Schluter® Systems

PROFILE OF INNOVATION

MODULAR SCREED SYSTEMS

INNOVATIVE SOLUTIONS FOR CERAMIC AND STONE TILE

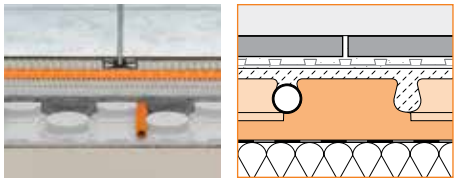
STRESS-FREE FLOORING ASSEMBLY FOR CONTINUOUS SCREEDS AND HYDRONIC RADIANT HEAT ACCOMMODATION

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.

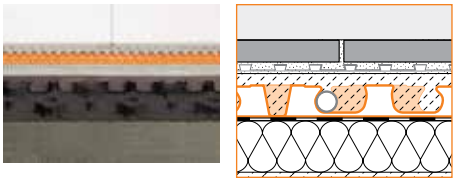
Application and Function

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.

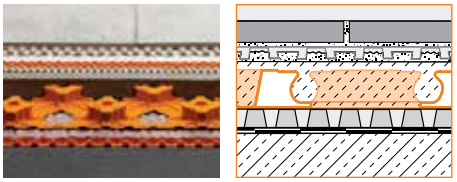
The cross-section of the assembly reveals a minimum screed thickness of 1-1/4" *(32 mm)* between the studs and 5/16" *(8 mm)* above the studs. This results in significant material and weight savings over traditional screeds. For example, a 1-1/4" *(32 mm)*-thick traditional mortar bed weighs approximately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



9.1 Schluter®-BEKOTEC



9.2 Schluter®-BEKOTEC-F



9.3 Schluter®-BEKOTEC-DRAIN

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

9.3 Schluter®-BEKOTEC-DRAIN is a variant of BEKOTEC-F with evenly spaced openings and interconnected drainage channels for use in exterior tile assemblies. BEKOTEC-DRAIN is placed over a sloped structure with a roofing membrane and Schluter®-TROBA-PLUS drainage membrane.

Ceramic and stone tile is installed over the BEKOTEC and BEKOTEC-F modular screeds using the Schluter®-DITRA 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). 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.

Ceramic and stone tile is installed over the BEKOTEC-DRAIN modular screed using the DITRA uncoupling membrane or Schluter®-DITRA-DRAIN thin-bed drainage membrane. Please refer to the Schluter®-DITRA Installation Handbook (detail D-EXT-OS) or Schluter®-DITRA-DRAIN Technical Data Sheet for additional information.

Material Properties and Areas of Application

BEKOTEC is manufactured using closed-cell expanded polystyrene and is suitable for use with conventional mortar and poured screeds. BEKOTEC 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 BEKOTEC 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.

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

BEKOTEC-DRAIN is manufactured using high-impact polystyrene foil and is suitable for use where drainage through conventional mortar assemblies is required (e.g., exterior applications).

Schluter®-BEKOTEC (Physical Properties)	
Property	**Value**
Schluter®-BEKOTEC (EPS Foam)	
Density[1]	2.5 lb/ft³ *(40 kg/m³)*
Compressive Strength[1]	44 psi *(303 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/ft² *(0.57 kPa)*
Weight w/Gypsum Screed[3,4]	9.5 lb/ft² *(0.45 kPa)*
Screed Material Volume[4] (per 100 ft²)	8.2 ft³ *(0.23 m³)*
Schluter®-BEKOTEC-F/-DRAIN (HIPS Foil)	
Maximum Service Temperature	158° F *(70° C)*
Weight w/Mortar Screed[3,4]	12.5 lb/ft² *(0.60 kPa)*
Weight w/Gypsum Screed[3,4]	10 lb/ft² *(0.48 kPa)*
Screed Material Volume[4] (per 100 ft²)	8.6 ft³ *(0.24 m³)*

Notes:
1. Compressive strength measured at 10% deformation
2. Calculated based on material R-value of 4.25 per inch and 1/2" average panel thickness
3. 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
4. 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.

Installation

1. BEKOTEC or BEKOTEC-F 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. BEKOTEC-DRAIN is installed over a sloped structure (1.5% - 2%), waterproofing membrane, and TROBA-PLUS drainage membrane.
2. 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 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.
3. The modular screed panel is cut to fit accurately at the edge area. The BEKOTEC panels are connected via the mortise-and-tenon-type joints, while the BEKOTEC-F and BEKOTEC-DRAIN panels are connected by overlapping a row of studs and clicking the panels together.
4. 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 foam panels. The distance between tubes is determined based on desired heat output.
5. 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 doorsill using the Schluter®-DILEX-DFP movement joint profile to prevent sound bridges.

   Note: BEKOTEC-DRAIN is not intended for use with poured screeds.
6. As soon as the mortar screed can be walked upon, the DITRA, DITRA-XL or DITRA-DRAIN 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 DITRA, DITRA-XL or DITRA-DRAIN using the thin-set method.
7. The surface covering on top of DITRA, DITRA-XL or DITRA-DRAIN is divided into fields with movement joints according to the Schluter®-DITRA Installation Handbook, Schluter®-DITRA-DRAIN data sheet, 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 DILEX perimeter or cove-shaped profile at the floor/wall transition, the protruding sections of the edge strip should first be trimmed.

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.
   Note: Alternate covering materials are not recommended in exterior applications.
   Note: When using resilient floor covering materials such as vinyl or carpet, it is recommended to increase the screed thickness over the studs to 5/8" *(15 mm)* minimum.

Maintenance

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

Technical Data

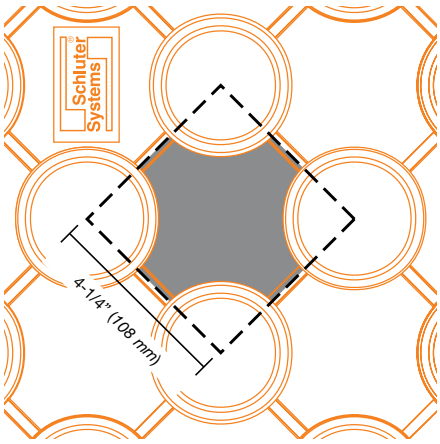
Schluter®-BEKOTEC

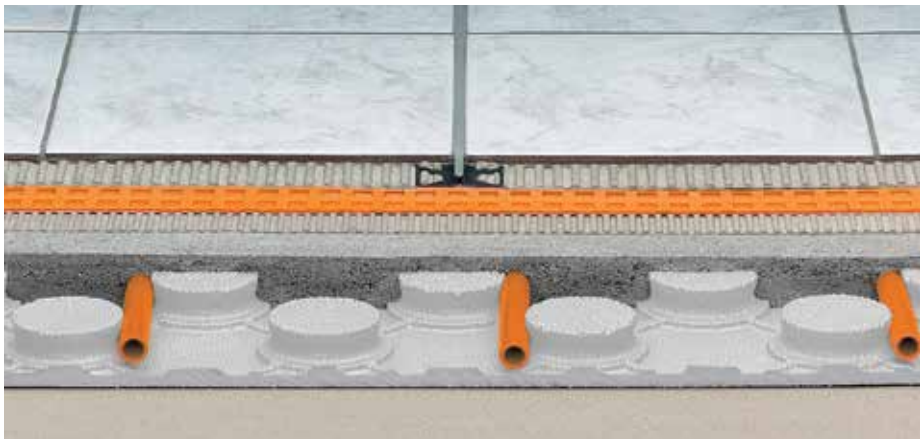
1. **Stud diameter:**
   2-19/32" *(66 mm)*
   Grid spacing for heating tubes:
   3" *(76 mm)*
   Diameter of heating tubes to be used:
   3/8" – 5/8" *(10 – 16 mm)* O.D. The studs feature an all-around cutback design, which ensures that the heating tubes are held securely without clamps in straight 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/-DRAIN

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:**
   BEKOTEC-F — 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-DRAIN — 10 sheets/box = 116.3 ft² *(10.8 m²)*
   The carton measures approximately 53" x 40" x 7-5/8" *(135 x 102 x 20 cm)*.

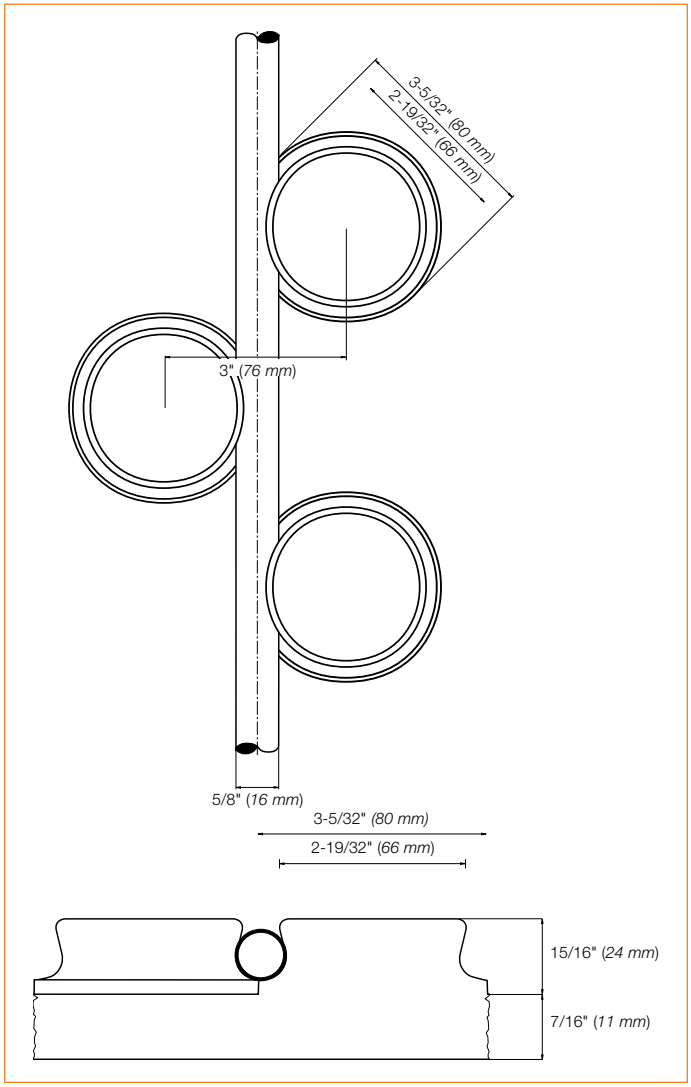
BEKOTEC: Modular Screed Principle

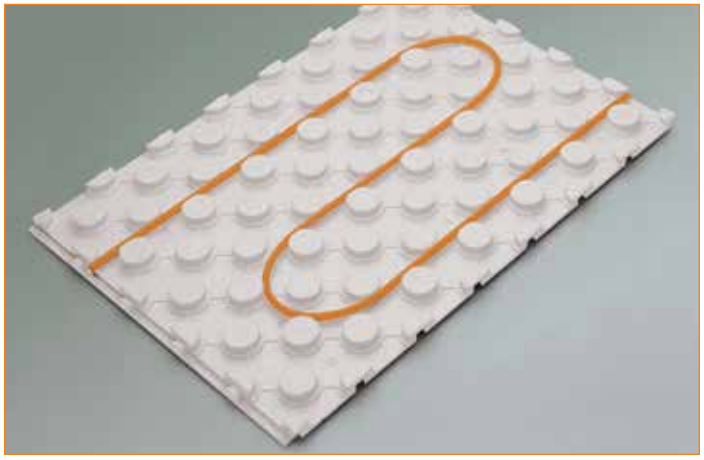




The screed surface is divided into 4-1/4" *(108 mm)* modules. This allows the installation of continuous screed surfaces without any control joints or wire reinforcement.

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.

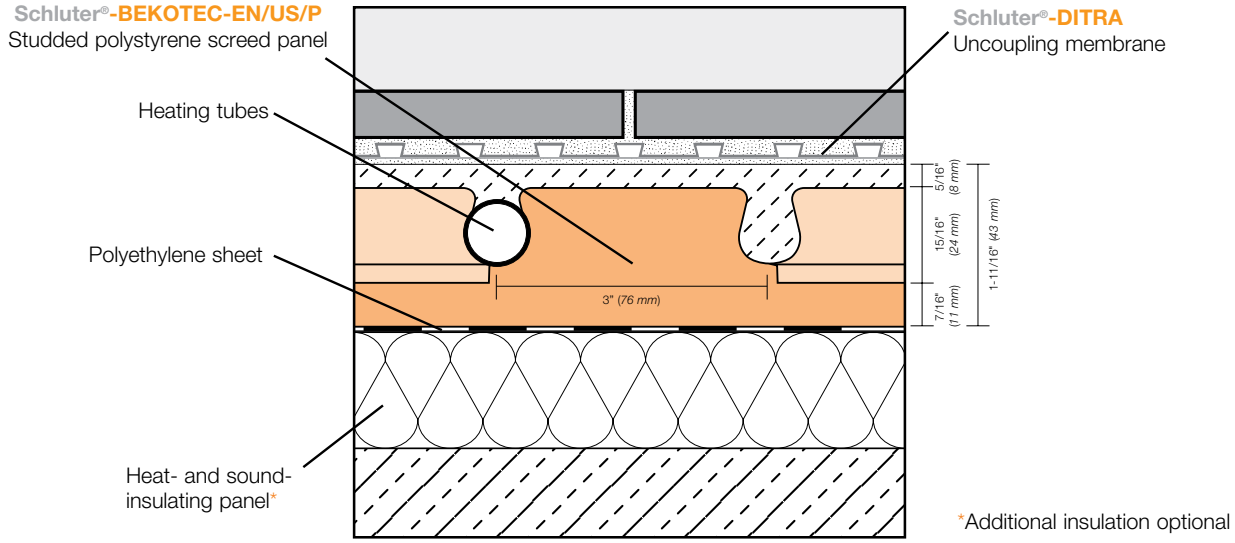
Schluter®-BEKOTEC-BRS/KSF is similar to BEKOTEC-BRS/KF, but is designed to be self-supporting rather than bonded to walls or other fixed building elements.

Roll: 3-1/8" x 82' *(8 cm x 25 m)*
Thickness: 5/16" *(8 mm)*

Hydronic Tube Clamps

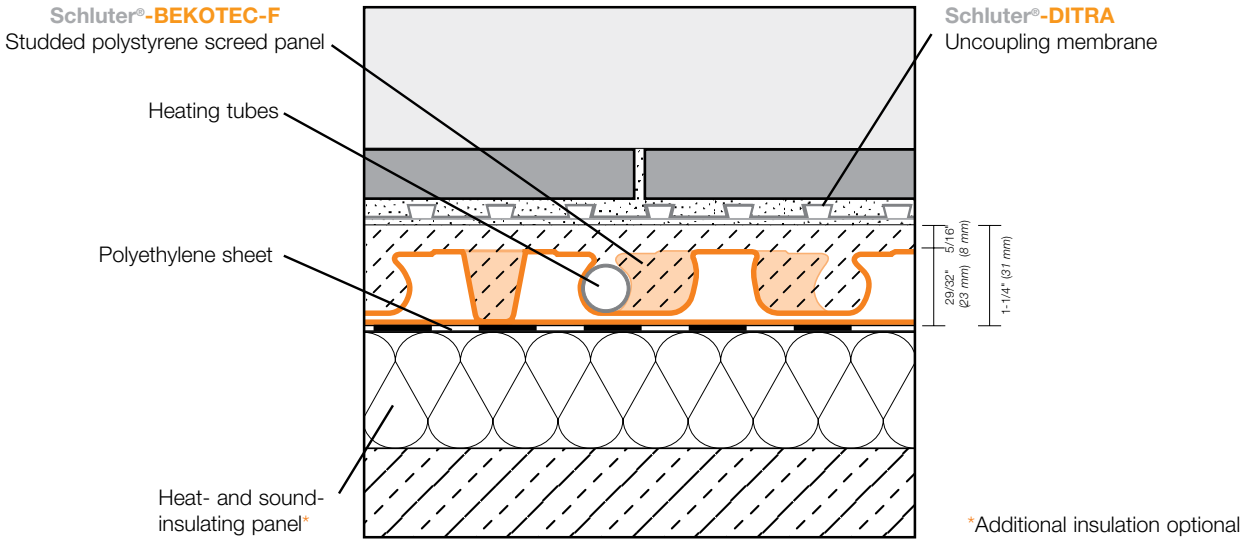
Schluter®-BEKOTEC-THERM-RH 75 is a PVC clamp used to attach radiant heating tubes to the Schluter®-BEKOTEC-EN/US/P expanded polystyrene foam studded panels. While the cut-back design of the studs ensures that tubes are securely held without clamps in straight runs, clamps may be necessary where the tubes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

Schluter®-BEKOTEC-EN/US/P System



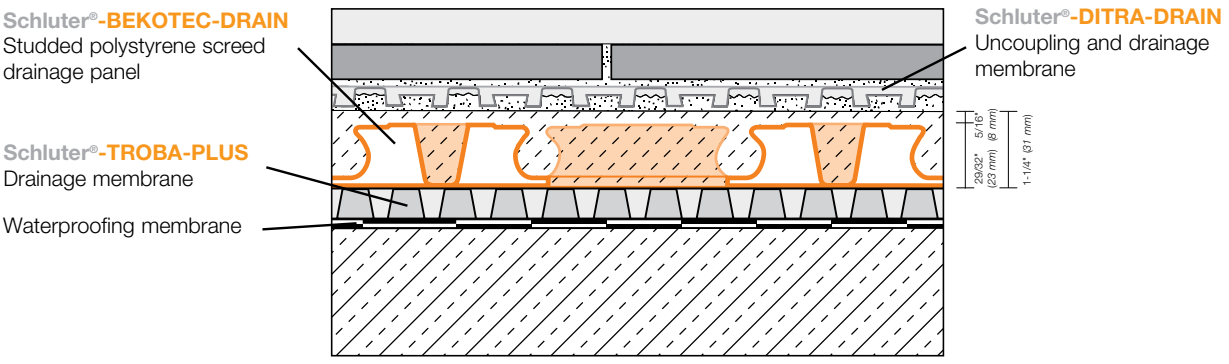
*Additional insulation optional

Schluter®-BEKOTEC-F System



*Additional insulation optional

Schluter®-BEKOTEC-DRAIN System



Product Item Numbers

Schluter®-BEKOTEC-EN/US/P — Studded screed panel 1-3/8" *(35 mm)*

Item No.	Width	Length	Area / sheet	Packaging
EN/US/P	24" – *61 cm*	48" – *122 cm*	8 ft² – *0.74 m²*	12 sheets

Schluter®-BEKOTEC-F — Studded screed panel 29/32" *(23 mm)*

Item No.	Width	Length	Area / sheet	Packaging
EN23F20	47-1/4" – *120 cm*	35-7/16" – *90 cm*	11.63 ft² – *1.08 m²*	20 sheets

Schluter®-BEKOTEC-DRAIN — Studded screed drainage panel 29/32" *(23 mm)*

Item No.	Width	Length	Area / sheet	Packaging
EN23FD10	47-1/4" – *120 cm*	35-7/16" – *90 cm*	11.63 ft² – *1.08 m²*	10 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/KSF — Self-supporting edge strip for poured screedwith 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-THERM-RH 75 — Heating clamps

Item No.	Packaging
BTZRH75/100	100 units

Schluter®-Systems Modular Screed Panels 10-Year Limited Warranty

COVERAGE AND CONDITIONS: Subject to the conditions and limitations as stated hereinafter, **Schluter-Systems*** warrants that **Schluter®-BEKOTEC**, **Schluter®-BEKOTEC-F**, or **Schluter®-BEKOTEC-DRAIN** (the "Product") will be free from manufacturing defects, and will not rot, deteriorate or break down under normal use for a period of ten (10) years from the date of purchase only when the Product is used and installed in accordance with the terms and conditions of the Schluter®-Systems Modular Screed Systems Technical Data Sheet and industry standard guidelines that are not in conflict with the Data Sheet in effect at the time of installation. Further, efflorescence is considered to be a natural occurrence with cementitious materials and is therefore not considered to be a defective condition and is not covered by this warranty. It is the responsibility of the owner/ builder/ installer to ensure the suitability of all building materials and all associated building materials for the owner's intended use. It is recommended that the owner consult with an experienced and professional installer.

RESOLUTION: If the Product fails to meet this warranty, then the owner's exclusive remedy and the sole obligation of Schluter-Systems, at its election, shall be to a) replace the failed portion of the Product or b) pay an amount not to exceed the original square foot cost of the Product verified to be defective. When Schluter®-BEKOTEC or Schluter®-BEKOTEC-DRAIN is installed in conjunction with Schluter®-DITRA/-DITRA-XL, the assembly qualifies for the Schluter®-DITRA & Schluter®-DITRA-XL 10-Year Limited Warranty. When Schluter®-BEKOTEC-DRAIN is installed in conjunction with Schluter®-DITRA-DRAIN, the assembly qualifies for the Schluter®-DITRA-DRAIN 10-Year Limited Warranty. The warranties referenced above cover the entire flooring assembly. Refer to the Schluter®-DITRA Installation Handbook and Schluter®-DITRA-DRAIN Technical Data Sheet for details and applicable warranty information.

DISCLAIMER: THERE ARE NO WARRANTIES BEYOND THIS EXPRESSED WARRANTY AS STATED ABOVE. ALL OTHER WARRANTIES, REPRESENTATIONS OR CONDITIONS, EXPRESSED OR IMPLIED, ARE DISCLAIMED AND EXCLUDED, INCLUDING WARRANTIES, REPRESENTATIONS OR CONDITIONS OF **MERCHANTABILITY** OR FITNESS FOR A PARTICULAR PURPOSE ARISING BY STATUTE OR OTHERWISE BY LAW OR FROM A COURSE OF DEALING OR USAGE OF TRADE. SCHLUTER-SYSTEMS EXCLUDES AND IN NO EVENT SHALL HAVE ANY LIABILITY FOR LOST PROFITS OR ANY OTHER INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, EXEMPLARY, OR CONSEQUENTIAL DAMAGES, ARISING OUT OF OR OTHERWISE CONNECTED TO FAILURE OF THE PRODUCT OR FLOORING SYSTEM OF WHICH IT IS PART, NOR MISUSE OF THE PRODUCT OR FLOORING SYSTEM, REGARDLESS OF ANY STRICT LIABILITY, ACTIVE OR PASSIVE NEGLIGENCE OF SCHLUTER-SYSTEMS, AND REGARDLESS OF THE LEGAL THEORY (CONTRACT OR TORT OR EXTRA-CONTRACTUAL OR OTHER), NOR FROM ACTS OF WAR, TERRORISM, FAULTY AND NEGLIGENT PENETRATION OF THE SYSTEM, FIRES, EXPLOSIONS, ACTS OF GOD, INTENTIONAL ACTS OF DESTRUCTION OR ANY LOSSES DUE TO STRUCTURAL FAILURE OR OTHER CAUSES UNRELATED TO THE PRODUCT OR DELAYS, OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES. THIS WARRANTY IS GIVEN IN LIEU OF ANY OTHER WARRANTY EXPRESSED OR IMPLIED. THE REMEDIES CONTAINED HEREIN ARE THE ONLY REMEDIES AVAILABLE FOR BREACH OF THIS WARRANTY. THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS; SOME STATES AND PROVINCES DO NOT ALLOW DISCLAIMERS OR OTHER RESTRICTIONS OF IMPLIED WARRANTIES, SO SOME OF THE ABOVE DISCLAIMERS MAY NOT APPLY TO YOU.

TRANSFERABILITY: This Limited Warranty extends ONLY to the original end user (defined as original intended owner and user of the property/unit in which the installation is incorporated - herein referred to as "Owner") and is not transferable or assignable, unless approved in writing by the Technical Director or an Officer of Schluter-Systems or otherwise prohibited by specific state or provincial law.

MODIFICATIONS TO WARRANTY: No changes or modification of any terms or conditions of this warranty are allowed unless authorized by written agreement and signed by the Technical Director or an Officer of Schluter-Systems.

EFFECTIVE DATE: This warranty shall supersede and replace any and all prior oral or written warranties, agreements, or other such representations made by or on behalf of Schluter-Systems relative to the Product or the application of the Product and shall apply to any installation occurring on or after January 1, 2013.

CLAIMS ON THIS LIMITED WARRANTY: To make a claim under this Limited Warranty, the Owner must provide Schluter-Systems with written notice within 30 days of any alleged defect in the Product covered by this Limited Warranty, together with date and proof of purchase of the Product, proof of the costs of the original installation and name and address of all installers, failing which this Limited Warranty shall be of no legal effect. Schluter-Systems reserves the right at its election and as a condition of this Limited Warranty to inspect the alleged failed and defective condition.

All U.S. Claims shall be sent to:

Schluter Systems L.P.
Attn: Warranty Claims Dept.
194 Pleasant Ridge Road
Plattsburgh, NY 12901-5841

All Canadian Claims shall be sent to:

Schluter Systems (Canada), Inc.
Attn: Warranty Claims Dept.
21100 chemin Ste-Marie
Ste-Anne-de-Bellevue, QC H9X 3Y8

*For the purpose of this warranty **Schluter Systems, L.P.** shall provide the warranty for all products for end users located in the United States, and **Schluter Systems (Canada) Inc.** shall provide the warranty for all products for end users located in Canada. This warranty is limited to sales of the Product made in and intended for use in the United States and Canada.

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