

MODULAR SCREED SYSTEMS



INNOVATIVE SOLUTIONS FOR CERAMIC AND STONE TILE

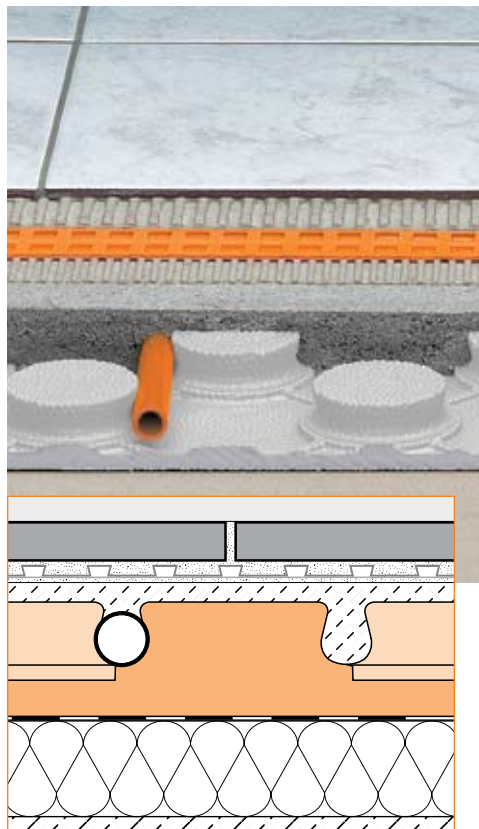
STRESS-FREE FLOORING ASSEMBLY FOR CONTINUOUS SCREEDS AND HYDRONIC RADIANT HEAT ACCOMMODATION

Schluter®-BEKOTEC is a lightweight modular screed system that is used to create continuous screed surfaces without control joints or reinforcement and is designed to accommodate hydronic radiant heating tubes. Since it is a floating system, the assembly can be customized to meet a range of heat and sound requirements.

Application and Function

9.1 Schluter®-BEKOTEC and **9.2 Schluter®-BEKOTEC-F** are modular screed systems that produce permanent flooring assemblies that are free from internal stresses. The bases for these systems are the Schluter®-BEKOTEC-EN/US/P and Schluter®-BEKOTEC-EN23F studded polystyrene screed panels that are placed directly over any load-bearing substrate and optional common sound and/or heat-insulating layers. The studs effectively divide the screed into smaller, 4-1/4" (108 mm) square modules, thereby confining shrinkage and curing stresses to control deformations such as curling and continuous cracks that can be common in a traditional screed. These modular screed systems allow the installation of continuous screed surfaces without any control joints or wire reinforcement. The elimination of control joints allows surface movement joints to be placed to match the joint layout in the tile covering.

The cross-section of the assembly reveals a minimum screed thickness of 1-1/4" (32 mm) between the studs and 5/16" (8 mm) above the studs. This results in significant material and weight savings over traditional screeds. For example, a 1-1/4" (32 mm)-thick traditional mortar bed weighs approximately 15-lb/ft² (0.72 kPa), while a BEKOTEC mortar screed weighs approximately 12 to 12.5-lb/

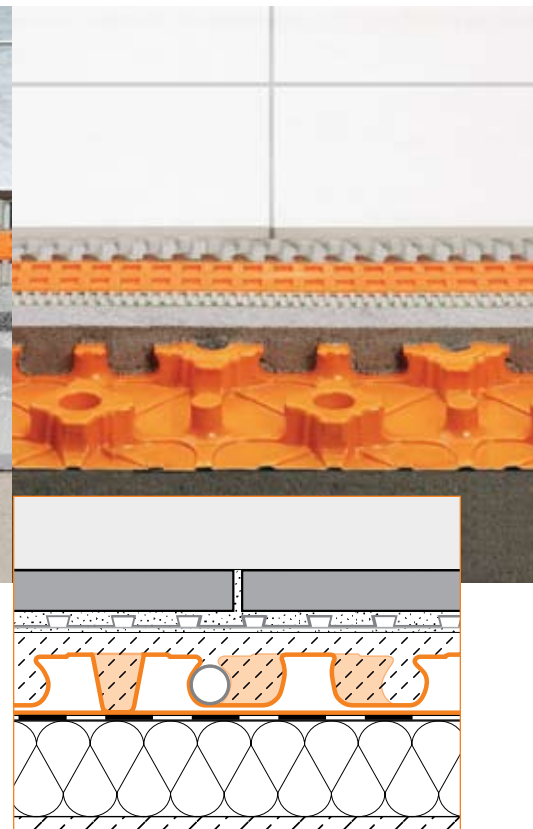


9.1 Schluter®-BEKOTEC

ft² (0.57 - 0.60 kPa), representing a 15 - 20% decrease. Material and weight savings compared to a 2" (51 mm)-thick mortar bed amount to approximately 50%.

The studs form a grid pattern, with a distance of 3" (76 mm) between studs to accept hydronic heating tubes 3/8" (10 mm) to 5/8" (16 mm) O.D. if a heating screed is to be installed. Since the screed mass to be heated is relatively small, the floor heating can be well regulated and operated at a low temperature range.

The modular screed system reduces impact sound transmission. Since it is a float-



9.2 Schluter®-BEKOTEC-F

ing screed system, it is also possible to incorporate a variety of sound attenuation materials below the panel, allowing for even greater impact sound reduction.

Ceramic and stone tile is installed over the modular screed using the Schluter®-DITRA or Schluter®-DITRA-XL uncoupling membrane. Please refer to the Schluter®-DITRA Installation Handbook (detail D-C-TS for Portland cement-based screeds and detail D-G-TS for gypsum-based screeds) for installation requirements, including but not limited to setting and grouting materials, setting and grouting specifications,



and movement joint placement. Surface coverings not sensitive to cracking, such as parquet or carpet, can be placed directly over the screed as soon as the residual moisture has reached an appropriate level.

Material Properties and Areas of Application

Schluter®-BEKOTEC-EN/US/P is manufactured using closed-cell expanded polystyrene and is suitable for use with conventional mortar and poured screeds. BEKOTEC-EN/US/P requires no special disposal and can be recycled. No CFCs or HCFCs are present in either the material or the manufacturing process.

The expanded polystyrene foam used to manufacture Schluter®-BEKOTEC-EN/US/P is treated with a flame-retarding agent. The foam is self-extinguishing and achieves an HF-1 rating according to UL 94. Expanded polystyrene should not be exposed to hydrocarbons, esters, amines, and aldehydes. Common examples include solvent-based adhesives and diluting agents, oil-based paints and stains, and petroleum fuels such as gasoline and kerosene. All will deteriorate foam. Exposure to ultraviolet rays (sunlight) for long periods of time will result in partial degradation (dusting) at the surface.

Schluter®-BEKOTEC-EN23F is manufactured using high-impact polystyrene foil and is suitable for use with conventional mortar and poured screeds.

Installation

- Schluter®-BEKOTEC-EN/US/P or Schluter®-BEKOTEC-EN23F is installed over an even and sufficiently load-bearing substrate. If additional insulation is required, place a layer of expanded or extruded polystyrene foam panels over the substrate and cover with a sheet of polyethylene.
- At the perimeter, where the covering meets walls or restraining surfaces, place the 5/16" (8 mm)-thick edge strip, Schluter®-BEKOTEC-BRS or -BRSK. The edge strips feature an integrated foil that must be carried over the separating layer covering the insulation. If a poured screed is to be applied, the Schluter®-BEKOTEC-BRS/KF or -BRS/KSF edge strip with adhesive leg is used. The -BRS/KF edge strip is attached to the wall using the adhesive strip on its backside, while the -BRS/KSF edge strip is

Schluter®-BEKOTEC		(Physical Properties)
Property	Value	
Schluter®-BEKOTEC-EN/US/P (EPS Foam)		
Density ¹	2.0 lb/ft ³ (32 kg/m ³)	
Compressive Strength ¹	31.1 psi (214 kPa)	
R-Value ²	2.1	
R-Value w/Mortar Screed	2.6	
Maximum Service Temperature	175° F (79° C)	
Weight w/Mortar Screed ^{3,4}	12 lb/ft ² (0.57 kPa)	
Weight w/Gypsum Screed ^{3,4}	9.5 lb/ft ² (0.45 kPa)	
Screed Material Volume ⁴ (per 100 ft ²)	8.2 ft ³ (0.23 m ³)	
Schluter®-BEKOTEC-EN23F (HIPS Foil)		
Maximum Service Temperature	158° F (70° C)	
Weight w/Mortar Screed ^{3,4}	12.5 lb/ft ² (0.60 kPa)	
Weight w/Gypsum Screed ^{3,4}	10 lb/ft ² (0.48 kPa)	
Screed Material Volume ⁴ (per 100 ft ²)	8.6 ft ³ (0.24 m ³)	

Notes:

- Compressive strength measured at 10% deformation
- Calculated based on material R-value of 4.25 per inch and 1/2" average panel thickness
- Assuming material unit weights of 145-lb/ft³ (2,320 kg/m³) for mortar and 115-lb/ft³ (1,840 kg/m³) for gypsum and 5/16" (8 mm) screed thickness above studded panel
- Approximate value for estimating purposes

Note on Sound Control:

When using BEKOTEC in combination with other sound attenuation materials over a 6" (150 mm)-thick bare concrete slab with an IIC of 28, an overall IIC of 50 or greater can be achieved.

- self-supporting. The screed panel is placed onto the self-adhesive foam leg of either the -BRS/KF or -BRS/KSF to prevent back-flow of the screed under the panel.
 - The modular screed panel is cut to fit accurately at the edge area. The BEKOTEC-EN/US/P panels are connected via the mortise-and-tenon-type joints, while the BEKOTEC-EN23F panels are connected by overlapping a row of studs and clicking the panels together.
 - To produce radiant-heated floors, suitable heating tubes, 3/8" - 5/8" (10 - 16 mm) O.D., can be wedged between the cut-back studs. The cut-back design of the studs ensures that the tubes are securely held without clamps in straight runs. Clamps may be necessary where the tubes are turned into a relatively tight radius. The Schluter®-BEKOTEC-THERM-RH 75 clamps can be used to attach tubes to the BEKOTEC-EN/US/P foam panels. The distance between tubes is determined based on desired heat output.
 - Fill the modular screed panel with a mortar screed or poured gypsum screed, ensuring a minimum screed coverage of 5/16" (8 mm) above the studs. If leveling is required, the mortar thickness can be increased up to 1" (25 mm) above the studs. The screed can be separated at the door-sill using the Schluter®-BEKOTEC -DFP movement joint profile to prevent sound bridges.
 - As soon as the screed can be walked upon, the Schluter®-DITRA or Schluter®-DITRA-XL uncoupling membrane can be applied. With respect to poured gypsum screeds, maximum residual moisture of 2.0 percent by volume shall be observed. Ceramic tile or stone coverings can be installed on top of the DITRA/DITRA-XL using the thin-set method.
 - The surface covering on top of DITRA/DITRA-XL is divided into fields with movement joints according to the Schluter®-DITRA Installation Handbook and industry standard guidelines. The family of Schluter®-DILEX prefabricated movement joint profiles includes a variety of shapes, sizes, and materials to suit different applications. When installing a Schluter®-DILEX perimeter or cove-shaped profile at the floor/wall transition, the protruding sections of the edge strip should first be trimmed.
- Note on steps 6 and 7:** Ceramic and stone tile is installed over the BEKOTEC screed using the Schluter®-DITRA or Schluter®-DITRA-XL uncoupling membrane. Please refer to the



Schluter®-DITRA Installation Handbook (detail D-C-TS for Portland cement-based screeds and detail D-G-TS for gypsum-based screeds) for installation requirements, including but not limited to setting and grouting materials, setting and grouting specifications, and movement joint placement.

8. When using the modular screed assembly for radiant heating, the completed floor covering can be heated after 7 days. Beginning at 77 °F (25 °C), start-up temperature shall be increased daily by 9 °F (5 °C) maximum, until the desired working temperature is reached.
9. Covering materials that are not subject to cracking (for example, parquet, carpet, or resilient flooring) can be placed directly on the modular screed; no uncoupling is necessary. In addition to the specific installation instructions, the allowable residual moisture for the selected covering must be observed.

Maintenance

Schluter®-BEKOTEC products do not rot and require no special maintenance. Before and during the application of the screed, the studded polystyrene panel must be protected in a suitable manner (i.e., running boards should be used to protect against mechanical damage).

Technical Data

Schluter®-BEKOTEC

1. **Stud diameter:**

2-19/32" (66 mm)

Grid spacing for heating tubes:

3" (76 mm)

Diameter of heating tubes to be used:

3/8" – 5/8" (10 – 16 mm) O.D. The studs feature an all-around cutback design, which ensures that the heating tubes are held securely without clamps in straight runs. Clamps may be necessary where the tubes are turned into a relatively tight radius.

2. **Connections:**

The studded panels are equipped with a mortise-and-tenon-type edge design for inter-connection.

3. **Panel size:**

24" x 48" = 8 ft² (61 cm x 122 cm = 0.74 m²).

The short, top edge of the modular BEKOTEC panel can also be connected to the longer, side edge. This minimizes waste during installation.

4. **Packaging:**

12 sheets/box = 96 ft² (8.9 m²)

The carton measures approximately 49-1/2" x 28" x 11-1/2" (125 x 71 x 29 cm).

Schluter®-BEKOTEC-F

1. **Stud diameter:**

Large studs: approx. 2-9/16" (65 mm)

Small studs: approx. 3/4" (19 mm)

Grid spacing for heating tubes:

3" (76 mm)

Diameter of heating tubes to be used:

3/8" – 5/8" (10 – 16 mm) O.D. The studs feature an all-around cutback design, which ensures that the heating tubes are held securely without clamps in straight runs. Clamps may be necessary where the tubes are turned into a relatively tight radius.

2. **Connections:**

The studded panels are connected by overlapping a row of studs and clicking the panels together.

3. **Panel size (utility area):**

35-7/16" x 47-1/4" = 11.63 ft² (90 cm x 120 cm = 1.08 m²).

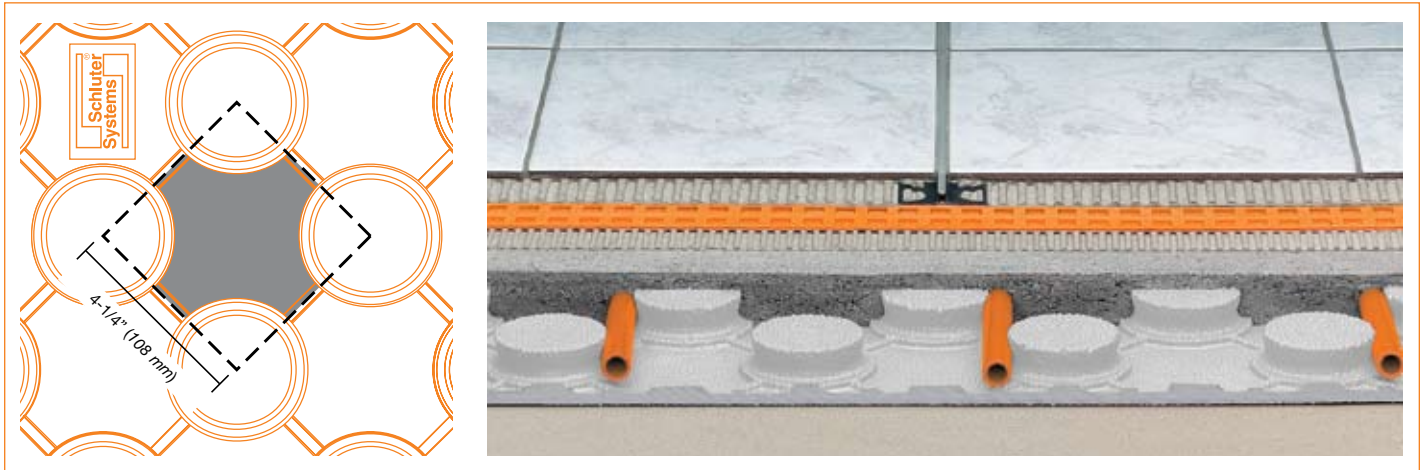
4. **Packaging:**


20 sheets/box = 232.6 ft² (21.6 m²)

The carton measures approximately 53" x 40" x 9-1/2" (135 x 102 x 24 cm).

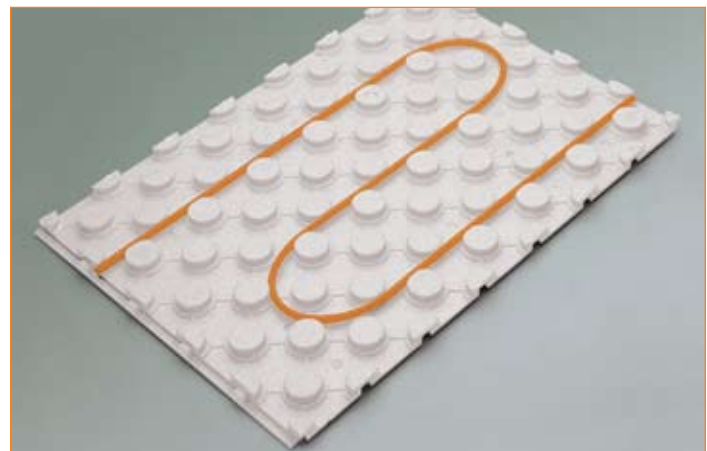
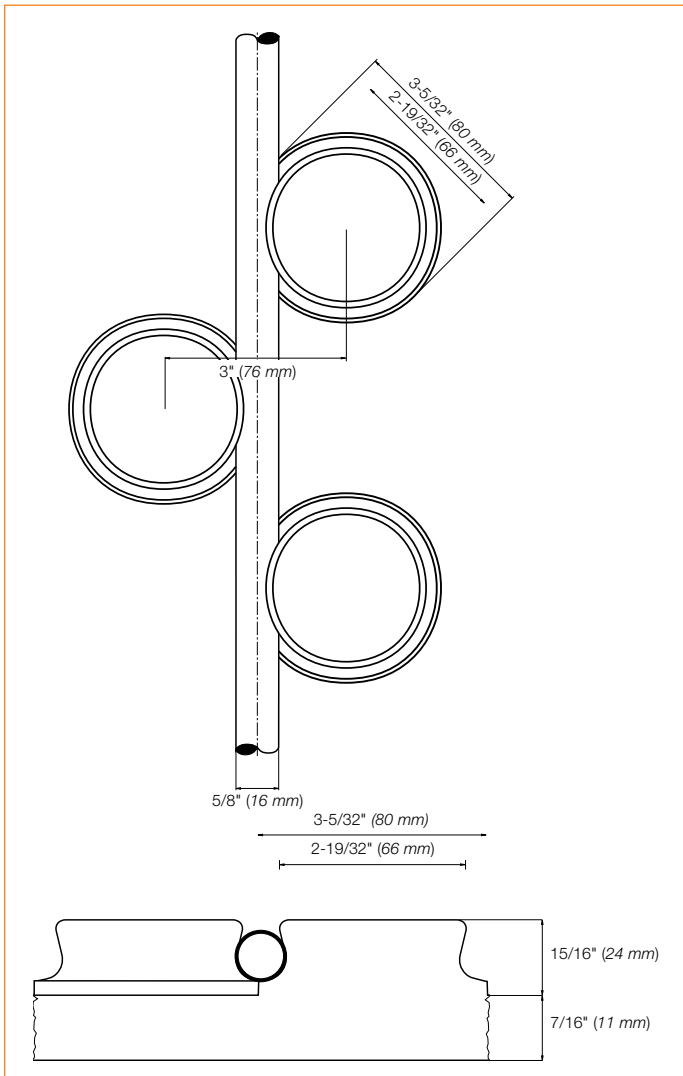


BEKOTEC: Modular Screed Principle



 The screed surface is divided into 4-1/4" (108 mm) modules. This allows the installation of continuous screed surfaces without any control joints or wire reinforcement.

BEKOTEC: Radiant Heat Function



The cutback design ensures that heating tubes from 3/8" to 5/8" (10 to 16 mm) O.D. are securely held without clamps in straight runs. Clamps may be necessary where the tubes are turned into a relatively tight radius.



System Accessories

Edge Strips for Conventional Screeds

Schluter®-BEKOTEC-BRS is an edge strip made of closed-cell polyethylene foam with an integrated foil leg. The edge strip is positioned at floor/wall transitions or fixed building elements, with the foil leg placed onto the substrate below the BEKOTEC panel or over the polyethylene covering sheet. Schluter®-BEKOTEC-BRSK is similar to BEKOTEC-BRS, but features an adhesive strip that allows the foam to be bonded to walls or other fixed building elements for ease of installation.

Roll: 4" x 164' (10 cm x 50 m)

Thickness: 5/16" (8 mm)



Edge Strips for Poured Screeds

Schluter®-BEKOTEC-BRS/KF is an edge strip made of closed-cell polyethylene foam, with an adhesive strip on the backside for fastening it to the wall and an adhesive leg for adjoining the studded panel. Placing the BEKOTEC studded panel onto the adhesive leg creates a connection that prevents poured screeds from flowing beneath the board. Schluter®-BEKOTEC-BRS/KSF is similar to BEKOTEC-BRS/KF, but is designed to be self-supporting rather than bonded to walls or other fixed building elements.

Roll: 3-1/8" x 82' (8 cm x 25 m)

Thickness: 5/16" (8 mm)



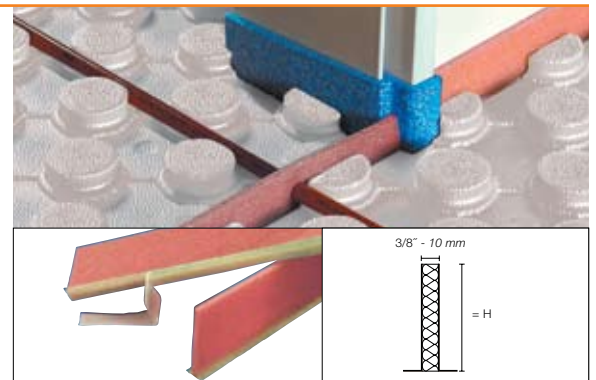
Movement Joint Profile

Schluter®-BEKOTEC-DFP is a movement joint profile for installation at door areas or to divide screed surfaces.

Height: 2-3/8" (6 cm)

3-1/8" (8 cm)

4" (10 cm)



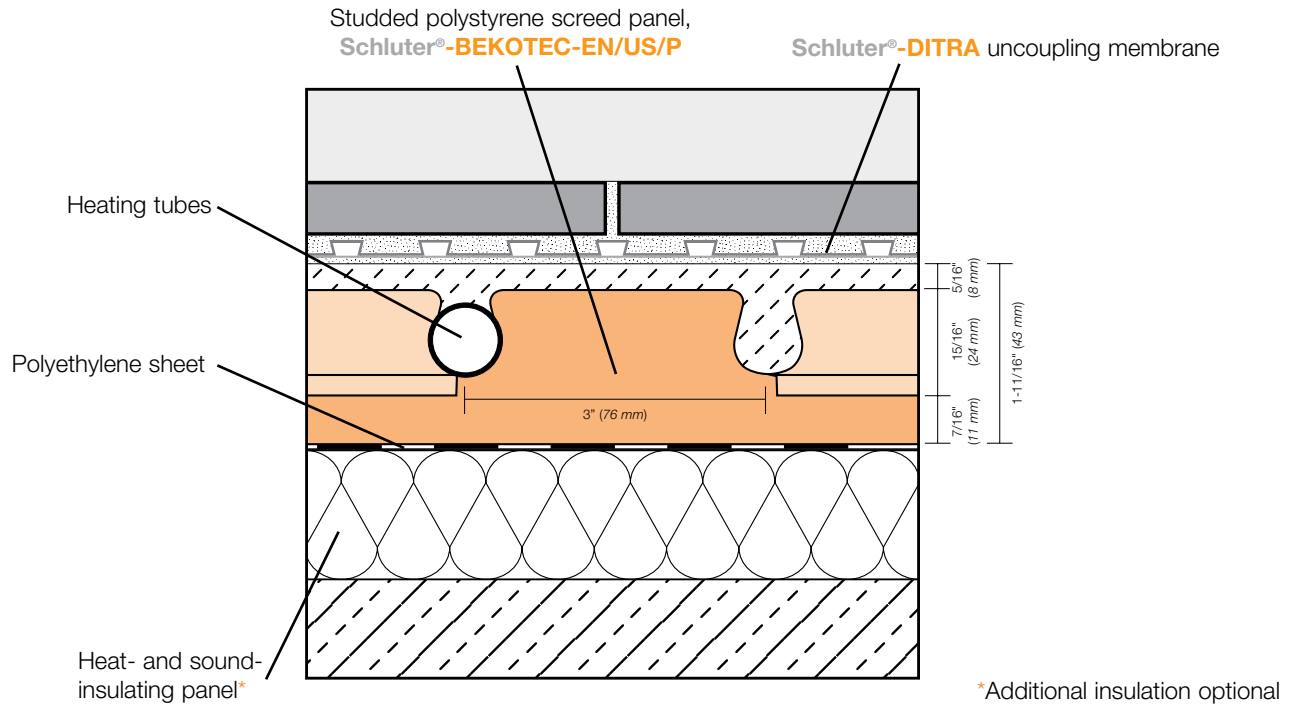
Hydronic Tube Clamps

Schluter®-BEKOTEC-THERM-RH 75 is a PVC clamp used to attach radiant heating tubes to the Schluter®-BEKOTEC-EN/US/P expanded polystyrene foam studded panels. While the cut-back design of the studs ensures that tubes are securely held without clamps in straight runs, clamps may be necessary where the tubes are turned into a relatively tight radius.

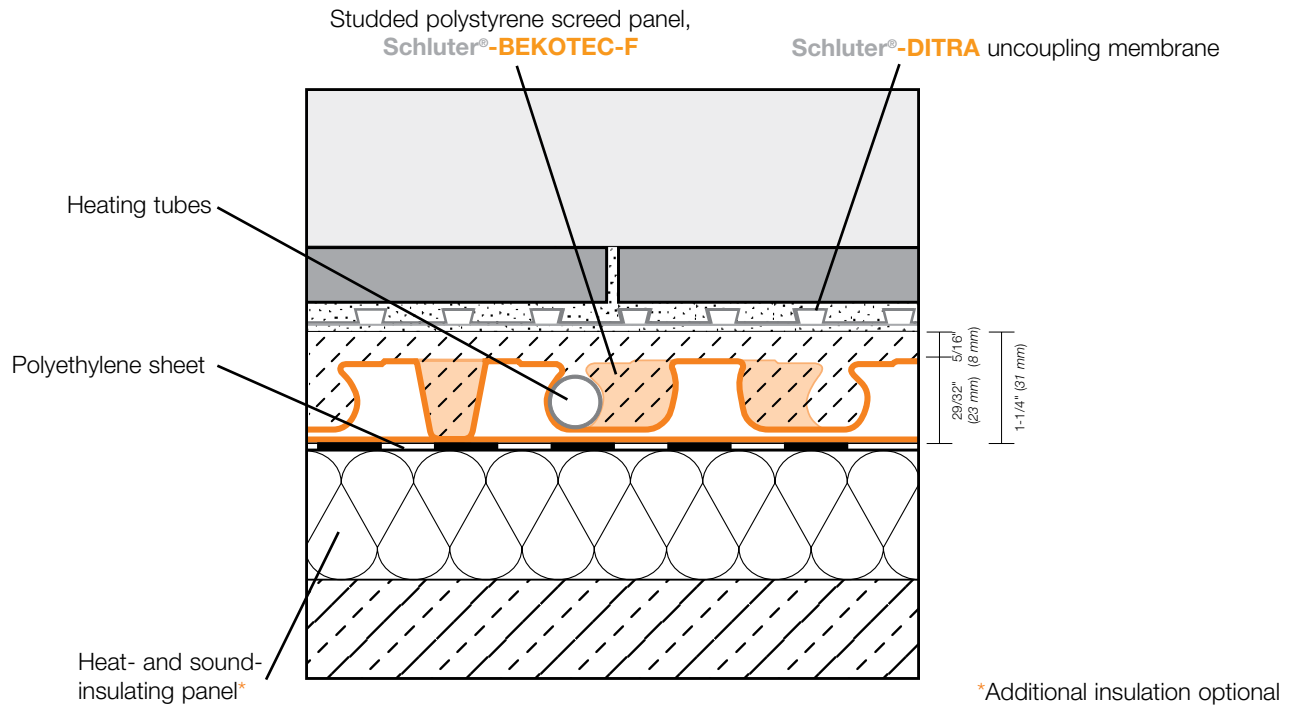




Schluter®-BEKOTEC-EN/US/P System



Schluter®-BEKOTEC-F System





Product Item Numbers

Schluter®-BEKOTEC-EN/US/P (studded screed panel 1-3/8" (35 mm))				
Item No.	Width	Length	Area	Packaging
EN/US/P	24" – 61 cm	48" – 122 cm	8 ft ² – 0.74 m ²	12 sheets

Schluter®-BEKOTEC-F (studded screed panel 29/32" (23 mm))				
Item No.	Width	Length	Area	Packaging
EN23F20	47-1/4" – 120 cm	35-7/16" – 90 cm	11.63 ft ² – 1.08 m ²	20 sheets

Schluter®-BEKOTEC-BRS (edge strip for conventional screed)				
Item No.	Width	Thickness	Roll	Packaging
BRS 810	4" – 10 cm	5/16" – 8 mm	164' – 50 m	1 roll

Schluter®-BEKOTEC-BRSK (edge strip for conventional screed, with adhesive strip)				
Item No.	Width	Thickness	Roll	Packaging
BRSK 810	4" – 10 cm	5/16" – 8 mm	164' – 50 m	1 roll

Schluter®-BEKOTEC-BRS/KF (edge strip for poured screed, with PE adhesive leg)				
Item No.	Width	Thickness	Roll	Packaging
BRSK 808 KF	3-1/8" – 8 cm	5/16" – 8 mm	82' – 25 m	1 roll

Schluter®-BEKOTEC-BRS/KF (self-supporting edge strip for poured screed, with PE adhesive leg)				
Item No.	Width	Thickness	Roll	Packaging
BRS 808 KSF	3-1/8" – 8 cm	5/16" – 8 mm	82' – 25 m	1 roll

Schluter®-BEKOTEC-DFP (movement joint profile)				
Item No.	Width	Thickness	Packaging	
DFP 6/100	2-3/8" – 6 cm	3' 3" – 1 m	1 unit	
DFP 8/100	3-1/8" – 8 cm	3' 3" – 1 m	1 unit	
DFP 10/100	4" – 10 cm	3' 3" – 1 m	1 unit	

Schluter®-BEKOTEC-THERM-RH 75 (heating clamps)	
Item No.	Packaging
BTZRH17/100	100 units



Hydronic radiant heating tubes are conveniently placed between the studs of the Schluter®-BEKOTEC modular screed panel without clamps before the screed application.



A dry-pack mortar screed (on the left) or poured gypsum screed (on the right) is placed over the Schluter®-BEKOTEC modular screed panel and hydronic radiant heating tubes without control joints or wire reinforcement.



Ceramic tile installed over the Schluter®-DITRA uncoupling membrane and Schluter®-BEKOTEC modular screed system in an auto showroom.



PROFILE OF INNOVATION

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