

## Schlüter®-BEKOTEC-EN-FI

Thin layer covering assembly  
with heat and sound insulation

# 9.8

Product data sheet

### Application and function

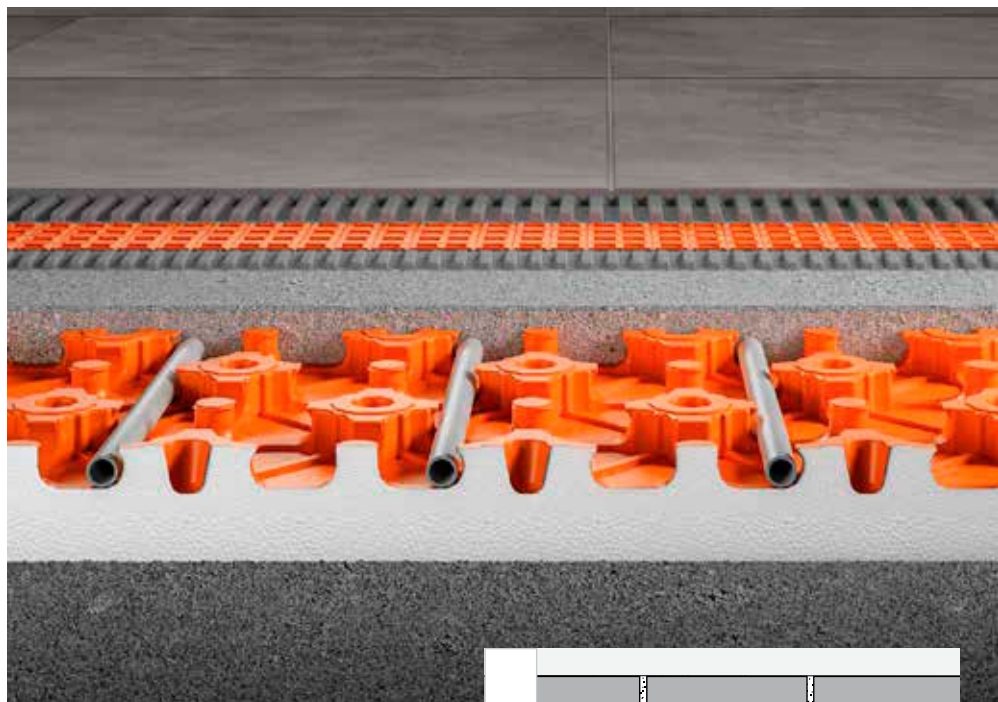
The reliable **Schlüter-BEKOTEC** covering assembly technology is a system for crack-free and functionally safe floating screeds and heated screeds, with coverings made of ceramics, natural stone, and other covering materials.

The system is based on the studded screed foil panel Schlüter-BEKOTEC-EN 23 FI 30, which is foam-backed with heat and sound insulation made of polystyrene (EPS) and can be directly installed on top of a load-bearing substrate or also over conventional heat insulation panels.

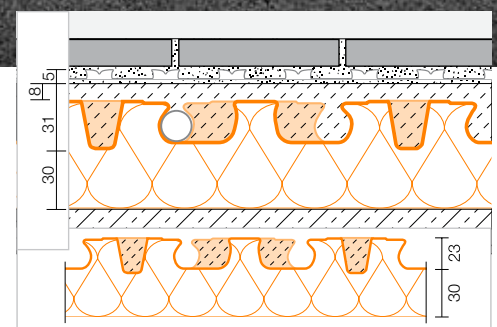
The geometry of the BEKOTEC-EN 23 FI 30 studded panel dictates a minimum screed layer thickness of 31 mm between and 8 mm above the studs. The stud spacing allows for clamping the heating pipes of the system, which have a diameter of 14 and 16 mm, in a 75-mm grid to produce a heated screed.

Since only a relatively small amount of screed has to be heated or cooled (with a coverage of 8 mm, approx. 58 kg/m<sup>2</sup>  $\approx$  28.5 l/m<sup>2</sup>), the floor heating system is easily adjustable and ideally suited for operation at low supply temperatures.

Any contraction occurring while the screed cures is absorbed by the studded pattern. As a result, stresses from contraction buckling cannot affect the entire area, and it is not necessary to install movement joints in the screed. Once the cement screed is ready to support weight, the uncoupling mat Schlüter-DITRA (alternatively, Schlüter-DITRA-DRAIN 4 or Schlüter-DITRA-HEAT) can be installed (gypsum based screed  $\leq$  2 CM-%). The ceramic tiles or natural stone are then installed directly over this layer, using the thin bed method. Movement joints



in the covering layer have to be created with Schlüter-DILEX in the customary spacing. Cover materials that are not susceptible to cracking, such as parquet or carpeting, are directly installed over the screed as soon as it reaches the corresponding residual moisture level.



### Material

BEKOTEC-EN 23 FI 30 is made of impact-resistant structured polystyrene which is foam-backed on the underside with expanded polystyrene (EPS). It is suitable for use with conventionally applied cement or gypsum screeds as well as flowing screed.



## Installation

1. Install BEKOTEC-EN 23 FI 30 on a sufficiently weight-bearing and level substrate. The substrates must be even and have no point-like protrusions (e.g. mortar residue) Correct uneven sections in the floor with screeds or suitable bound fill in advance.  
If required, install additional suitable pressure-resistant heat insulation (DEO) over the substrate in accordance with the applicable heat insulation requirements. Additional impact sound insulation is not permitted.
2. Cover the edges of the covering at walls or structural elements with BEKOTEC-BRS edging strips according to the screed type or height.
3. The BEKOTEC-EN 23 FI 30 studded panels must be precisely cut to size in the edge areas. The protruding studded foil must be removed in the edge area of the first row. Cut segments that are longer than  $\geq 30$  cm can be fit into the next row. Snap the studded panels into the tapered connection studs.  
In door threshold areas and near distributor boxes, the smooth levelling panel Schlüter-BEKOTEC-ENFGI 30 may be used to simplify the pipe installation. This is also laminated on the underside with 30-mm expanded polystyrene (EPS). The self-adhesive pipe clamping strip Schlüter-BEKOTEC-ZRKL allows for precise pipe placement in this area.
4. Clamp the system pipes with a diameter of 14 or 16 mm between the cutback studs to create a Schlüter-BEKOTEC-THERM floor heating system. The spacing of the pipes must be determined on the basis of the required heating output, as shown in the Schlüter-BEKOTEC heating diagrams.
5. As part of the screed installation, fresh cement- or gypsum-based screed is installed with a minimum screed cover of 8 mm over the studded panels. A compressive strength of C20 to C35, as well as a flexural tensile strength of F4, max. F5, must be maintained for both cement- and gypsum-based screeds. If the cement screed has a shrinkage class of SW1, using products with a higher flexural tensile strength is also possible. The layer thickness can be partially increased to max. 25 mm for levelling. When installing a flowing screed, carefully place the studded panels and seal the abutting edges/end points. Make sure the screed does not flow underneath the BEKOTEC panels. Observe the system approval for this application.  
Note: Please contact our Technical Department in advance to discuss different screed properties for specific projects. To prevent impact sound transmission between two rooms, separate the screed in the relevant places with the expansion joint profile Schlüter-DILEX-DFF.
6. The DITRA uncoupling mat (or alternatively, DITRA-DRAIN 4 or DITRA-HEAT) can be installed in accordance with the installation instructions of the relevant product data sheets as soon as the screed is ready to bear weight. The uncoupling mat can be installed over gypsum based screeds as soon as they have reached a residual moisture level of 2 CM % or less.
7. Coverings of ceramic tile or natural stone can then be directly installed on top of the uncoupling mat, using the thin bed method. Divide the covering above the uncoupling mat into fields, using movement joints in accordance with the applicable regulations. We recommend the movement joint profiles Schlüter-DILEX-BWB, -BWS, -KS, -AKWS or -F for creating movement joints (see product data sheets 4.6 – 4.8, 4.18 and 4.23).
8. Install the corner movement profile Schlüter-DILEX-EK or -RF as a flexible edge joint in the area of the floor-wall transition (see product data sheet 4.14). Cut off the protruding part of the edging strip Schlüter-BEKOTEC-BRS in advance.
9. If the Schlüter-BEKOTEC-THERM ceramic thermal comfort floor is to function as a floor heating system, the full covering assembly is ready for heating only 7 days after completion. Start from a water temperature of 25 degrees C and increase the supply temperature by no more than 5 degrees C a day until the desired usage temperature has been reached.



10. Covering materials that are not susceptible to cracking (e.g. parquet, carpet or vinyl coverings) can be installed without the uncoupling mat, directly on top of the BEKOTEC screed. The screed thickness must be adjusted to the relevant material thicknesses.

Note: In addition to the applicable installation guidelines, the permissible residual moisture level of the screed must be observed for the selected covering material. For detailed installation instructions in conjunction with non-ceramic surface coverings, please refer to our technical manual for Schlüter-BEKOTEC-THERM or contact our Technical Department.

### Notes

Before and during the installation of the screed, the studded panel may need to be protected from mechanical damage with suitable measures, such as laying out wooden boards.

Schlüter-BEKOTEC-EN 23 FI 30, -ENFGI 30, -BRS and -BTS do not rot and require no special maintenance or care

When dismantling the BEKOTEC-EN 23 FI 30, the thermoforming sheet can be separated from the polystyrene support panel.

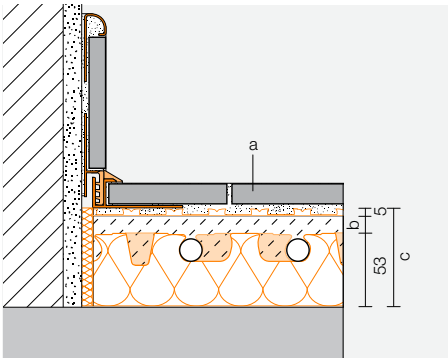


**Screed coverage over Schlüter-BEKOTEC-EN 23 FI 30 for various covering types**

**Schlüter®-BEKOTEC-EN 23 FI 30**

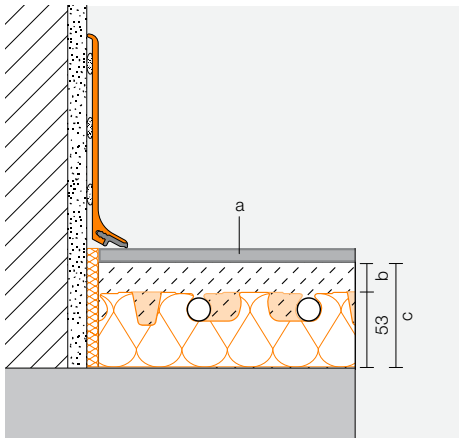
Screed coverage and maximum traffic loads for various surface coverings

**Ceramic coverings**



(a) Floor covering	Max. traffic load $q_k$ according to DIN EN 1991	Max. individual load $Q_k$ according to DIN EN 1991	System (b) coverage with conventional screeds	(c) Total thickness of BEKOTEC assembly
Ceramic tile/ natural stone	5.0 kN/m <sup>2</sup>	3.5 – 7.0 kN	8 – 25 mm	66 – 83 mm

**Non-ceramic coverings**



Soft coverings: PVC, vinyl, linoleum, carpet, cork	2.0 kN/m <sup>2</sup>	2.0 – 3.0 kN	15 – 25 mm	68 – 78 mm
Adhered parquet without tongue and groove connection	2.0 kN/m <sup>2</sup>	3.5 – 7.0 kN	15 – 25 mm	68 – 78 mm
Adhered parquet with tongue and groove connection	5.0 kN/m <sup>2</sup>	3.5 – 7.0 kN	8 – 25 mm	61 – 78 mm
Floating parquet, laminate	2.0 kN/m <sup>2</sup>	2.0 – 3.0 kN	8 – 25 mm	61 – 78 mm



Schlüter®-BEKOTEC-EN 23 FI 30



Schlüter®-BEKOTEC-ENFGI 30



### Schlüter-BEKOTEC-EN 23 FI 30 at a glance

General product properties	
Material studded sheet	Polystyrene (PS) with 70% recycled content
Material heat and sound insulation	Expanded polystyrene DES sg (EPS 30 mm)
Panel height	53 mm
Width	1275 mm
Length	975 mm
Weight	1650 g
Working area	1.08 m <sup>2</sup> (1.2 x 0.9 m)
System data	
Weight per unit area with 8 mm coverage	58 kg/m <sup>2</sup>
Screed volume with 8 mm coverage	28.5 l/m <sup>2</sup>
Traffic load	up to 5 kN/m <sup>2</sup>
System heating pipes	diameter 14 mm silver grey
	diameter 16 mm orange
Heating pipe installation spacing	75/150/225/300 mm
Technical properties	
Density (structured polystyrene)	1.05 g/cm <sup>3</sup>
Density (expanded polystyrene)	23 kg/m <sup>3</sup>
Processing temperatures	from +5 °C
Temperature resistance	-30 °C to +70 °C
Impact sound improvement measure according to DIN EN ISO 10140-1	Up to 28 dB
Thermal conductivity	0.039 W/mK
Thermal resistance (R-value)	≥ 0.769 m <sup>2</sup> K/W
U value	1.30 W/m <sup>2</sup> K
Fire resistance class acc. to EN 13501-1	E
Dynamic rigidity	20 MN/m <sup>3</sup>
Flexural bending capacity	≥ 100 kPa
Compressibility	CP 2 < 2 mm
Certifications/approvals	
VOC (French regulation / EMICODE)	available (A+ / EC 1 PLUS)
CE (EN 13163:2012+A1:2015)	available



## Supplementary system products

### Levelling panel

The levelling panel Schlüter-BEKOTEC-ENFGI 30 is installed in the area of door thresholds and heating circuit distributors to simplify connections and to minimise cutting waste. It consists of smooth polystyrene foil material with a 30 mm thick EPS lamination applied to the back.

Dimensions: 1200 x 900 mm

Thickness: 31 mm



### Pipe clamping strip

Schlüter-BEKOTEC-ZRKL is a pipe clamping strip for dependable pipe installation, e.g. in the connection area. The clamping strips are self-adhesive to allow for permanent attachment.

Length: 20 cm, Number of pipe spaces: 4



### Edging strip

Schlüter-BEKOTEC-BRS are edging strips of closed cell polyethylene foam. For further information please refer to the Schlüter-BEKOTEC-THERM manual.

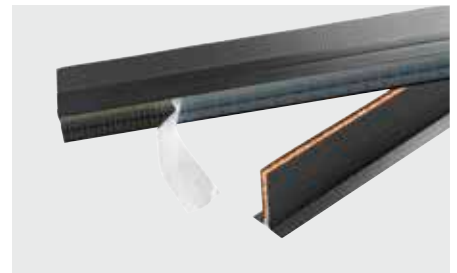


### Expansion joint profile

Schlüter-DILEX-DFP is an expansion joint profile for installation in door threshold areas to prevent sound bridges. Due to the bilateral coating and the self-adhesive strip, straight line installation is very easy.

Length: 1.00 m, height: 60 / 80 / 100 mm, thickness: 10 mm

Length: 2.50 m, height: 100 mm, thickness: 10 mm





Schlüter-BEKOTEC-EN 23 FI 30 with BT HR 14



Schlüter-BEKOTEC-EN 23 FI 30 with BT HR 16

### Product overview:

#### Schlüter®-BEKOTEC-EN 23 FI 30

Studded screed panel	Dimension	Packaging
EN 23 FI 30	1275 x 975 mm	8 units = 8.64 m <sup>2</sup> / box

#### Schlüter®-BEKOTEC-BRS

Edging strip	Dimension	Roll
BRS 808 KSF	8 mm x 80 mm	25 m
BRS 808 KF	8 mm x 80 mm	25 m
BRSK 810	8 mm x 100 mm	50 m
BRS 810	8 mm x 100 mm	50 m

#### Schlüter®-BEKOTEC-ENFG I30

Levelling panel	Dimension
ENFGI 30	1200 x 900 mm

#### Schlüter®-BEKOTEC-BTZRKL

Pipe clamping strip	Dimension
BTZRKL	200 mm x 40 mm

#### Schlüter®-DILEX-DFP

DFP = expansion joint profile Supplied length 1.00 m

H = mm	Packaging
60	20 units
80	20 units
100	20 units

#### Schlüter®-DILEX-DFP

DFP = expansion joint profile Supplied length 2.50 m




H = mm	Packaging
100	40 units



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