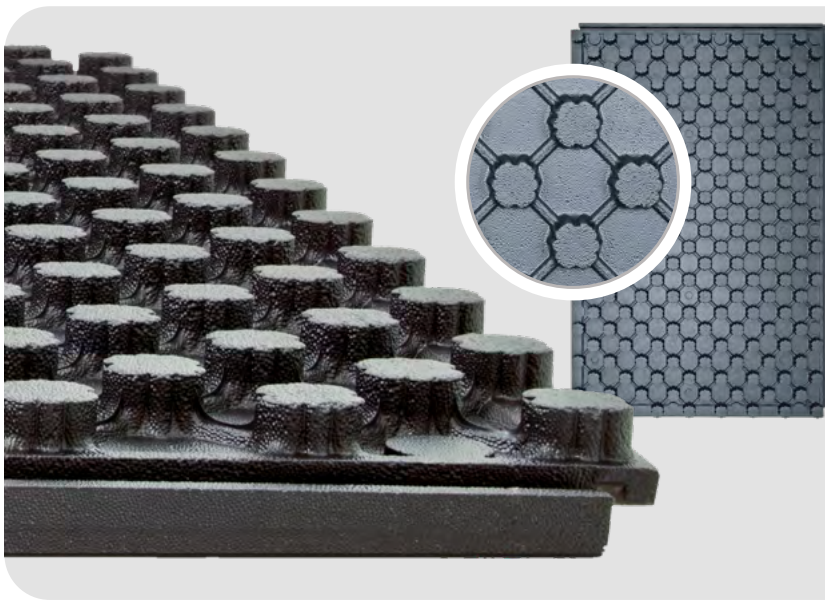



| *point load [kN] | | Mini TFS Pipe \varnothing 10 mm | Mini TFS Pipe \varnothing 12 mm |
|------------------|-------------|-----------------------------------|-----------------------------------|
| ≤ 2 | Covering | 10 mm | 10 mm |
| | Tot. height | 24 mm | 24 mm |



Preformed board

PB50



Preformed insulating board with different thickness's in polystyrene EPS. Declared heat conductivity of 0.034 / 0.035 W/mK (UNI EN 13163), protected on top by a special 0.16 mm film (UNI EN 1264-4) and nobs set to allow the setting of the pipes with a distance of 5 cm; the insulating sheet is interlocking to eliminate heat bridges. Compressive strength at 10% deformation: 120 / 150 kPa (UNI EN 13163); reaction to fire: Euroclass E (EN 13501-1).

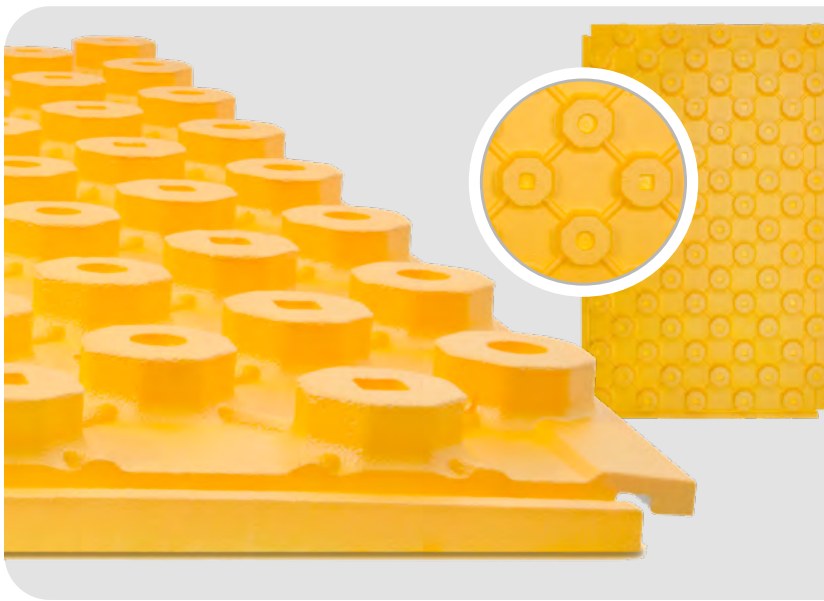
○ Pipe 14-17 mm ■ Pipe distance 5 cm ≡ Pipe laying 90° ■ Skinned ■ Suitable for cement and self-levelling screed

| DESCRIPTION | | PB 50-20/45 | PB 50-30/55 | PB 50-40/65 |
|--|----------------|-----------------|-----------------|-----------------|
| Board size (length x width) | mm | 1220 x 820 | 1220 x 820 | 1220 x 820 |
| Effective board size (length x width) | mm | 1200 x 800 | 1200 x 800 | 1200 x 800 |
| Base/+nob height | mm | 20/45 | 30/55 | 40/65 |
| Tube diameter | mm | 14-17 | 14-17 | 14-17 |
| Pipe distance (multiple) | mm | 50 | 50 | 50 |
| Heat conduction λ (EN 12667) | W/mK | 0.035 [120 kPa] | 0.035 [120 kPa] | 0.035 [120 kPa] |
| Boards per box | nr | 15 | 12 | 10 |
| Board surface per box | m ² | 14.19 | 11.35 | 9.46 |
| Box size | cm | 124 x 85 x 59 | 124 x 85 x 59 | 124 x 85 x 59 |
| Boxes per pallet | nr | 4 | 4 | 4 |
| Board surface per pallet (h 300 cm) | m ² | 56.76 | 45.41 | 37.84 |
| Board surface per full truck (120 m ³) | m ² | 1.816.32 | 1.456.05 | 1.210.88 |

| ARTICLE | DESCRIPTION |
|------------|--------------------------------|
| 1150121020 | PB 50 – 20/45 mm – EPS 120 kPa |
| 1150121030 | PB 50 – 30/55 mm – EPS 120 kPa |
| 1150121040 | PB 50 – 40/65 mm – EPS 120 kPa |
| 1150151020 | PB 50 – 20/45 mm – EPS 150 kPa |
| 1150151030 | PB 50 – 30/55 mm – EPS 150 kPa |
| 1150151040 | PB 50 – 40/65 mm – EPS 150 kPa |

Preformed board

PB75



Preformed insulating board with different thickness's in polystyrene EPS. Declared heat conductivity of 0.035 W/mK (UNI EN 13163), protected on top by a special 0.16 mm film (UNI EN 1264-4) and nobs set to allow the setting of the pipes with a distance of 7.5 cm; the insulating sheet is interlocking to eliminate heat bridges.

Compressive strength at 10% deformation: 150 kPa (UNI EN 13163); reaction to fire: Euro-class E (EN 13501-1).

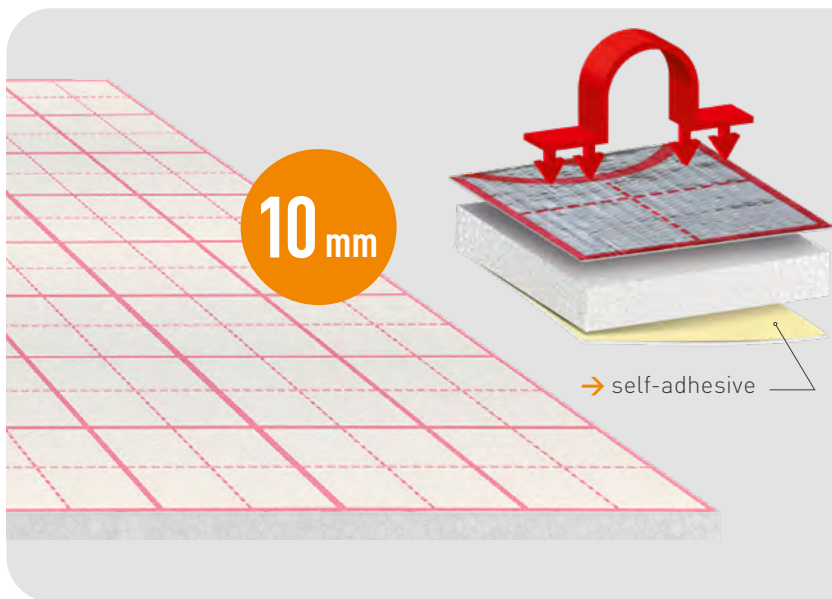
○ Pipe 17-20 mm ■ Pipe distance 7.5 cm ≡ Pipe laying 90° ■ Skinned ■ Suitable for traditional screed

| DESCRIPTION | | PB 75-20/48 | PB 75-30/58 | PB 75-40/68 |
|--|----------------|---------------|---------------|---------------|
| Effective board size (length x width) | mm | 1200 x 750 | 1200 x 750 | 1200 x 750 |
| Base/+nob height | mm | 20/48 | 30/58 | 40/68 |
| Tube diameter | mm | 14-20 | 14-20 | 14-20 |
| Pipe distance (multiple) | mm | 75 | 75 | 75 |
| Heat conduction λ (EN 12667) | W/mK | 0.035 | 0.035 | 0.035 |
| Boards per box | nr | 16 | 12 | 10 |
| Board surface per box | m ² | 14.40 | 10.80 | 9.00 |
| Box size | cm | 124 x 85 x 59 | 124 x 85 x 59 | 124 x 85 x 59 |
| Boxes per pallet | nr | 4 | 4 | 4 |
| Board surface per pallet (h 300 cm) | m ² | 56.76 | 45.41 | 37.84 |
| Board surface per full truck (120 m ³) | m ² | 1.843.20 | 1382.40 | 1.152.00 |

| ARTICLE | DESCRIPTION |
|------------|--------------------------------|
| 1170152020 | PB 75 - 20/48 mm - EPS 150 kPa |
| 1170152030 | PB 75 - 30/58 mm - EPS 150 kPa |
| 1170152040 | PB 75 - 40/68 mm - EPS 150 kPa |

Ultra slim flat board

EUROTEN



The Euroten flat board is specially designed for use in renovations and the compressive strength of 150 kPa allows Euroten to be used in any underfloor heating application. In combination with the system-clips, pipes can be installed from dimension 10 mm to 17 mm. The laminated aluminized foil is high tear-resistant with printed grid spacing 50 mm, the foil is one side overlapped 30 mm layered with adhesive-backed to prevent penetration of water to the insulation. The complete panel is self-adhesive on the backside to fix the Euroten system in perfect shape on existing insulations. The Euroten panel is folded to a dimension of 800 x 1200 mm to fit perfectly the europallet dimension.

- Pipe 10-17 mm
- Pipe distance 5 cm
- ▨ Pipe laying free
- Hot melt foil
- Suitable for self-levelling screed

| DESCRIPTION | EUROTEN | |
|--|----------------|---------------|
| Board size (length x width) | mm | 1200 x 1600 |
| Pipe distance (multiple) | mm | 50 |
| Heat conduction λ (EN 12667) | W/mK | 0.034 |
| Boards per box | nr | 20 |
| Board surface per box | m ² | 19.2 |
| Box size | cm | 120 x 80 x 20 |
| Boxes per pallet | nr | 13 |
| Board surface per pallet (h 300 cm) | m ² | 249.60 |
| Board surface per full truck (120 m ³) | m ² | 8.985.60 |

| ARTICLE | DESCRIPTION |
|-----------|----------------------------------|
| 101101516 | EUROTEN 10 mm |
| 101101515 | EUROTEN 10 mm self-adhesive |
| 103170816 | Perimetral strip 6 + 2 self-adh. |

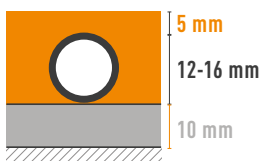
According to rooms by D.M. 17-01-2018 of categories A, B1, B2 (living areas, including hospitals and hotels, office space) * Proof of pointily concentrated loads $Q_k = 2$ kN

Certified laboratory (NTC2018)



- about 250 m² per pallet, the warehouse storage and the transport are simple
- cables and pipes safe to drill because the special clip doesn't pass through the insulation
- the printed grid is provided to help a quick and simple installation of the pipes

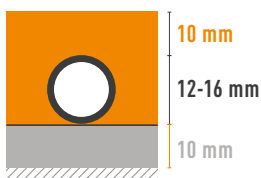
Euroten self-adhesive + Self-levelling mortar Knauf NE 499



30 mm

| | | |
|------------------|-------------|---------------------------|
| *point load [kN] | | Euroten Pipe ϕ 15 mm |
| ≤ 2 | Covering | 5 mm |
| | Tot. height | 30 mm |

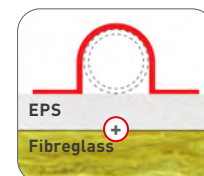
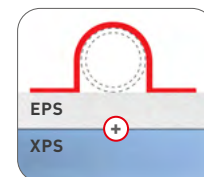
Euroten + Self-levelling mortar Knauf NE 425



35 mm

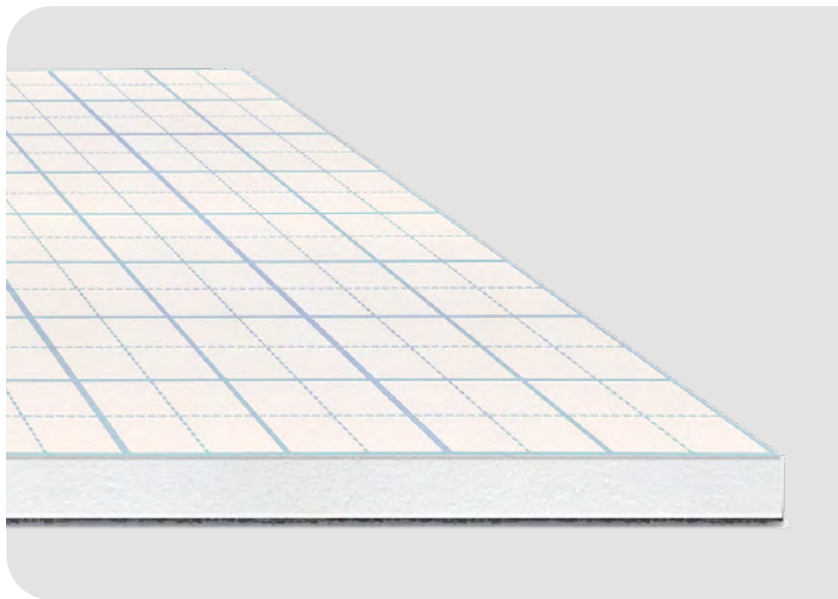
| | | |
|------------------|-------------|---------------------------|
| *point load [kN] | | Euroten Pipe ϕ 15 mm |
| ≤ 2 | Covering | 10 mm |
| | Tot. height | 35 mm |

The Euroten board can be coupled to other types of boards:



Flat board

KLETT

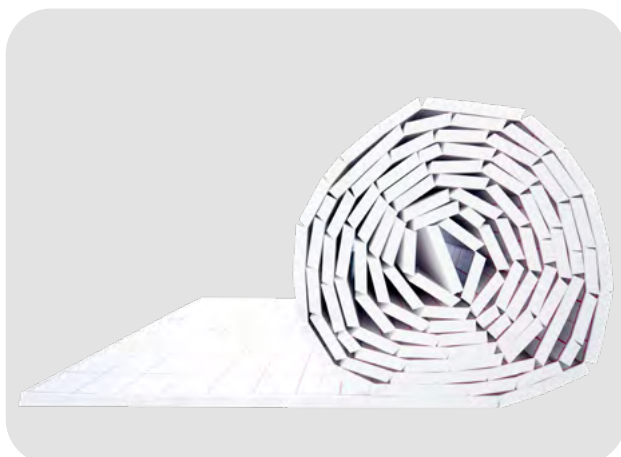


Klett is an easy-to-install, leak-resistant radiant floor heating and cooling system. It is fast and easy to lay, without the need of additional accessories such as clips or clamps. A self-attaching strap fastener wrapped around Klett pipes makes it quick and easy to secure the pipe to the smooth insulation board. On the klett foil is printed a grid spacing 50 mm, the foil is one side overlapped 30 mm layered with adhesive-backed on the opposite side to prevent penetration of water or screed. Available in rolls and boards.

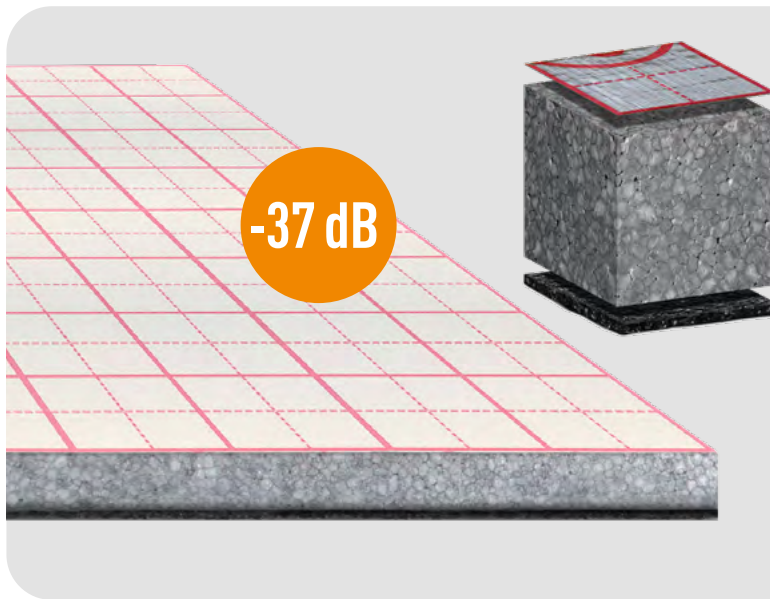
○ Pipe 10-20 mm ■ Pipe distance 5 cm ≡ Pipe laying free ■ Hot melt foil ■ Suitable for traditional screed

| DESCRIPTION | | KLETT 20 | KLETT 30 |
|--|--------------------|--------------|--------------|
| Board size (length x width) | mm | 1000 x 15000 | 1000 x 10000 |
| Pipe distance (multiple) | mm | 50 | 50 |
| Heat conduction λ (EN 12667) | W/mK | 0.035 | 0.035 |
| Total thickness | mm | 20 | 30 |
| Compressive strength (10/Y) | kPa | 150 | 150 |
| Thermal resistance | m ² K/W | 0.55 | 0.85 |
| Board surface per Roll | m ² | 15 | 10 |
| Board surface per pallet (h 300 cm) | m ² | 60 | 40 |
| Board surface per full truck (120 m ³) | m ² | 1920 | 1280 |

| ARTICLE | DESCRIPTION |
|-----------|------------------|
| 102215020 | Klett roll 20 mm |
| 102215030 | Klett roll 30 mm |



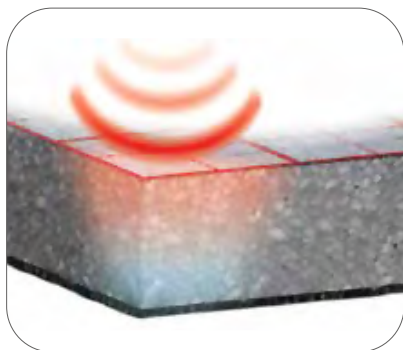
FLAT-DB



Insulation plate tacker panel Flat-dB made of expanded polystyrene grades EPS with graphite, declared thermal conductivity λ : 0.030 W/mK (EN 13163; EN 12667). The insulation panel is coated on the underside with a granulated SBR-rubber sheat to give exceptional acoustic performances. To the insulation panel has been certified an acoustical step noise insulation ΔL_w of -37dB compliant to EN ISO 717-2. The upper side of the panel is laminated with high tear-resistant fabric-reinforced foil made of aluminized polyethylene (DIN EN 1264-4), with printed grid spacing 50 mm. The foil is one side overlapped approx. 30 mm to allow a safe junction of the boards and avoid concrete infiltration.

- Pipe 10-20 mm
- Pipe distance 5 cm
- ≡ Pipe laying free
- Hot melt foil
- Suitable for traditional screed

| DESCRIPTION | FLAT-DB |
|--|-------------------------|
| Code | 101711432 |
| Board size (length x width) | mm 2000 x 1000 |
| Pipe distance (multiple) | mm 50 |
| Heat conduction λ (EN 12667) | W/mK 0.030 |
| Total thickness | mm 32 |
| Compressive strength (10/Y) | kPa 150 |
| Thermal resistance | m ² K/W 0.80 |
| Boards per packing unit | m ² 6 |
| Board surface per pallet (h 280 cm) | m ² 78 |
| Board surface per full truck (120 m ³) | m ² 2.028 |



Certified acoustic

The entire system, complete with pressurised piping, perimeter strip and any other accessory necessary for precision laying, has been laboratory tested in compliance with EN ISO 140-6 on 20 + 5 cm clay/cement mix floor under the strict control of the Dipartimento di Fisica Tecnica DFT of the University of Padova. In this way it was possible, on the basis of the experimental values measured, to supply evaluation indexes ΔL_w and $L_{n,w}$ in compliance with EN ISO 717-2 that consider the real application and effect of a "difficult" floor like the clay/cement mix, which due to its non-homogeneous constitution is outside of the use conditions of the acoustic reduction prevision form of the EN 12354-2.

System acoustic performance; index of evaluation of the pressure level attenuation indoor sound ΔL_w on clay/cement floor 20 + 5 in compliance with UNI 9730-1:1990, EN 15037-3:2009 and MD 09/01/1996

37 dB (without covering)*
 36 dB (with ceramic tiles)*
 44 dB (with floating parquet floor)*
 * EN ISO 717-2; EN ISO 140-6 (DFT)

Normalised indoor sound pressure level $L_{n,w}$ measured in laboratory on clay/cement mix floor 20 + 5 in compliance with UNI 9730-1:1990, EN 15037-3:2009 and MD 09/01/1996

55 dB (without covering)*
 56 dB (tiles covering)*
 48 dB (floating covering)*
 * EN ISO 717-2; EN ISO 140-6 (DFT)



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