Schlüter Systems®

PROFILE OF INNOVATION

Schlüter®-BEKOTEC-EN 2520 /-EN 1520 PF

Covering assembly

Thin layer covering assembly for renovation and new construction

9.1

Product data sheet

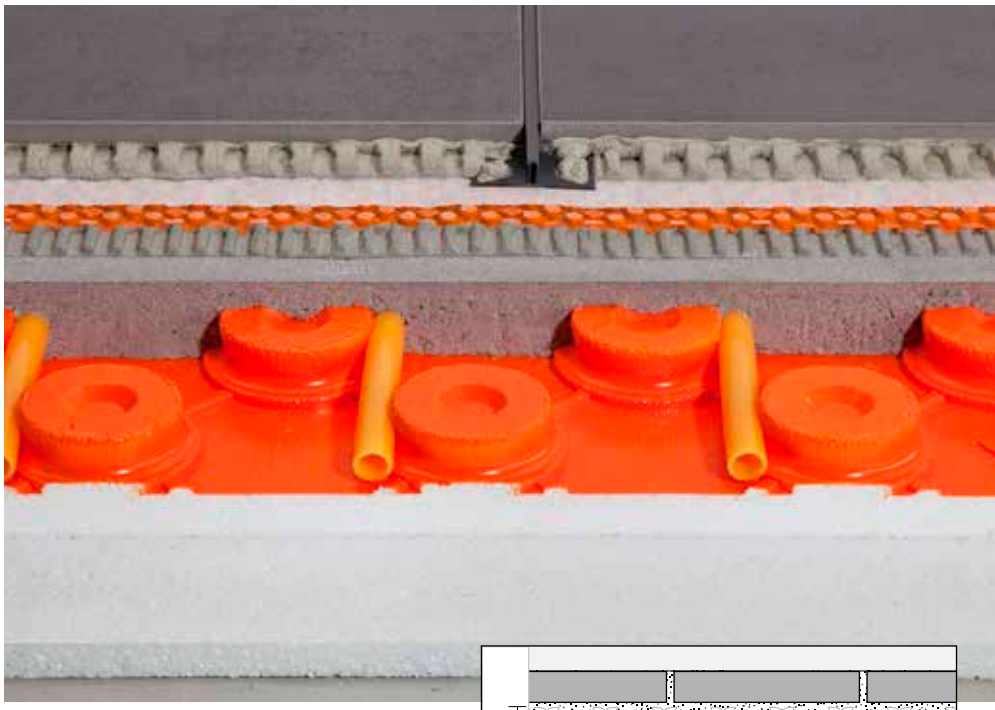
Application and function

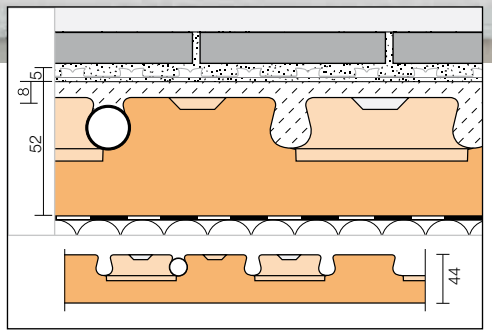
The reliable **Schlüter-BEKOTEC** covering assembly technology is a system for crack-free, functionally safe floating and heated screeds, with coverings made of ceramic tiles, natural stone and other covering materials.

The system is based on the polystyrene studded screed panel Schlüter-BEKOTEC-EN, which is directly installed on top of a load bearing substrate and/or on conventional heat insulation and sound insulation panels. The geometry of the BEKOTEC-EN studded screed panel dictates a minimum screed layer thickness of 32 mm between the studs and 8 mm above the studs. The stud spacing allows for clamping the heating pipes of the system, which have a 16 mm diameter, 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. 57 kg/m² ≙ 28.5 l /m²), 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 ≤ 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 according to industry guidelines.





Covering 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

Schlüter-BEKOTEC-EN 2520P, made of polystyrene EPS 033 DEO (PS 30), is especially suited for use with conventionally applied cement or gypsum screeds. Schlüter-BEKOTEC-EN 1520PF is made of polystyrene EPS 033 DEO (PS 25) and features a foil cover on the top side. It is particularly suitable for flowing screed.

Installation

1. Install Schlüter-BEKOTEC-EN on a sufficiently weight bearing and level substrate. Correct any uneven sections in the floor with a suitable self levelling compound, or similar infill. If required, install suitable insulation materials over the substrate in accordance with the applicable sound insulation and/or heat insulation requirements and cover the insulation with a PE separating layer as necessary. If cables or pipes are installed on the weight bearing substrate, the sound insulation must cover the full levelling layer as specified in DIN 18560-2. The max. compressive strength CP3 (≤ 3 mm) must be taken into consideration to select a suitable insulation material. If the construction height is insufficient for using polystyrene or mineral fibre insulation, Schlüter-BEKOTEC-BTS in a thickness of just 5 mm can achieve significantly improved sound insulation.
2. Cover the edges of the covering at rising walls or fixed structural components with the 8 mm edging strip Schlüter-BEKOTEC-BRS 810. The integrated foil leg of the edging strip must be situated between the substrate (or the top insulation layer) and the studded panel.
   Use the edging strip Schlüter-BEKOTEC-BRS 808KF with adhesive leg if using a flowing screed. The adhesive strip on the reverse side attaches the edging strip to the wall. Placing the studded screed panel on the self-adhesive foam leg prevents the screed from flowing underneath the assembly.
3. The BEKOTEC-EN studded panels must be precisely cut to size in the edge areas. The smooth levelling panel Schlüter-BEKOTEC-ENR 1520P (see page 5) simplifies the cutting process and saves material. The BEKOTEC panels have an interlocking design.
4. Clamp the system pipes with a diameter of 16 mm between the cutback studs to create a 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-THERM heating diagrams.
5. As part of the screed installation, install fresh cement screed of screed quality CT-C25-F4, max. F5, or gypsum based screed CA-C25-F4, max. F5, over the studded panels with a minimum screed coverage of 8 mm (recommended aggregate size 0-4 mm). The layer thickness can be partially increased to max. 25 mm for levelling. Suitable flowing screeds CAF/CTF with the corresponding specifications may be used as well. Observe the system approval for this application. The studded panel EN 2520P is an exception - it is exclusively designed for traditional semi-dry screeds.
   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 DILEX-DFP.
6. The DITRA uncoupling mat (or alternatively, DITRA-DRAIN 4 or DITRA-HEAT) can be installed in accordance with the installation instructions of product data sheets 6.1 (alternatively: 6.2 or 6.4) as soon as the screed is ready to bear weight. The uncoupling membrane 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, natural or agglomerate 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 DILEX-BWB, -BWS, -KS or -AKWS for creating movement joints (see product data sheets 4.6 - 4.8 and 4.18).
8. Install the corner movement profile DILEX-EK or -RF as a flexible perimeter movement joint in the area of the floor-wall transition (see product data sheet 4.14). Cut off the protruding part of the edging strip BEKOTEC-BRS in advance.
9. If the 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.

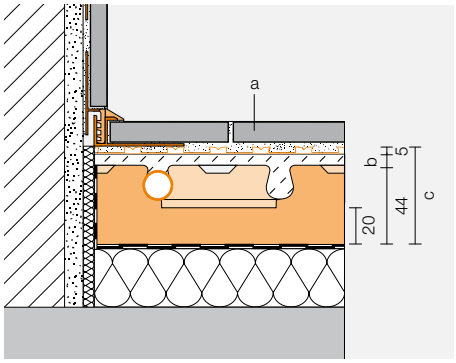
Notes

Schlüter-BEKOTEC-EN, -ENR, -BRS and -BTS do not rot and require no special maintenance or care. The studded polystyrene screed panel may need to be protected from mechanical damage with suitable measures, such as laying out wooden boards before and during the installation of the screed.

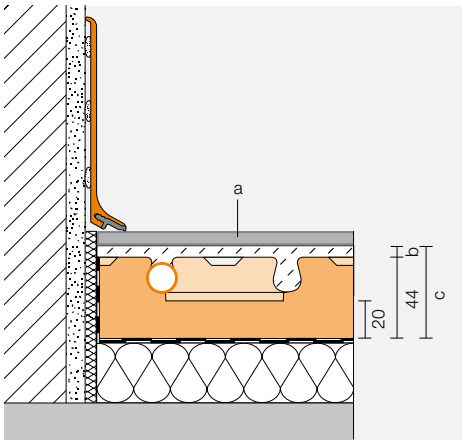
Screed coverage over Schlüter-BEKOTEC-EN for various covering types

Schlüter®-BEKOTEC-THERM-EN 2520 / 1520 PF
Screed coverage and maximum traffic loads for various surface coverings

Ceramic coverings



Non-ceramic coverings



(a) Floor covering	Max. traffic load qk according to DIN EN 1991	Max. individual load Qk according to DIN EN 1991	(b) System coverage with conventional screeds	(c) Total thickness of BEKOTEC assembly
Ceramic tile/ natural stone	5.0 kN/m²	3.5 - 7.0 kN	8 – 25 mm	57 – 74 mm
Soft coverings: PVC, vinyl, linoleum, carpet, cork	2 kN/m²	2.0 - 3.0 kN	15 – 25 mm	59 – 69 mm
Adhered parquet without tongue and groove connection	5.0 kN/m²	3.5 - 7.0 kN	15 – 25 mm	59 – 69 mm
Adhered parquet with tongue and groove connection	5.0 kN/m²	3.5 - 7.0 kN	8 – 25 mm	52 – 69 mm
Floating parquet, laminate	2 kN/m²	2.0 - 3.0 kN	8 – 25 mm	52 – 69 mm

Advantages of the Schlüter®-BEKOTEC system

- **Warranty:**
  Schlüter-Systems offers a five-year warranty for the usability and crack free functionality of the covering assembly, provided the installation instructions were followed and the covering is used as intended.

- **Crack free covering:**
  The BEKOTEC system is designed to reduce shearing tensions of the screed in the modular studded membrane pattern. No structural reinforcement is required.

- **Non buckling assembly:**
  The covering assembly built with the BEKOTEC system is free of inherent stresses when in use, which means that buckling in the area can virtually be ruled out. This applies in particular to stresses resulting from temperature fluctuations, e.g. in heated screeds.

- **No screed joints:**
  No expansion joints are needed in the screed since the BEKOTEC system evenly distributes any shearing tension in the screed across the entire area.

- **Movement joints in the joint pattern of the tile or paver covering:**
  The BEKOTEC system allows for adapting the design of movement joints to the selected joint pattern of the covering for tile or paver coverings since expansion joints from the screed do not have to be continued into the top covering. Only the general rules on the sizes of covering fields need to be followed.

- **Short construction time:**
  The uncoupling mat ensures that the screed created with the BEKOTEC system is ready for covering with ceramic tiles, natural stone or agglomerate stone as soon as the screed is ready to bear weight. Floor heating systems are ready for heating just 7 days after completion.

- **Low assembly height:**
  Compared to a heated screed according to DIN 18 560-2, the BEKOTEC system saves an assembly height of up to 37 mm.

- **Low material requirement:**
  With a screed coverage of 8 mm, only approx. 57 kg/m² ≙ 28.5 l/m² screed volume is needed. This advantage is also reflected in the static calculations.

- **Fast responding floor heating system:**
  A covering assembly using the BEKOTEC system in conjunction with a floor heating system is able to respond to temperature changes faster than a conventional heated screed since the volume to be heated or cooled is significantly smaller. That allows for operating the floor heating system in the low temperature range to save energy.

Supplementary system products

Levelling panel

The levelling panel Schlüter-BEKOTEC-ENR 1520P is installed along edges and in niches to simplify the cutting process and to minimise cutting waste. It is made of an EPS 040 DEO material and features an interlocking design. The panels can be installed in longitudinal or crosswise direction.

Packaging unit: 20 units/carton
Dimensions: 30.5 x 45.5 cm
Thickness: 20 mm

Edging strip for conventional screed

Schlüter-BEKOTEC-BRS 810 is an edging strip of closed cell polyethylene foam with an integrated foil leg.
The edging strip is installed along walls or fixed structural components. The integrated foil leg of edging strip must be situated below the BEKOTEC panel between the substrate (or the top insulation layer) and the studded panel.

Roll: 50 m, height: 10 cm, thickness: 8 mm

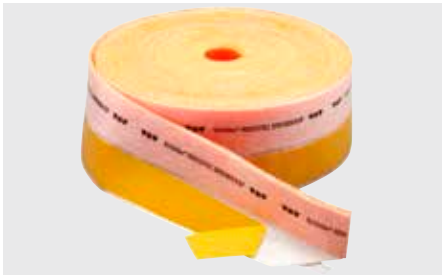
Schlüter-BEKOTEC-BRSK 810 is identical with the above edging strip, but has an adhesive backing for wall attachment.

Roll: 50 m, height: 10 cm, thickness: 8 mm

Edging strip for flowing screeds

Schlüter-BEKOTEC-BRS 808KF is an edging strip with an adhesive leg of PE foam and an adhesive backing for wall attachment.
When the BEKOTEC studded panel is placed on the adhesive PE leg, the resulting connection prevents flowing screeds from running underneath the assembly during installation.

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



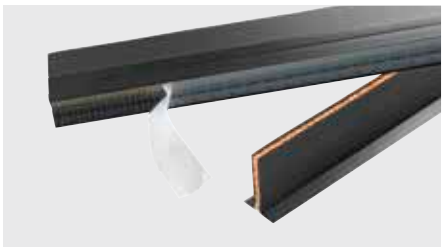
Schlüter-BEKOTEC-BRS 808 KSF is an edging strip of closed cell polyethylene foam with an integrated foil leg that features an adhesive strip on both sides for attachment. The edging strip is pressed toward the wall by the adhesion on the substrate and the pre-tensioning of the integrated foil leg. When the studded panel BEKOTEC is placed on top of the adhesive leg, the panel bonds with the substrate and flowing screed can no longer flow underneath the panel.

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

Impact sound insulation

Schlüter-BEKOTEC-BTS is a 5 mm insulation layer of closed cell polyethylene foam for installation below BEKOTEC-EN. The use of BEKOTEC-BTS results in a significant improvement of sound insulation. The material can be used if the required assembly height is not sufficient for a thick insulation layer of polystyrene or mineral fibre.

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



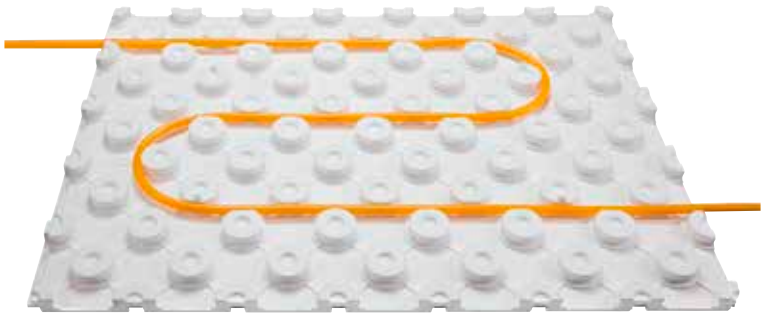
Flexible movement joint

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 backing 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

Technical data

1. Stud size: 65 mm diameter
   Spacing for heating pipes: 75 mm
   System heating pipes: Ø 16 mm
   The studs have a cutback design on all sides to securely keep heating pipes in place without the need for clamps.
2. Connections: The studded panels have an interlocking design.
   The studded BEKOTEC panels can also be fitted at the sides of the floor with their short end. This cuts down on material waste.
3. Panel size (working area):
   75.5 x 106 cm = 0.80 sqm.
   Panel height: 44 mm
4. Packaging: 20 units/carton = 16 sqm
   Carton dimensions are approx. 120 x 80 x 60 cm.
   Carton corners are reinforced with cardboard angles.



Schlüter®-BEKOTEC-EN 2520PF

Product overview:

Schlüter®-BEKOTEC-EN

Studded screed panel	Dimension	Packaging
EN 2520P (without foil cover)	75.5 cm x 106 cm = 0.8 m² working area	20 units (16 m²)/carton
EN 1520PF (with foil cover)	75.5 cm x 106 cm = 0.8 m² working area	20 units (16 m²)/carton
ENR 1520P (levelling panel)	30.5 cm x 45.5 cm	20 units/carton

Schlüter®-BEKOTEC-BRS

Edging strip	Dimension	Roll	Packaging
BRS 810 (for conventional screed)	8 mm x 100 mm	50 m	10 rolls
BRSK 810 (for conventional screed)	8 mm x 100 mm	50 m	10 rolls
BRS 808KF (for flowing screed)	8 mm x 80 mm	25 m	10 rolls
BRS 808KSF (for flowing screed)	8 mm x 80 mm	25 m	5 rolls

Schlüter®-BEKOTEC-BTS

Impact sound insulation	Dimension	Roll	Packaging
BTS 510	5 mm x 1 m	50 m	1 roll

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:

_____m²
☐ ____Impact sound and heat insulation
☐ ____Heat insulation
for installation below Schlüter-BEKOTEC-EN, to be supplied and professionally installed on a sufficiently level substrate.
☐ Mineral fibre, type: _____
☐ Polystyrene, type: _____
☐ Extruded rigid foam, type:_____
☐ Cellular glass, type:_____
The fully installed insulation panels may need to be covered with a PE separating layer if using flowing screed.
The manufacturer's specifications must be observed.
Material:_____ /m²
Labour: _____ /m²
Total: _____ /m²

_____m² Schlüter-BEKOTEC-BTS 510 as an impact sound insulation membrane consisting of 5 mm closed-cell polyethylene foam for installation below Schlüter-BEKOTEC-EN, to be supplied and installed on a sufficiently level substrate.
The manufacturer's specifications must be observed.
Material:_____ /m²
Labour: _____ /m²
Total: _____ /m²

_____m² Schlüter-BEKOTEC-EN 2520P as a studded screed panel made of polystyrene EPS 033 DEO (PS 30) with an working area of 106 cm x 75.5 cm and interlocking design, featuring 70 studs in a height of 24 mm, of which 4 studs have an 8 mm hemispherical apex, respectively, to be supplied and professionally installed, including cutting in the edge area, if necessary with the use of the levelling panel Schlüter-BEKOTEC-ENR 1520P.
The manufacturer's specifications must be observed.
Material:_____ /m²
Labour: _____ /m²
Total: _____ /m²

_____m² Schlüter-BEKOTEC-EN 1520PF as a studded screed panel made of polystyrene EPS 033 DEO (PS 25) with an working area of 75.5 cm x 106.0 cm and interlocking design, featuring 70 studs in a height of 24 mm, of which 4 studs have an 8 mm hemispherical apex, respectively, to be supplied and professionally installed, including cutting in the edge area, if necessary with the use of the levelling panel Schlüter-BEKOTEC-ENR 1520P.
The manufacturer's specifications must be observed.
Material:_____ /m²
Labour: _____ /m²
Total: _____ /m²

_____linear metres Schlüter-BEKOTEC-BRS 810 as an edging strip made of closed-cell polyethylene foam, 8 mm thick and 100 mm high, with an integrated foil leg, to be supplied and adhered to rising walls or fixed structural components. The foil leg of the edging strip must be installed below the BEKOTEC studded panel.
The manufacturer's specifications must be observed.
Material:_____ /m
Labour: _____..../m
Total: _____...../m

_____linear metres Schlüter-BEKOTEC-BRSK 810 as an edging strip made of closed-cell polyethylene foam, 8 mm thick and 100 mm high, with an integrated foil leg, to be supplied and adhered to rising walls or fixed structural components with the help of the integrated backing. The foil leg of the edging strip must be installed below the BEKOTEC studded panel.
The manufacturer's specifications must be observed.
Material:_____ /m
Labour: _____..../m
Total: _____...../m

___ linear metres of Schlüter-BEKOTEC-BRS 808KF as an edging strip for flowing screeds made of closed-cell polyethylene foam, 8 mm thick and 80 mm high, with an integrated self-adhesive foam leg, to be supplied and adhered to rising walls or fixed structural components with the help of the integrated backing. The adhesive leg of the edging strip must be installed below the studded screed panel and bond with the underside of the studded panel.
The manufacturer's specifications must be observed.
Material:_____...../m
Labour: _____...../m
Total: _____...../m

___ linear metres of Schlüter-BEKOTEC-BRS 808KSF as an edging strip made of closed-cell polyethylene foam, 8 mm thick and 80 mm high, with an self-adhesive support leg on both sides, to be adhered to rising walls or fixed structural components. The adhesive leg of the edging strip must be installed below the studded screed panel and bond with the underside of the studded panel.
The manufacturer's specifications must be observed.
Material:_____...../m
Labour: _____...../m
Total: _____...../m

_____linear metres of Schlüter-DILEX-DFP as an expansion joint profile made of closed-cell polyethylene foam, lateral rigid plastic coating, 10 mm thick and with a self-adhesive leg, to be installed in the door area.
The manufacturer's specifications must be observed.
Height: ☐ 60 mm ☐ 80 mm ☐ 100 mm
Material:_____...../m
Labour: _____..../m
Total: _____...../m

_____linear metres of oxygen impermeable heating pipes made of plastic
ø _____mm wall thickness _____mm
to be supplied and professionally installed between the studs of the polystyrene studded screed panel Schlüter-BEKOTEC-EN in the required spacing.
The manufacturer's specifications must be observed.
Type: _____Art.-No.:_____
Material:_____ /m
Labour: _____...../m
Total: _____...../m

_____m²
- Cement screed of
  strength class CT-C25-F4 (ZE 20)
  - conventional installation
  - flowing screed
- Gypsum based screed of
  strength class CA-C25-F4 (AE 20)
  - conventional installation
  - flowing screed
  - equivalent screeds

with a minimum coverage of 8 mm over the studs of the polystyrene panel Schlüter-BEKOTEC-EN without joints, to be compacted and levelled. Sound bridges at wall transitions or structural components as well as in door transitions must be avoided.
The manufacturer's specifications must be observed.
Material:_____ /m²
Labour: _____ /m²
Total: _____ /m²

Text template for tenders
can be found at www.schluter.co.uk

Schlüter-Systems KG · Schmölestraße 7 · D-58640 Iserlohn · Tel.: +49 2371 971-1261 · Fax: +49 2371 971-1112 · www.schlueter-systems.com
Schlüter-Systems Ltd · Units 3-5 Bardon 22 Industrial Estate · Beveridge Lane · Coalville · Leicestershire · LE67 1TE
Tel.: +44 1530 813396 · Fax: +44 1530 813376 · sales@schluter.co.uk · www.schluter.co.uk

Art.-No. 550 522 – edition 12/22 – Reprints will invalidate this issue – See website for the latest version.