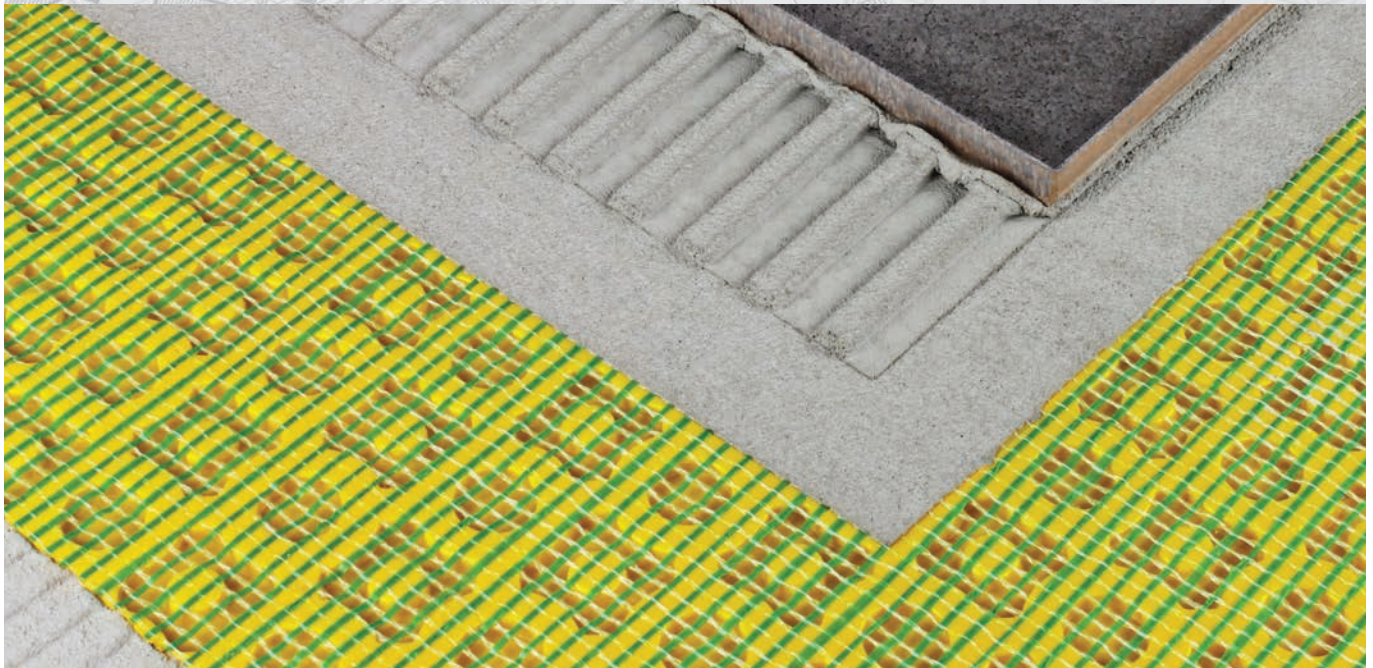


# DURABASE CI++

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## Underlay mats for decoupling and waterproofing tiled flooring

**DURAL**



### THE PROBLEMS:

#### 1. Cracks in the subfloor

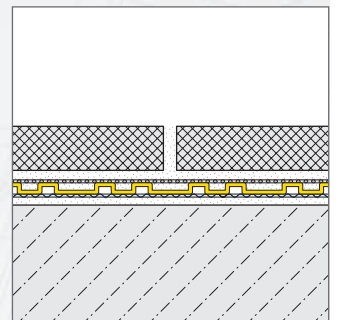
When renovating older floors, cracks can be present in the subfloor, making it impossible to install a safely watertight new tiled surface.

#### 2. Stresses in the subfloor

In the subfloor beneath the flooring it is possible for tensions to appear in materials, depending on the design and the kind of materials they are. These can then be transferred to the tiling and cause cracks to appear in it. For instance, with concrete, even after six months or after many years of expansion and contraction, deformation can occur. Cement and hot screed surfaces can also deform after tiles have been laid. Chipboard or plywood too can deform considerably due to absorption of moisture.

#### 3. Damp from the subfloor

When laying on top of anhydrite screed, residual moisture from the screed itself can collect under the tiles and damage the adhesive layer.



### APPLICATIONS AND FUNCTION

DURABASE CI++ matting in conjunction with tiles serves to decouple the tiles and bridge any cracks. It also allows water vapour pressure to be compensated for if there is residual moisture. DURABASE CI++ decouples the flooring from the foundations. Any small cracks can also be bridged so that they do not affect the tiling. This makes it ideal for renovation work.

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At mat joints we recommend the use of WPF sealing tape. Where CI++ decoupling mats are also used for waterproofing, all penetrations, sleeves, corner pieces and sealing must be professionally sealed using a suitable waterproof mineral sealant material in accordance with the German Construction Federation (ZDB) information sheet "Verbundabdichtungen".

Due to the structure of the matting (nodules) channels are created, which also act to equalise water vapour pressures. With DURABASE CI++ the distribution of weight is handled by the texturing, which is filled in by thin-bed mortar. This means that loads can be spread out over the floor so that the tiles can withstand more stress if their thickness is sufficient. In very busy and highly stressed areas, the thickness of the tiles and their resistance to pressure needs to be selected appropriately for the location (at least 13 mm thick or more depending on the application, for Germany see the ZDB data sheet "Ceramic flooring subject to severe mechanical stresses").

### Material properties and uses on various types of foundation

DURABASE CI++ mats are made of yellow polypropylene with a grid of texturing nodules and a supporting polypropylene fleece layer on the back. This combination means the matting is resistant to most chemicals (e.g. salts, acids, alkalis, solvents and oils, although when the locations are seriously at risk from chemicals, it is recommended that a professional assessment be made for the use of the mats). For specific peculiarities depending on the situations, it is recommended that a professional assessment be made for the use of the mats with regard to the expected concentrations, temperatures and durations of exposure.

Decoupled flooring layers can sound different when walking on them with hard soles or heels.

According to DIN-EN 12004C2, the thin-bed mortar being used for the flooring material must be suitable for the required usage. Outdoors, specific attention should also be paid to whether the material is resistant to heat and frost. Furthermore, it may be necessary to use special protection when laying DURABASE CI++ outdoors.

It is common practice to divide the foundation under the flooring into areas with expansion joints. The expansion joints in the tiling need to match those already existing. We recommend using junction profiles from the DURAFLEX range for this. Expansion joints should also be laid in decoupled floors as area perimeters, edging and junctions. This should also be planned and carried out in keeping with common practice. The joints in the CI++ decoupling layer need to match those in the foundations, too. In any areas subject to large quantities of moisture, the joints will need to be waterproofed using loops of WP or WPF sealing tape.

On floating cement screed, expansion joints are required at all door thresholds, in areas in excess of 60 m<sup>2</sup> in size or where a side of the area exceeds 8 m in length, wherever there is serious cracking in the floor surface, above existing building expansion joints and so on. For calcium sulphate screed, the stipulations of the respective screed manufacturer should be observed. Otherwise the relevant data sheets provided by the "tiling and natural stone" trade association should apply.

When the mats have just been laid, it is recommended that boards be laid over them if they need to be walked on. This should prevent damage.

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### SUITABLE SUBFLOORS

#### Cement screed

Cement screed must be at least 28 days old before the laying of tiles in accordance with the applicable regulations and the residual moisture should be no greater than 2%. Hot screed and floating screed, though, both tend to deform and crack at a later date. DURABASE CI++ allows tiles to be laid on top of screed as soon as it is possible to walk on it (when the residual moisture is about 4 %).

#### Calcium sulphate screed (anhydrite screed)

Calcium sulphate screed may only have a maximum residual moisture of 0.5%, or 0.3% for hot screed, according to the applicable regulations. DURABASE CI++ makes it possible to lay tiles over calcium sulphate screed as soon as it has a residual moisture content of less than 2%. The surface of the screed needs to be prepared prior to the laying of tiles (smoothing, priming, etc.) and both professional regulations and the manufacturers' stipulations need to be observed. To adhere the DURABASE CI++ mats to the ground, hydraulic-setting fast-binding thin-bed mortar is recommended. Since calcium sulphate screed is sensitive to damp, DURABASE CI++ protects the surface from any further entry of moisture.

#### Hot screed

DURABASE CI++ can also be used on hot screed if the aforementioned instructions are observed (for cement and calcium sulphate). The screed must be heated before DURABASE CI++ mats are laid. The air channels formed by the DURABASE CI++ mats provide for rapid and uniform distribution of heat under the tiling. DURABASE CI++ is also suitable for the installation of direct under-floor heating, if the heating pipes are properly enveloped in thin-bed mortar.

#### Melted asphalt screed

Before laying DURABASE CI++ mats on standardised melted asphalt screed, either indoors or outdoors, the surfaces need to be sanded down or of a surface texture that allows for sufficient adhesion for the thin bed mortar used to adhere the DURABASE CI++ underlay. The ZDB information sheet, "melted asphalt screed" should be observed. Trowelling melted asphalt screed to even up the surface should only be done using trowels of suitable dimensions with restrictions on the thickness of layers.

#### Concrete

Concrete can also undergo additional tension due to creeping. Both normal and pre-stressed concrete can also undergo tension due to bending. DURABASE CI++ evens out the stresses between concrete and tiles due to shrinkage, meaning that tiles can be laid as soon as the concrete has become sufficiently hard, as long as the poured cement is of an adequately high quality classification. If CI++ mats are to be installed on top of newly-laid concrete, it is essential that you ask our applications department for suitable technical advice.

#### Plastic flooring and laminates

The surfaces must be able to support weight and be sufficiently well bonded to the foundation. They also need to be of such surface texture that a suitable adhesive can bond to it and anchor to the fleece backing of the DURABASE CI++ underlay. Checks should be made in advance to ensure that the adhesive is compatible with the foundation and with the CI++ matting.

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### Plywood and chipboard

These materials are particularly subject to deformation due to changes in the moisture content of the material (including severe fluctuations in atmospheric humidity). The plywood or chipboard used should be treated against absorption of water. The boards should be chosen so that they are thick enough to retain their shape and resist loading to a sufficient extent in conjunction with the relevant flooring base. They should be secured by screwing them down at appropriate intervals. They should butt together with tongue and groove joints that need to be glued. Approximately 10 mm of space needs to be left between the edges and any adjoining walls or fittings. DURABASE CI++ reduces horizontal stresses and provides protection against damp. All work should be carried out in keeping with common practice.

### Floorboards

As long as the floorboards are screwed down, level and sufficiently able to bear weight, tiles can be laid directly on top of them in conjunction with DURABASE CI++. A balanced moisture level of about 15% needs to be ensured before DURABASE CI++ underlay is laid. It is recommended that if the floorboards are unstable, a suitably thick additional layer of plywood or chipboard should be added. Uneven places need to be smoothed out directly on the wooden foundation using a trowel of suitable dimensions.

### Balconies and terraces

The tensions occurring outdoors due to temperature changes can be compensated for by DURABASE CI++. The foundations will be protected from moisture if installation is made in conjunction with DURABASE WP or WPFb tape. The gradient of the floor must be of sufficient magnitude (approx. 2 %). If existing flooring is firm, sufficiently able to bear weight and possessed of a sufficient gradient, then it is possible to build directly on this surface. If this is not the case, loose material should be removed before adhering the DURABASE CI++ mats and broken patches or the lack of gradient need to be made good using suitable mortar. Important: it is common practice to put in area perimeter joints every 2.50 to 5.00 (max.) metres. It is important that the DURABASE CI++ mats are also separated by expansion joints at these points. Such joints should be waterproofed using loops of WP sealing tape. For roof terraces the applicable rules for roofing work need to be observed as well. The installation thus needs to have a suitable damp course, heat insulation layer, sealing and floor covering planned and implemented.

## INSTALLATION

**1.** The floor making up the foundation must be free of any material that would impair adhesion. It must be level and able to bear weight. Any evening out to be done must be completed before DURABASE CI++ is laid. The adhesive is chosen depending on the nature of the foundation. The adhesive must bond to the foundation and to the backing fleece of the DURABASE CI++ mats. For most surfaces a water-based C2 flexible mortar can be used. The mortar is applied to the foundation using a serrated trowel (4 x 4 mm). **Important: do not use larger sized serrated trowels or the decoupling effect of the CI++ matting will be impaired. This in turn will create a crunching sound under foot.**

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2. Having been cut to size, the rolls must quickly be laid over the entire surface with the fleece backing on the adhesive. The rolls can be pushed into place using a roller or other suitable tool. Make sure this is done before the adhesive is dry. To avoid damage to the rolls being laid, it is recommended that they be protected from loading by laying boards on them. Other protective measures may be necessary, too, e.g. protection from direct sunlight or rain in outdoor locations. Any water collecting in the texturing must be removed before applying thin-bed mortar.

3. Always cover over junctions between mats with DURABASE WP or DURABASE WPFB tape.

4. As soon as the DURABASE CI++ matting has been laid, tiles can be laid on top of it using a thin-bed technique and a thin-bed mortar appropriate to the flooring. Practically, it is advisable to apply mortar to the round depressions in one working step and then apply thin-bed mortar and roughen it in another. The work can also be done in such a way that the application of the top mortar layer only starts after the initial application has hardened. The tiles must be embedded in the mortar to cover the entire surface. The depth of the serrations on the trowel must be appropriate to the tile format. Make sure this is all done before the adhesive is dry. For flooring out of doors, the laying of tiles should only begin after the mortar for the CI++ underlay has properly hardened.

Where expansion joints are used to delineate areas, edges and junctions, professional regulations should be observed. Flooring outdoors, floors using large-format tiles or any flooring subject to heavy loading should be laid using a combined installation procedure.

### Note:

**By reason of design DURABASE-CI++ mats are not suitable for laying under thin or large-format floor tiles ("slimline tiles"). There is a risk of them breaking. In addition, small-format tiles under 50 x 50 mm must not be used either.**

For all products and materials, the following applies: The suitability of the material with regard to the expected mechanical loading and chemical exposure must be investigated carefully in each individual case. The generally recognised rules of good engineering practice must always be observed!

DURABASE CI++ – when laying underlay mats on balconies or patios in high summer temperatures, the mats need to be protected by some means in order to prevent them becoming unglued or buckling while the adhesive is hardening. For better results when installing the mats, it is better to lay them in the cooler hours of the evening and then to lay tiles on top the following morning.

Data sheet downloads. The latest versions of the technical data sheets are available on the internet at [www.dural.de](http://www.dural.de). If need be, you can also order them in printed form, of course.

(Read our detailed installation instructions by downloading the PDF file)

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## PRODUCT DATA:

PRODUCT:	CI decoupling mat ++
MATERIAL:	Textured foil = PP, Backing fleece = PP, Mesh = PP
MATERIAL THICKNESS:	0.5 mm approx.
HEIGHT OF MATS:	3 mm
WIDTH OF ROLL:	100 cm
LENGTH OF ROLL:	5 / 10 / 30 m
COMPRESSIVE STRENGTH:	0,37 N/mm <sup>2</sup> approx.
TEMPERATURE RANGE:	- 40 °C to + 80 °C
COLOUR OF MATS:	Textured foil = yellow, backing fleece = white, mesh = green
MATERIAL PROPERTIES:	Resistant to chemicals, decay, fungus und bacteria
APPLICATIONS:	Underlay matting for decoupling and compound sealing of tiled floors

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