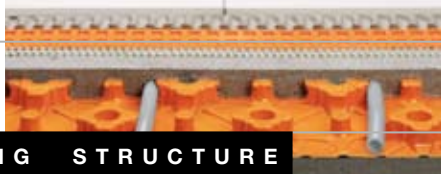


## 9.2 Schlüter®-BEKOTEC-F



FLOORING STRUCTURE

CURL RESISTANT, THIN LAYER SCREED SYSTEM

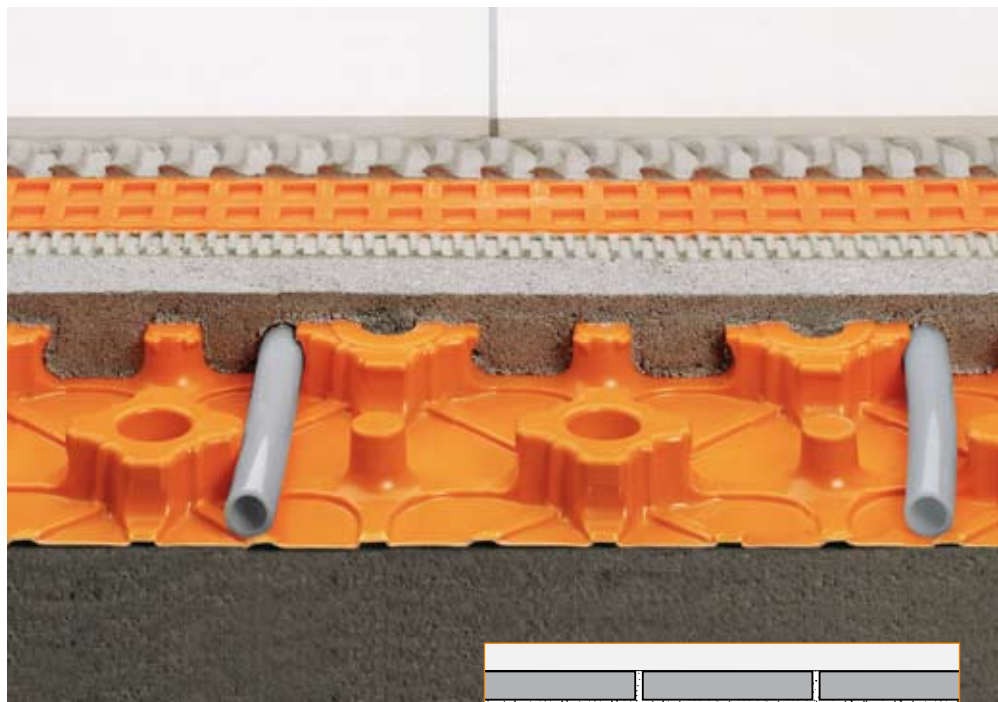
### Application and Function

Schlüter®-BEKOTEC-F is a modular system for crack free and functionally safe floating screeds and heated screed with coverings made of ceramic tiles, natural stone or other materials.

The system is based on the studded screed panel Schlüter®-BEKOTEC-EN 23 F, which is directly installed on top of load bearing substrates or conventional heat insulation and/or sound insulation panels. The geometry of the Schlüter®-BEKOTEC-EN 23 F studded panel results in a minimum screed thickness of 31 mm between the studs and 8 mm above the studs. The studs form a grid pattern with a distance of 75 mm between them to accept 14 mm diameter heating pipes if a heated screed is to be installed. The floor heating system is easily adjustable and ideally suited for use with low temperatures, since the screed volume to be heated or cooled is relatively small (28.5 l/m<sup>2</sup> with 8 mm coverage).

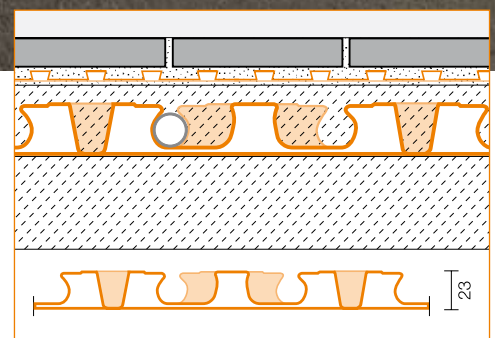
The curing stresses that occur in the screed due to shrinkage are absorbed by the studded pattern, thus controlling deformations such as curling. It is therefore unnecessary to install movement joints or control joints in the screed. As soon as the cement screed is ready to support weight, the uncoupling mat Schlüter®-DITRA can be installed (calcium sulfate screed < 2 CM-%). Ceramic tiles or natural stone tiles are then installed directly over this layer, using the thin-bed method. Movement joints in the covering layer are created using Schlüter®-DILEX according to industry guidelines.

Cover materials that are not susceptible to cracking, such as parquet or carpeting, can be directly installed over the screed as soon as it reaches the necessary residual moisture level for the corresponding covering.



### Material

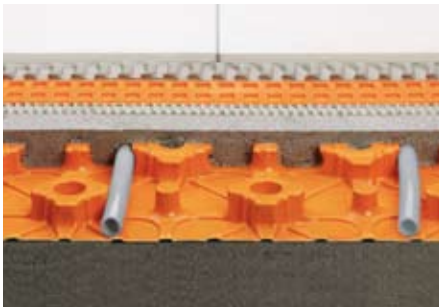
Schlüter®-BEKOTEC-EN 23 F is made of a high impact polystyrene deep drawing foil and is suitable for use with conventional cement screeds of strength class CT-C25-F4 (ZE 20) or calcium sulfate screed CA-C25-F4 (AE 20) and flowing screed.





## Installation

1. Schlüter®-BEKOTEC-EN 23 F is installed over an even and sufficiently load bearing substrate. Larger uneven sections should be levelled with screed or suitable fill materials prior to installation. If required, install additional suitable insulation materials on the substrate, observing the applicable regulations for sound and/or heat insulation. If cables or pipes are installed on the load bearing substrate, install a full layer of sound insulation in accordance with DIN 18560-2 above the levelling layer. Observe the maximum compressibility CP4 ( $\leq 4$  mm) when selecting a suitable insulation material. If the construction height does not allow for using polystyrene or mineral fibre insulation, the Schlüter®-BEKOTEC-BTS sound insulation membrane with a thickness of just 5 mm can achieve a significant improvement in sound insulation.
2. Adhere the 8 mm edge strip Schlüter®-BEKOTEC-BRS 808 KSF in places where the covering adjoins walls and other construction elements. The edge strip features an adhesive segment on the top and bottom for secure attachment. The adhesion on the substrate or the top insulation layer and the pre tensioning of the integrated foil leg push the edge strip toward the wall. When the studded Schlüter®-BEKOTEC panel is laid on top of the adhesive strip, the panel is permanently adhered to the substrate and flowing screed can no longer get beneath the panel.
3. The Schlüter®-BEKOTEC-EN 23 F modular panels must be cut to size in the peripheral areas. The Schlüter®-BEKOTEC panels are connected by overlapping a row of studs and clicking the panels together. In door transition areas and near distributor boxes, the smooth levelling panel Schlüter®-BEKOTEC-ENFG may be used to simplify the pipe installation. This panel is used underneath the studded panels and is adhered with double sided adhesive strips. The self adhesive pipe clamping strip Schlüter®-BEKOTEC-BTZRKL allows for precise routing of pipes in these areas. It may be necessary to adhere the panels to the substrate, for instance if the force of the pipes is relatively high (in small rooms with tight pipe radiuses).



The double sided adhesive tape Schlüter®-BEKOTEC-BTZDK66 can be used for this purpose.

4. To create a Schlüter®-BEKOTEC-THERM ceramic thermal comfort floor, the system pipes with a diameter of 14 mm are now clamped between the cutback studs. 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, cement screed with strength class CT-C25-F4 (ZE 20) or calcium sulfate screed CA-C25-F4 (AE 20) is installed with a minimum screed cover of 8 mm over the studded panels. The flexural strength of the screed may not exceed F5. The screed thickness may be increased to a maximum of 25 mm above the studs for levelling. To avoid sound transmission between individual rooms, the screed should be separated at the threshold using the expansion joint profile Schlüter®-DILEX-DFP.
6. As soon as the cement screed is ready to support weight, the uncoupling mat Schlüter®-DITRA may be installed in accordance with the manufacturer's recommendations (see product data sheet 6.1). Calcium sulfate screeds may be covered with Schlüter®-DITRA as soon as they have reached a residual moisture level of  $< 2$  CM-%.
7. Ceramic tile or natural stone can be directly installed on top of the Schlüter®-DITRA, using the thin-bed method. The ceramic covering must be divided into fields with movement joints above Schlüter®-DITRA in accordance with the applicable regulations. We recommend the movement joint profiles Schlüter®-DILEX-BWB / -BWS / -KS / -AKWS for creating movement joints (see also product data sheets 4.6, 4.7, 4.8 and 4.18).
8. Our corner movement profiles Schlüter®-DILEX-EK or Schlüter®-DILEX-RF (see product data sheet 4.14) can be used as a flexible edge joint in floor to wall transition areas. The protruding sections of the Schlüter®-BEKOTEC-BRS edging strip should first be trimmed.
9. The Schlüter®-BEKOTEC-THERM ceramic thermal comfort floor is ready for heating just seven days after the completion of the cover assembly. Increase the supply temperature by a

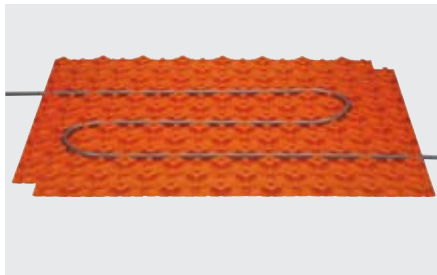


maximum of 5 °C a day to reach the desired operating temperature, starting from 25 °C water temperature.

10. All other covering materials that are not susceptible to cracking (e.g. parquet, carpet or synthetic coverings) can be directly installed over the Schlüter®-BEKOTEC screed without the Schlüter®-DITRA uncoupling mat. The height of the screed must be adjusted to the corresponding material thickness. In addition to the applicable installation guidelines, note the permissible residual moisture level of the screed for the selected covering material.

### Maintenance

Schlüter®-BEKOTEC-EN 23 F / -ENFG / -BRS / -BTS will not rot and require no special care or maintenance. Before and during the application of the screed, the studded screed panel may need to be protected from mechanical damage with suitable measures, such as laying out timber boards.



### Technical Data

1. Stud size:  
Small stud diameter: approximately 20 mm  
Large stud diameter: approximately 65 mm  
Grid spacing for heating pipes: 75 mm  
Diameter of system heating pipes: 14 mm.  
The studs have a cutback design to securely keep heating pipes in place without the need for clamps.
2. Connections:  
The studded panels are connected by overlapping a row of studs and clicking the panels together.
3. Panel size (working area): 1.2 x 0.9 m = 1.08 m<sup>2</sup>  
Panel height: 23 mm
4. Packaging: 10 units/box = 10.8 m<sup>2</sup>  
Box size is approximately 1355 x 1020 x 195 mm.



## Supplementary System Products

### Levelling panel

The levelling panel Schlüter®-BEKOTEC-ENFG is installed in door transition areas and in the area of heating circuit distributors to simplify connections and to minimise cutting waste. It consists of smooth polystyrene foil material and is adhered below the studded panels, using the supplied double sided adhesive tape.

Dimensions: 1275 x 975 mm

Thickness: 1.2 mm



### Pipe clamping strip

Schlüter®-BEKOTEC-BTZRKL is a pipe clamping strip for securing the pipes on the levelling panel. The clamping strips are self adhesive to allow for permanent attachment.

Length: 20 cm, number of pipe spaces: 4 units



### Double sided adhesive tape

Schlüter®-BEKOTEC-BTZDK66 is a double sided adhesive tape for adhering the studded panel to the levelling panel or to the substrate if necessary.

Roll: 66 m, height: 30 mm, thickness: 1 mm



### Edge strip

Schlüter®-BEKOTEC-BRS/KSF is an edge strip of closed cell polyethylene foam with an integrated foil leg that features an adhesive strip on the underside for attachment. The adhesion on the substrate and the pre tensioning of the integrated foil leg push the edge strip toward the wall. When the studded Schlüter®-BEKOTEC panel is laid on top of the adhesive strip, the panel is permanently adhered to the substrate and flowing screed can no longer get beneath the panel.

Roll: 25 m, height: 8 cm, thickness: 8 mm



### Impact sound insulation

Schlüter®-BEKOTEC-BTS is a 5 mm sound insulation membrane made of closed cell polyethylene foam to be installed below Schlüter®-BEKOTEC-EN 23 F. The use of Schlüter®-BEKOTEC-BTS leads to significant improvements in impact sound insulation. The material can be used if the room height is not sufficient for the use of sound insulation material made of polystyrene or mineral fibre.

Roll: 50 m, width: 1.0 m, thickness: 5 mm

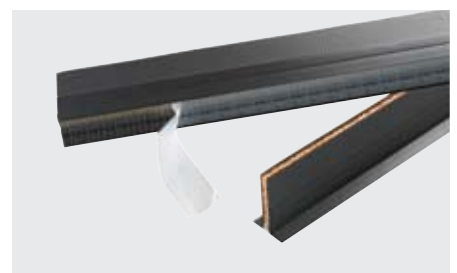


### Expansion joint profile

Schlüter®-DILEX-DFP is an expansion joint profile for installation in door transition areas to prevent sound bridges. Thanks 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

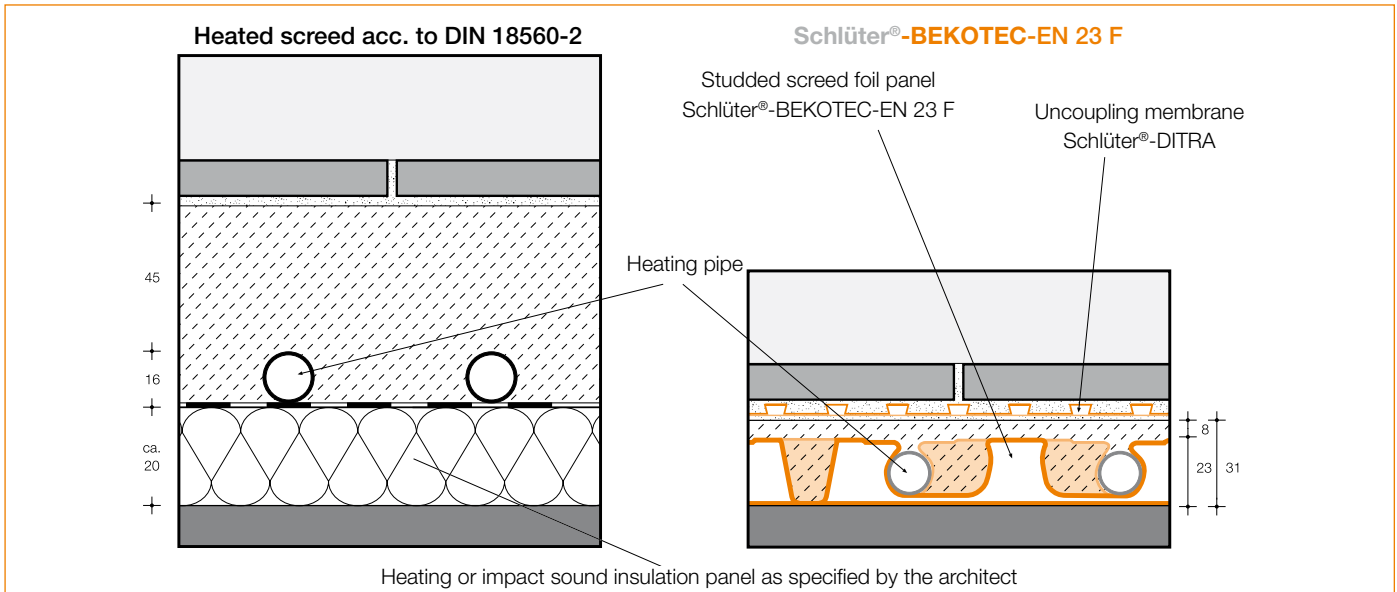




## Benefits of the Schlüter®-BEKOTEC System

- **Warranty:**  
Schlüter-Systems offers a five year warranty for the life of the cover assembly, provided all installation instructions were observed and the covering is used as intended.
- **Crack free covering:**  
The Schlüter®-BEKOTEC system is designed to reduce shearing tensions in the screed within the grid of the studded panel. No construction reinforcement is required.
- **Non buckling construction:**  
The cover assembly of the Schlüter®-BEKOTEC system is free of inherent stresses. Consequently, buckling in the system is virtually impossible. This is especially applicable in the presence of temperature fluctuations; e.g. with heated screeds.
- **Joint free screed:**  
The regular patterns of the Schlüter®-BEKOTEC studded panel evenly reduce tensions in the screed, which allows for constructing the screed without movement joints.
- **Movement joints in the joint pattern of the tile or stone covering:**  
With the Schlüter®-BEKOTEC system, the design of movement joints can match the joint pattern of the tile or stone covering, since it is not necessary to continue construction joints from the screed into the surface covering. The applicable regulations for the placement and construction of movement joints in and around the tile field must be observed.
- **Short construction time:**  
As soon as the screed produced with the Schlüter®-BEKOTEC system is able to support weight, coverings of ceramic tile, natural stone or artificial stone can be directly installed on top of the Schlüter®-DITRA membrane. Ceramic thermal comfort floors are ready for heating only seven days after the completion of the cover assembly.
- **Low construction height:**  
Compared to conventional heated screeds according to DIN 18 560-2, the Schlüter®-BEKOTEC system saves 37 mm in construction height.
- **Material and weight savings:**  
Assuming a base area of 100 m<sup>2</sup>, reducing the screed thickness by 37 mm saves 3.7 m<sup>3</sup> of screed, which is the equivalent of 7.4 metric tons. This advantage is reflected in the static calculation of new buildings or in refurbishments.
- **Fast reacting heated floor assembly:**  
Compared to conventional heated screeds, cover assemblies installed with a Schlüter®-BEKOTEC-THERM ceramic thermal comfort floor react much faster to temperature changes, since the volume to be heated or cooled is much lower. Consequently, the heated floor system is particularly suitable for operation at low temperatures.
- **Documented suitability for the defined purpose:**  
The trouble free functionality and suitability of the Schlüter®-BEKOTEC system has been documented in the test report of an accredited testing institute. In particular, the tests focused on the maximum traffic loads.





## Product Overview

### Schlüter®-BEKOTEC-EN 23 F

Studded screed panel EN 23 F	Dimensions 1.2 x 0.9 m = 1.08 m <sup>2</sup> working area	Packaging 10 units (10.8 m <sup>2</sup> ) / box
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### Schlüter®-BEKOTEC-BRS

Edge strip BRS 808 KSF	Dimensions 8 mm x 80 mm	Roll 25 m
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### Schlüter®-BEKOTEC-ENFG

Levelling panel ENFG	Dimensions 1275 x 975 mm
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### Schlüter®-BEKOTEC-BTZRKL

Pipe clamping strip BTZRKL	Dimensions 200 mm x 40 mm
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### Schlüter®-BEKOTEC-BTZDK66

Double sided adhesive tape BTZDK66	Dimensions 30 mm x 1 mm	Roll 66 m
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### Schlüter®-BEKOTEC-BTS

Sound insulation BTS 510	Dimensions 5 mm x 1 m	Roll 50 m	Packaging 1 roll
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### 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



**Text template for tenders:**

- \_\_\_\_\_m<sup>2</sup>
- \_\_\_\_\_Sound insulation and heat insulation
  - \_\_\_\_\_Heat insulation

for installation below Schlüter®-BEKOTEC-EN 23 F, to be supplied and professionally installed on a sufficiently level substrate.

- Mineral fibre, type: \_\_\_\_\_
- Polystyrene, type: \_\_\_\_\_
- Extruded rigid foam, type: \_\_\_\_\_
- Foam glass, type: \_\_\_\_\_

If using flowing screed, the complete layer of insulation panels may need to be covered with a PE separating foil. The installation instructions of the manufacturer must be observed.

Material: \_\_\_\_\_/m<sup>2</sup>  
 Labour: \_\_\_\_\_/m<sup>2</sup>  
 Total price: \_\_\_\_\_/m<sup>2</sup>

\_\_\_\_\_m<sup>2</sup> Schlüter®-BEKOTEC-BTS 510 as an impact sound insulation membrane made of 5 mm thick closed cell polyethylene foam for installation below Schlüter®-BEKOTEC-F on a sufficiently level substrate to be supplied and professionally installed. The installation instructions of the manufacturer must be observed.

Material: \_\_\_\_\_/m<sup>2</sup>  
 Labour: \_\_\_\_\_/m<sup>2</sup>  
 Total price: \_\_\_\_\_/m<sup>2</sup>

\_\_\_\_\_m<sup>2</sup> Schlüter®-BEKOTEC-EN23 F, as a studded screed panel made of studded polystyrene foil with cutback 23 mm studs, consisting of 109 larger studs of Ø 65 mm and 110 smaller studs of Ø 20 mm, which allow for installing heating pipes in a spacing pattern of 75 mm. The outer row of studs can be used to connect panels with a working area of 1.2 m x 0.9 m = 1.08 m<sup>2</sup>, to be professionally installed, including custom cuts in the periphery area and, if applicable, with the use of the levelling panel Schlüter®-BEKOTEC-ENFG. The installation instructions of the manufacturers must be observed.

Material: \_\_\_\_\_/m<sup>2</sup>  
 Labour: \_\_\_\_\_/m<sup>2</sup>  
 Total price: \_\_\_\_\_/m<sup>2</sup>

\_\_\_\_\_linear metres of Schlüter®-BEKOTEC-BRS 808 KSF as an edge insulation strip of closed cell polyethylene foam, 8 mm thick and 80 mm high, with a self adhesive support strip at the top and bottom, to be installed at floor to wall transitions or fixed construction elements. The adhesive part of the edge strip must be installed below the studded screed panel and joined to the underside of the studded panel. The installation instructions of the manufacturer must be observed.

Material: \_\_\_\_\_/m  
 Labour: \_\_\_\_\_/m  
 Total price: \_\_\_\_\_/m

\_\_\_\_\_linear metres of Schlüter®-DILEX-DFP as an expansion joint profile of closed cell polyethylene foam, with lateral hard plastic coating, 10 mm thick, for installation in door transition areas with self adhesive base. The installation instructions of the manufacturer must be observed.

Height: ■ 60 mm ■ 80 mm ■ 100 mm  
 Material: \_\_\_\_\_/m  
 Labour: \_\_\_\_\_/m  
 Total price: \_\_\_\_\_/m

\_\_\_\_\_linear metres of Schlüter®-BEKOTEC-THERM-HR heating pipe 14 x 2 mm, quality monitored, of high quality PE-RT plastic with high temperature resistance, very flexible, for optimal installation in the Schlüter®-BEKOTEC studded screed panel, to be supplied and professionally installed while observing the manufacturer's instructions.

Make: \_\_\_\_\_ Art.-No.: \_\_\_\_\_  
 Material: \_\_\_\_\_/m  
 Labour: \_\_\_\_\_/m  
 Total price: \_\_\_\_\_/m

\_\_\_\_\_m<sup>2</sup>

- Cement screed of strength class CT-C25-F4 (ZE 20)
  - Conventional installation
  - Flowing screed
- Calcium sulfate screed of Strength class CA-C25-F4 (AE 20)
  - Conventional installation
  - Flowing screed

with a minimum screed cover of 8 mm over the studs of the polystyrene panel Schlüter®-BEKOTEC-EN, to be installed without joints, compacted, and smoothed. Sound bridges at wall connections or construction elements as well as in door transition areas must be avoided. The installation instructions of the manufacturers must be observed.

Material: \_\_\_\_\_/m<sup>2</sup>  
 Labour: \_\_\_\_\_/m<sup>2</sup>  
 Total price: \_\_\_\_\_/m<sup>2</sup>

\_\_\_\_\_m<sup>2</sup> Schlüter®-DITRA as a tension neutralising and crack bridging uncoupling mat made of polyethylene, with cutback dovetail rib structure and anchoring fleece laminated on the underside, to be supplied and professionally installed on load bearing Schlüter®-BEKOTEC screed, using dry set thin-bed mortar.

- Install Schlüter®-DITRA as an additional bonded waterproofing assembly. This requires the professional waterproofing of all connections at pipe sleeves, floor drains, wall fixtures and abutting joints with Schlüter®-KERDI-BAND.

The resulting additional cost is to be

- Included in the unit prices
- Invoiced separately.

The installation instructions of the manufacturer must be observed.

Material: \_\_\_\_\_/m<sup>2</sup>  
 Labour: \_\_\_\_\_/m<sup>2</sup>  
 Total price: \_\_\_\_\_/m<sup>2</sup>



\_\_\_\_\_linear metres of Schlüter®-DILEX-KS as a movement joint profile with lateral metal profiles of

- EKS = stainless steel
- EKS V4A = stainless steel 1.4404 (V4A)
- MKS = brass
- AKS = aluminium

with trapezoid perforated anchoring legs and an 11 mm movement zone of synthetic rubber installed in a U shaped profile chamber, to be supplied and professionally installed as part of the tile installation, while observing the manufacturer's instructions.

Colour: \_\_\_\_\_  
 Profile height: \_\_\_\_\_  
 Material: \_\_\_\_\_/m  
 Labour: \_\_\_\_\_/m  
 Total price: \_\_\_\_\_/m

\_\_\_\_\_linear metres of Schlüter®-DILEX-BWB as a movement joint profile with lateral, trapezoid perforated anchoring legs of recycled rigid PVC and an approximately 10 mm flexible movement zone of soft CPE, to be supplied and professionally installed as part of the tile installation, while observing the manufacturer's instructions.

Colour: \_\_\_\_\_  
 Profile height: \_\_\_\_\_  
 Material: \_\_\_\_\_/m  
 Labour: \_\_\_\_\_/m  
 Total price: \_\_\_\_\_/m

\_\_\_\_\_linear metres of Schlüter®-DILEX-BWS as a movement joint profile with lateral trapezoid perforated anchoring legs of recycled rigid PVC and an approximately 5 mm flexible movement zone of soft CPE, to be supplied and professionally installed as part of the tile installation, while observing the manufacturer's instructions.

Colour: \_\_\_\_\_  
 Profile height: \_\_\_\_\_  
 Material: \_\_\_\_\_/m  
 Labour: \_\_\_\_\_/m  
 Total price: \_\_\_\_\_/m

\_\_\_\_\_linear metres of Schlüter®-DILEX-AKWS as a movement joint profile with laterally attached aluminum profiles with trapezoid perforated anchoring legs and a profile chamber for insertion of a 6 mm movement zone of synthetic material, to be supplied and professionally installed as part of the tile installation, while observing the manufacturer's instructions.

Profile height  
 (depending on tile thickness): \_\_\_\_\_ mm  
 Colour: \_\_\_\_\_  
 Item no: \_\_\_\_\_  
 Material: \_\_\_\_\_/m  
 Labour: \_\_\_\_\_/m  
 Total price: \_\_\_\_\_/m

\_\_\_\_\_linear metres of Schlüter®-DILEX-EK as a two part corner movement profile with a tongue and groove connection for permanently flexible joints at floor to wall transitions with trapezoid perforated rigid PVC anchoring legs and soft CPE expansion zone, suitable for absorbing vertical deformations up to 8 mm, to be supplied and professionally installed, while observing the manufacturer's instructions.

Colour: \_\_\_\_\_  
 Profile height: \_\_\_\_\_  
 Material: \_\_\_\_\_/m  
 Labour: \_\_\_\_\_/m  
 Total price: \_\_\_\_\_/m

\_\_\_\_\_ per metre Schlüter®-DILEX-RF as a two part corner profile with a tongue and groove connection for permanent flexible corner joints between floor and skirting or wall tiles, featuring trapezoid perforated anchoring legs made of rigid PVC and a movement zone made of soft CPE, suitable for accepting vertical movements up to approximately 8 mm, and install according to the manufacturer's specifications.

Profile height U: \_\_\_\_\_  
 Profile height O: \_\_\_\_\_  
 Colour: \_\_\_\_\_  
 Art.-No.: \_\_\_\_\_  
 Material: \_\_\_\_\_/m  
 Labour: \_\_\_\_\_/m  
 Total: \_\_\_\_\_/m

\_\_\_\_\_m<sup>2</sup>  
 ■ Tile  
 ■ Natural stone  
 ■ Artificial stone  
 of dimensions .....cm x .....cm  
 Make: \_\_\_\_\_ Art.-No.: \_\_\_\_\_  
 to be supplied and professionally installed using the thin-bed method in dry set mortar over Schlüter®-DITRA, complete with grouting after the curing of the thin-bed mortar. The installation instructions of the manufacturers must be observed.  
 Material: \_\_\_\_\_/m<sup>2</sup>  
 Labour: \_\_\_\_\_/m<sup>2</sup>  
 Total price: \_\_\_\_\_/m<sup>2</sup>