

6.1 Schlüter®-DITRA

UNDERLAYMENT

UNCOUPLING, WATERPROOFING, AND VAPOUR PRESSURE EQUALISATION

Application and Function

Schlüter®-DITRA is a polyethylene membrane with a grid structure of square cavities, each cut back in a dovetail configuration, and an anchoring fleece laminated to its underside. Designed for tile and natural stone installations, Schlüter®-DITRA serves as a waterproofing membrane, a vapour pressure equalisation layer to accommodate moisture occurring at the underside of the substrate, and an uncoupling layer for problematic substrates.

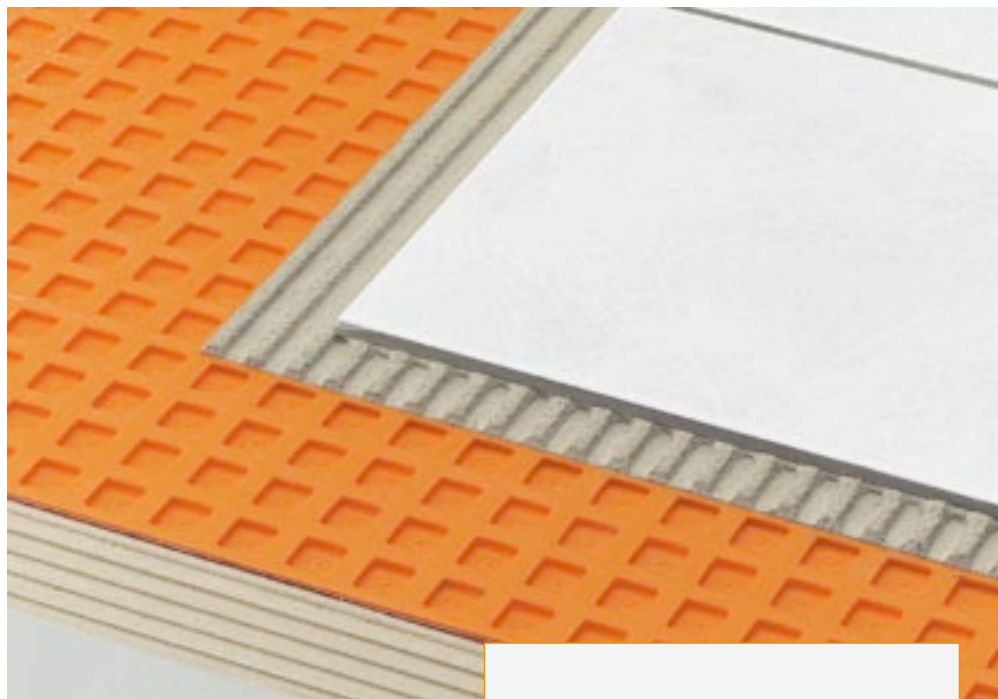
The substrate must be even and load bearing. To bond Schlüter®-DITRA, use a bonding adhesive that is appropriate for the substrate. Apply the adhesive using a 3 x 3 mm or 4 x 4 mm notched trowel. The anchoring fleece on the underside of Schlüter®-DITRA must be fully engaged in the adhesive to provide a mechanical bond to the substrate. Please observe the open time of the bonding adhesive.

Using the thin-bed method and following all applicable industry standards, set the tile or stone covering directly on the Schlüter®-DITRA in such a way that the tile adhesive becomes mechanically anchored in the square, cut back cavities of the Schlüter®-DITRA matting.

Summary of Functions

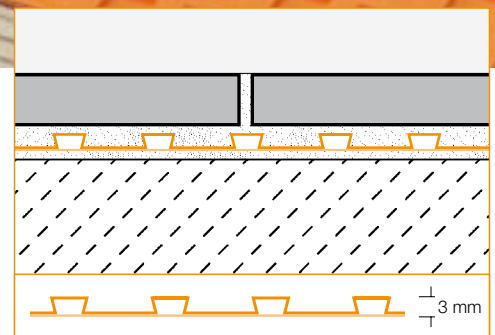
a) Uncoupling

Schlüter®-DITRA uncouples the floor covering from the substrate and neutralises the tensions between the substrate and the tile covering that result from the varying deformations of the materials. Likewise, stress cracks in the substrate are bridged and are, therefore, not transferred to the surface covering.



b) Waterproofing

Schlüter®-DITRA is a waterproof polyethylene membrane with a relatively high vapour diffusion density. Provided the joints, floor/wall connections, and connections to building fixtures are properly installed, Schlüter®-DITRA creates a waterproofing assembly with the tile covering that meets the requirements of the mandatory guideline "Recommendations on Waterproofing in Conjunction with Panelling and Tile and Paver Coverings in Interior and Exterior Applications," published by the German Construction Industry Association (ZDB). If the material requires an official permit from German authorities, the corresponding test certificate is available and may be requested.

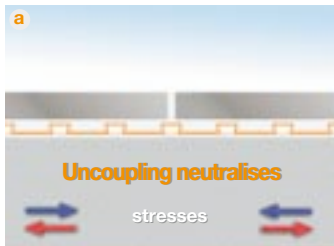




Thus, Schlüter®-DITRA protects the substrate against damage due to moisture penetration and aggressive substances.

c) Equalisation of vapour pressure

The interconnected air channels between the cavities on the underside of the Schlüter®-DITRA matting remain open. This allows moisture in the substrate to evaporate, thus neutralising vapour pressure.



Material

Schlüter®-DITRA is a polyethylene sheet with a grid structure of square cavities, each cut back in a dovetail configuration. An anchoring fleece is laminated to the underside. The rib height is approximately 3 mm. Polyethylene is not permanently UV stable. Prolonged exposure to intensive sunlight should be avoided when storing the material.

Material Properties and Areas of Application

Schlüter®-DITRA is flexible, bridges cracks, and will not rot. In addition, it is highly resistant to watery solutions, salts, acids, and alkalis, as well as many organic solvents, alcohols, and oils.

Its resistance to specific stresses must be examined separately on the basis of the expected concentration, temperature, and exposure time. The vapour diffusion density is relatively high. The material is physiologically safe.

Schlüter®-DITRA is used with a great variety of applications. Its suitability for specific chemical or mechanical conditions must be evaluated for each individual case. The instructions below provide some general guidelines.

Coverings constructed with Schlüter®-DITRA may have a certain hollow sound when they are walked upon with hard shoes or tapped with a hard object.

Note

The thin-bed adhesive and the covering materials selected for use with Schlüter®-DITRA must be suitable for the corresponding application and must meet the requirements of the site. Materials used in exterior applications must be waterproof as well as resistant to frost and weather.

Schlüter®-DITRA should be used primarily as a waterproofing layer when installing cover materials that are sensitive to moisture (e.g. natural stone or synthetic resin panels) or if moisture is expected to build up on the underside (e.g. in the case of green screed). When Schlüter®-DITRA is installed in exterior applications, special protective measures may be required; e.g. shielding the installation from direct sunlight.

d) Load distribution (load impact)

The bottom of the square cavities in Schlüter®-DITRA, which are filled with thin-bed adhesive, directly transfer the load impact on the tile covering to the substrate. As a consequence, tile coverings installed on top of Schlüter®-DITRA are highly load resistant. If high traffic loads are expected (e.g. in industrial locations), the tiles selected for the installation must be of the corresponding thickness and pressure stability. The requirements of the mandatory guideline "Ceramic Floor Coverings With High Impact Resistance," published by the German Construction Industry Association (ZDB) must be followed.

In areas with high impact loads, the tiles must be fully embedded in the thin-bed adhesive. The contact surface of Schlüter®-DITRA amounts to approximately 50% of the total surface. This can reduce the load bearing capacity in case of point loads. For high point loads, select a tile thickness that is capable of distributing the loads. Ceramic tile coverings should not be exposed to the direct impact of hard objects. The tile dimensions should be at least 50 mm x 50 mm.

e) Adhesive properties

Due to the bonding of the anchoring fleece into the thin-bed adhesive on the underside and the mechanical anchoring of the adhesive in the cut back cavities, Schlüter®-DITRA achieves a good adhesion of the tile covering to the substrate (laboratory test values: $\sim 0.25\text{N/mm}^2$). Consequently, Schlüter®-DITRA can be used for wall and floor coverings. Anchor plugs may be used with wall coverings if necessary.



The use of rapid setting thin-bed adhesives may be an advantage for certain projects. Schlüter®-DITRA should be covered with protective running boards if the transport of material makes it necessary to walk over the matting.

Note on movement joints:

Schlüter®-DITRA must be separated at the existing movement joints. If Schlüter®-DITRA is used as a waterproofing layer, the joints between the sheets must be covered with Schlüter®-KERDI-FLEX band.

Movement joints must be continued in the tile covering, as specified by the applicable industry standards. In all other cases, large area floor assemblies installed over Schlüter®-DITRA must be subdivided into smaller fields with the help of movement joints. The distance between such control joints in exterior applications (balconies and terraces) should not exceed 3 metres.

Depending on the construction of the substrate, field sizes may need to be smaller. Please refer to our Schlüter®-DILEX profile series. Install the corresponding profiles such as Schlüter®-DILEX-BT or Schlüter®-DILEX-KSBT over expansion joints in accordance with the expected movements.

It must be assured that no tension can build at the edge of coverings, e.g. at upright construction elements or floor/wall transitions. The edge profiles and connective joints have to meet the requirements of the corresponding construction standards and must be suitable to prevent the build up of tensions. Please refer to our Schlüter®-DILEX profile series.

Substrates for Schlüter®-DITRA

It must be verified that substrates which are to receive the Schlüter®-DITRA matting are even, load bearing, clean, and compatible. Bond inhibiting surfaces must be removed. Any unevenness or height and slope differences in the substrate must be levelled prior to the application of Schlüter®-DITRA.

Concrete

Concrete is subject to lengthy deformation processes due to shrinkage. Concrete and pre-stressed concrete may build up tension because of deflection. Schlüter®-DITRA absorbs inherent stresses between the concrete and tile covering so that the tile can be installed as soon as the concrete is hard enough to be walked upon.

Mortar screeds

According to the applicable standards, mortar screeds must cure a minimum of 28 days prior to the installation of tile, and their residual moisture content must be below 2% (percentage by volume). In particular, floating screeds and heated screeds tend to change shape or develop cracks after installation, e.g. due to load stresses or temperature changes. With Schlüter®-DITRA, tiles can be installed as soon as the screed can be walked upon.

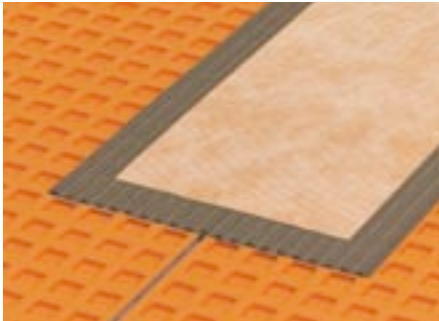
Gypsum based screeds

According to the applicable standards, the residual moisture of gypsum based screeds should not exceed 0.5% (percentage by volume) prior to the installation of tiles. With the application of Schlüter®-DITRA, tile coverings can be installed as soon as the residual moisture is below 2.0% (percentage by volume).

If required, the screed surface may need to be pretreated (sanding, priming) in accordance with the applicable industry standards and manufacturers' recommendations.

Schlüter®-DITRA can be applied using thin-bed tile adhesives that are suitable for the substrate. Schlüter®-DITRA protects the screed against moisture penetration from the surface. Gypsum based screeds are sensitive to moisture and must be protected from additional moisture penetration, especially on the underside.





Radiant heated screeds

Schlüter®-DITRA may be used over heated screeds as described in the sections on mortar screeds and gypsum based screeds. With Schlüter®-DITRA, tiles can be heated seven days subsequent to installation. Starting at 77 °F (25 °C), the radiant heated floor temperature can be raised gradually by +9 °F (+5 °C) per day, to a maximum of 104 °F (40 °C). The air channels of Schlüter®-DITRA allow for a quick and even distribution of heat below the tile covering.

Note: For radiant heated floors, we especially recommend our system Schlüter®-BEKOTEC-THERM, the ceramic thermal comfort floor.

Schlüter®-DITRA is also recommended for uncoupling of radiant heated floors consisting of thin electric heating mats. Schlüter®-DITRA may be installed either above or below the heating mat. However, the uncoupling function is more effective if Schlüter®-DITRA is installed above the heating mat.

Masonry/mixed substrates

Masonry consisting of brick, stone, limestone, cement block, lightweight concrete, or similar is generally a suitable substrate for Schlüter®-DITRA. Uneven areas must be levelled in advance. Particularly in refurbishments or extensions, different materials (mixed masonry) may be encountered. At the transitions, movement can cause cracks. With Schlüter®-DITRA, stresses and cracks do not transfer to the tile covering.

Stucco/ plaster

Plaster substrates should be examined in accordance with the applicable building codes to ensure they are dry. The surface may need to be pretreated with a primer. Schlüter®-DITRA can be applied using thin-bed tile adhesives that are suitable for the substrate.

Balconies / terraces

As an uncoupling membrane, Schlüter®-DITRA neutralises the stresses between the substrate and the tile covering that are caused by the frequent and extensive temperature changes occurring on balconies. Furthermore, Schlüter®-DITRA serves as a bonded waterproofing assembly together with the tile covering (see notes on waterproofing). The substrate (concrete, screed) must be sufficiently sloped.

For refurbishments, the existing surface assembly can generally remain, provided it is sufficiently sloped and load bearing. Prior to the application of Schlüter®-DITRA over existing and cracked tile floors, the loose tiles must be removed and the remaining cavities filled using an appropriate mortar. The preparations also include ensuring a proper slope in the substrate.

Rooftop terraces

Rooftop terraces over enclosed living or utilisation spaces below are subject to the applicable standards and building codes for roof construction and must feature the required insulation to serve as vapour barrier, heat insulation, and top insulation. A drainage system such as Schlüter®-TROBA or Schlüter®-TROBA-PLUS must be installed over this top insulation layer. This is then topped with screed to act as a load distribution layer. Schlüter®-DITRA is installed over this screed as an uncoupling layer with the tile covering and as a moisture barrier for the screed. As an uncoupling mat, Schlüter®-DITRA neutralises the stresses between the substrate and the tile covering that are caused by the frequent and extensive temperature changes occurring on terraces.

Synthetic flooring and surface coatings

In principle, the surface must be load bearing and prepared in such a way that a suitable tile adhesive will adhere to it and anchor the fleece on the underside of the Schlüter®-DITRA matting. The compatibility of the adhesive for the substrate and Schlüter®-DITRA must be verified ahead of time.



Plywood and Oriented Strand Board (OSB)

These materials are particularly prone to deformation under the influence of moisture (or significant changes in atmospheric humidity). The plywood or OSB panels used in construction should therefore be exterior grade. In principle, plywood and OSB can be used as backing materials for Schlüter®-DITRA on both floors and walls in interior applications. The thickness of the panels must be sufficient to ensure stability in conjunction with a suitable supporting construction. Attach the panels with screws set at the required minimum spacing. The joints must feature tongue and groove connections and should be secured with additional adhesive. Movement joints of at least 10 mm must be left at the transition to other construction parts. Schlüter®-DITRA neutralises the stress occurring in the tile covering and prevents the penetration of moisture.

Structural plank subflooring

Sufficiently load bearing structural plank subflooring in tongue and groove construction, with the appropriate screws in place, in principle is suited as a substrate for ceramic tiles. The timber substrate should have reached the equilibrium moisture content prior to installing Schlüter®-DITRA. However, an additional layer of plywood or OSB panels is recommended. Uneven floors must be levelled using an appropriate levelling compound.

Bituminous screed (paving grade asphalt)

Schlüter®-DITRA allows for the installation of ceramic tile coverings over load bearing bituminous screeds built according to industry standards in interior and exterior applications. The surface needs to be sanded or must be suitable to allow for the proper adhesion of the thin-bed tile adhesive for the installation of Schlüter®-DITRA.

Installation

1. The substrate must be free of bond-inhibiting components, load bearing, and even. Any unevenness in the substrate must be levelled prior to the application of Schlüter®-DITRA.
2. The type of bonding adhesive used to apply Schlüter®-DITRA depends on the type of substrate. The adhesive must bond to the substrate and mechanically anchor the fleece on the underside of the Schlüter®-DITRA matting. Verify the compatibility of all materials prior to installation.
3. Apply the bonding adhesive to the substrate using a 3 x 3 mm or 4 x 4 mm notched trowel.
4. Individual courses of Schlüter®-DITRA are cut to size. Solidly embed the anchoring fleece on the underside of Schlüter®-DITRA in the adhesive so that its entire surface is bonded, and immediately work it into the adhesive using a float or screed trowel. Please observe the open time of the bonding adhesive. When initially positioning Schlüter®-DITRA, it is advisable to align and position the matting while slightly stretching it.
Application is made easier with a second person. The side edges and ends of individual courses are cut straight and abutted.
Note: If Schlüter®-DITRA is only installed as an uncoupling membrane, side edges and ends of individual courses do not need to be sealed with Schlüter®-KERDI-KEBA. Please refer to the instructions for waterproofing if the membrane is to serve as a waterproofing layer.
5. Once installed, the matting must be protected against heavy mechanical loads to avoid loosening it from the substrate or other damage. It is advisable to place running boards (especially in the centre of material transports) to protect Schlüter®-DITRA. Other protective measures, such as shielding of direct sunlight or protection from precipitation in exterior applications, may also be required. Carefully remove any moisture that may have gathered in the indentations of the studs before applying the thin-bed tile adhesive.





6. Immediately after the Schlüter®-DITRA matting is installed, the tiles can be set using the thin-bed method and using a bonding tile adhesive that matches the requirements of the covering. It is recommended to fill the square cavities with the smooth side of the trowel and to establish a regular pattern in the bonding adhesive with the notched side of the trowel in one application. The tiles are fully embedded in the adhesive. Fully embedded installation of tiles in accordance with the applicable professional standards is particularly important for coverings with high traffic loads and in outdoor areas. The notches of the trowel must match the thickness of the tiles. Please observe the open time of the adhesive.
7. For movement joints as control joints, expansion joints, or connection joints please follow the instructions given in this product data sheet as well as the applicable industry regulations.

Waterproofing with Schlüter®-DITRA

By carefully sealing the mat joints and connections with fixtures and walls, Schlüter®-DITRA can be used for achieving a waterproofing layer in a tile assembly that is equal to the requirements of the applicable guideline of the German Construction Industry Association, covering the moisture load classifications 0 through C specified therein. If the material requires an official permit from German authorities, the corresponding test certificate is available and may be requested.

We recommend the use of our waterproofing membrane Schlüter®-KERDI (see product data sheet 8.1 Schlüter®-KERDI) for applications of Utilisation Class B, "pools." Schlüter®-DITRA therefore protects the substrate from damages due to the penetration of moisture and aggressive substances.

The abutting joints are covered with the sealing adhesive Schlüter®-KERDI-COLL and Schlüter®-KERDI Band (minimum width: 12.5 cm) is solidly embedded over the joint.

For floor/wall connections, adhere the Schlüter®-KERDI-BAND in the appropriate width. The sealing band should overlap at least 5 cm.

Schlüter®-KERDI-BAND is also well suited for sealing joints with existing fixtures such as door frames, window frames, and balcony edge profiles of metal, wood, or plastic. Start by applying Schlüter®-KERDI-FIX to the part of the fixture that is to be adhered. The remaining width is fully embedded on Schlüter®-DITRA, using the adhesive Schlüter®-KERDI-COLL.

The suitability of Schlüter®-KERDI-FIX for the material of the corresponding fixtures must be verified ahead of time.

Cut Schlüter®-DITRA above structural and seismic expansion joints; then cover the joint with Schlüter®-KERDI-FLEX.

Schlüter®-KERDI-FLEX can also be used for flexible finishing edges. Alternatively, Schlüter®-KERDI-BAND may be used, provided a loose fold is left above the joint.

Note on floor drains:

Schlüter®-KERDI-DRAIN is a floor drain specifically designed to allow connections to a bonded waterproofing membrane. This allows the simple and fast connection of Schlüter®-DITRA to the floor drain, using the Schlüter®-KERDI collar.



Product overview:

Schlüter®-DITRA

Length = m	5	30
Width = 1 m	•	•

Schlüter®-KERDI-KEBA (Band)

(A) Thickness = 0.1 mm

Length = m	5	30
Width = 8.5 cm	•	•
Width = 12.5 cm	•	•
Width = 15 cm	•	•
Width = 18.5 cm	•	•
Width = 25 cm	•	•

Schlüter®-KERDI-FLEX

(B) Thickness = 0.3 mm

Length = m	5	30
Width = 12.5 cm	•	•
Width = 25 cm	•	•

Schlüter®-KERDI-KM (Pipe collar)

(C) Thickness = 0.1 mm

Dim. 17 x 17 / Hole 22 mm
KM 5117 / 22 Set = 5 pieces

Schlüter®-KERDI-KERECK

(D) Thickness = 0.1 mm

Internal Corner	2 Pc.	5 Pc.	10 Pc.
prefabricated	•		•
pre-cut section		•	
External Corner	2 Pc.	5 Pc.	10 Pc.
prefabricated	•		•
pre-cut section		•	

(E) **Schlüter®-KERDI-COLL**

Sealant adhesive	4.25 kg + 1.85 kg
see product data sheet 8.4	

Schlüter®-KERDI-FIX (Installation adhesive)

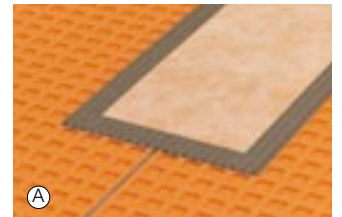
(F)

Cartridge	grey / 290 ml
	brilliant white / 290 ml
see product data sheet 8.3	

Schlüter®-KERDI-DRAIN (Floor drains)

(G)

see product data sheet 8.2



**Text template for tenders:**

Accurately bond in accordance with the manufacturer's specifications

_____ m² Schlüter®-DITRA as

- uncoupling matting
 - waterproofing and uncoupling matting for tile consisting of a crack bridging polyethylene membrane with a grid structure of square cavities, each cut back in a dove tail configuration, and an anchoring fleece laminated to its underside, to an existing, even and load bearing substrate on the
 - floor, consisting of _____
 - wall, consisting of _____
- with a suitable
- tile adhesive, as suggested by the supplier.
 - tile adhesive, Type _____

Connections to pipes and floor drains:

- are to be included in unit prices;
- are to be charged as extra.

Material: _____/m²

Labour: _____/m²

Total: _____/m²

Text template for tenders:

Bond in a professional manner and according to the manufacturer's specifications

_____ running metres of Schlüter®-KERDI-FLEX as a highly flexible polyethylene waterproofing strip, covered on both sides with fleece fabric and an approximately 30 mm wide fleece free central zone to serve as sealing of

- flexible butt joints
- flexible floor/wall connections
- flexible connections of Schlüter®-DITRA waterproofing membrane to building elements.

Width of KERDI-FLEX:

- 12.5 cm
- 25 cm

Material: _____/m

Labour: _____/m

Total: _____/m

Text template for tenders:

Accurately bond in a professional manner and according to the manufacturer's specifications

_____ running metres of Schlüter®-KERDI-KEBA as a polyethylene waterproofing strip, covered on both sides with fleece material for the sealing of

- butt joints
- floor/wall connections
- connections

to fixed installation parts of the Schlüter®-DITRA waterproofing membrane.

Internal and external corners

- are to be included in unit prices;
- are to be charged as extra.

Width of the KERDI-KEBA:

- 8.5 cm
- 12.5 cm
- 15 cm
- 18.5 cm
- 25 cm

Material: _____/m

Labour: _____/m

Total: _____/m

Text template for tenders:

Supply and bond in a professional manner and according to the manufacturer's specifications

_____ pieces of Schlüter®-KERDI-KM as a polyethylene pipe sleeve, covered on both sides with fleece fabric.

Material: _____/Piece

Labour: _____/Piece

Total: _____/Piece