

AquaDrain® EK

Capillary passive drainage system for tiles and natural stone in external areas

DESCRIPTION

High-performance, capillary passive surface drainage system for tiles and natural stone fixing on balconies, patios and roof terraces when combined with a recommended drainage mortar or epoxy mortar/screed from BAL. For in-depth application guidance and technical drawings please refer to Part A Technical Design Guide or contact the BAL TECHNICAL ADVISORY AND SPECIFICATION SERVICE.

Product Properties and Benefits

- A complete support, drainage and protection system for external areas.
- Rapidly drains seepage water and provides 3-dimensional water management.
- Compensates for the insufficient drainage capacity of single-grain mortars.
- Inhibits rising trapped moisture thereby avoiding discolouration of the surface of moisture-sensitive coverings. Also helps reduce risk of efflorescence.
- Guarantees the fastest possible drying out of the covering and the bedding layer. (Drainage mortar)
- Ensures efficient drainage for barrier-free/low door connections in a system using AquaDrain® drain grates.
- Note: Can reduce footfall noise to 30 dB when used as part of a total construction, (see test report BL 01-07515; Construction Acoustics Laboratory, University of Rhein-Main dated 05.04.2015).

Suitable Coverings:

- Natural stone and concrete pavers, extruded and dry pressed ceramic tiles. For laying coverings exposed to the weather, using only those materials that have been tested and are classed as both frost resistant and suitable for external use. Stone susceptible to dishing or curling due to contact with water should not be used externally such as BAL RAPIDSET FLEXIBLE FIBRE, BAL RAPIDSET FLEXIBLE or BAL STONE AND TILE PTB.

PRODUCT INFORMATION

Composition: AquaDrain® EK drainage rolls/sheets consist of non-rotting plastic (Polypropylene) membranes with channel-like profiles lengthwise and across, on the upper and lower side, pressure resistant, in 8 mm and 16 mm thickness. A fine mesh glass fibre weave is laminated onto the upper side.

Colour: Blue

Pack sizes: 10 m rolls, 20 m² packs of 1x2 m sheets (8 mm only)

Sheet Width: 1m plus 50mm overlapping

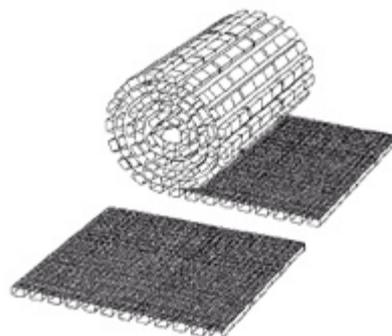
Sheet Thickness: 8 mm and 16 mm (8 mm only for sheets)

Roll Weight: approx. 9kg

Sheet Pack Weight : approx. 17kg

Additional Information:

- Static pressure tolerance: 2,000 kg/m²
- Contact area: approx. 66%
- Height of structure including tiles from 78 mm with 50 mm cement-based mortars, and 43 mm with MorTech DRAIN single grain mortar from 25 mm thickness.
- Store horizontally; keep in their closed original packaging. Do not store in direct sunlight. Protect against pressure.
- Drainage performance: see page 2.



DRAINAGE PERFORMANCE

According to DIN EN ISO 12958 "Determination of water flow capacity within the plane" (Item 5.1a), 08/2010. SKZ-TeConA GmbH Würzburg test report 112155/14-II (TBC)

AquaDrain® EK 8 mm
Gradient Fall Drainage performance

i = 1.0	= 100 %*	4.35 l/(mxs)
i = 0.1	= 10 %*	1.35 l/(mxs)
i = 0.015	= 1,5 %	0.50 l/(mxs)

AquaDrain® EK 16 mm
Gradient Fall Drainage performance

i = 1.0	= 100 %*	9.33 l/(mxs)
i = 0.1	= 10 %*	2.98 l/(mxs)
i = 0.015	= 1,5 %	1.16 l/(mxs)

TEMPERATURE RESISTANCE

-30°C to 70°C **N.B** Tiling should not be carried below 5°C

Minimum Thickness					Minimum Height of Structure		
Bedding/Drainage screed	Mat Thickness	Concrete Slabs	Stone	Ceramic	Concrete Slabs/Stone	Ceramic	
Cement-based Mortar (BAL QUICKSET CEMENT)	Min. 50 mm	8 mm	Min. 20 mm	Min. 20 mm	Min. 10 mm	> 78 mm	> 68 mm
	Min. 50 mm	16 mm	Min. 20 mm	Min. 20 mm	Min. 10 mm	> 86 mm	> 76 mm
MorTech DRAIN single grain	Min. 25 mm	8 mm	Min. 20 mm	Min. 20 mm	Min. 10 mm	> 53 mm	> 43 mm

INSTALLATION INSTRUCTIONS

NOTE: For further information on installation please refer to Part B Installation Guide or contact BAL TECHNICAL ADVISORY AND SPECIFICATION SERVICE.

Application 1 – For conventional cement-based mortar/drainage screeds

Substrates/Concrete

Falls should be between 1 -2 % and equivalent to (SR1)

Surface regularity (SR):

Surface Regularity is defined as the deviation in height of the surface of a flooring layer over short distances in a local area. In simpler terms, it is the 'flatness' or 'measure of unevenness' of the screeded surface.

Falls of 2 % or greater may require slip-proofing in line with the current codes of practice.

Falls of 1 % or less:

- Can encourage higher water load on the seals and covering
- Can make higher demands on surface regularity than required by British Standards in order to prevent backfalls.

Falls of less than 1 % can cause the following:

- Higher water loading
- More risk of encouraging water to the building.
- Pooling or ponding of water
- Water staining of porous covering materials.
- Increased risk of ice formation.
- Void formation.

Barrier-free door connections/thresholds must always be formed with a minimum fall of $\geq 1.0\%$, preferably $\geq 1.5\%$, in order to ensure sufficiently rapid draining off of any façade or surface water via the AquaDrain® surface drains.

Must be load-bearing, rigid and not resilient or compressive. For seals on balconies/patios/roof terraces according to BS 5385 Part 3 – 5.5 Separating Layers and G.8 Separating Layer (unbonded method), e. g. made of PE membrane with a minimum thickness of 0.125mm should be used for most conditions.

Thermal insulation needs to have a pressure resistance of ≥ 120 k/Pa.

Installation:

Selection of appropriate mat thickness: 8 mm & 16 mm

1. AquaDrain® EK rolls are laid on suitable substrates with the mesh side up, preferably with the drainage channels pointing in the direction of the main fall.
2. The overlapping mesh covers the joints between the lengths, ensuring that none of the single-grain mortar can enter the drainage channels.
3. Other joint areas are covered and adhered with the self-adhesive AquaDrain® SK joint tape.
4. To join all adjacent construction elements, AquaDrain® EK is to be laid with a 10 mm expansion joint. To ensure freedom of movement of the subsequent covering structure and to protect against the entry of mortar behind/underneath the surface drainage, the AquaDrain® RD edge insulation strip with self-adhesive foot is to be applied to AquaDrain® EK. The perforation of the self-adhesive foot ensures permeability, so that seepage water is transferred to the surface drainage.

Always check the suitability of the covering for use externally with the manufacturer.

Further instructions: While work is being carried out, the drainage mats are to be protected in the areas of transport pathways etc. with planks/walk boards.

Drainage mortar/screeds

BAL QUICKSET CEMENT is recommended as a binder for the load distribution layer made up of single grain mortar, please refer to BAL TECHNICAL DATA SHEET FOR MIXING INSTRUCTIONS.

Greater thickness is required for the load distribution layers in order to achieve comparable bending/tensile strength with standard screeds. Ready-made dry mortars can, according to the manufacturers, be used from 50 mm upwards. The minimum thickness of the load-bearing layer made from on-site mixtures should, according to the Technical Construction Information on Natural Stone (Bautechnischer Information Naturwerkstein) 1.4 (status May 2008), be at least 60mm. (Bending tensile strengths must be demonstrated).

If the load-bearing single grain mortar layer has to be reinforced (when mortar is over 50mm in thickness), only corrosion protected or corrosion-resistant reinforcement mats are permitted. The stainless steel surface grid is to be installed for this purpose. Overlaps must be at least 50 mm wide.

Expansion joints are to be installed in line with the current codes of practice/British Standards for external tiling.

AquaDrain® RD edge insulation strip with self-adhesive foot is available for ensuring the required freedom of movement of the expansion joints.

Tiles and Natural stone laid on single grain mortar and on screeds must be bonded with a suitable tile adhesive applied across the whole screed surface and on the back of the tile (Backbuttered).

Open edge areas with drip edges

1. **Surface seal not yet present:**
 - a. Exposed covering edges should be bordered with the ProFin® drain and drip profile. The cross-section of the covering construction can be masked by the ProFin® push-in facing plate.
 - b. For easier assembly, use a suitable Multi-Purpose Construction Adhesive and Sealant to fix the drain end profile. The fixing strips should be arranged with spacing of approx. 300mm between strips, running in the direction of the substrate fall.
 - c. The system profiles must each be bolted through the outer most punched hole. Other bolts should be placed at approx. 500 mm intervals.
2. **Surface seal already present:**
 - a. These are to be bordered with the ProFin® V55 drain edge profiles. The application of AquaDrain® EK and single grain mortar/drainage screed is the same installation process as in Point 4 above.
 - b. ProFin® V55 drain end profiles are to be mounted flush in height and aligned in the fresh screed mortar or fixed in advance onto the AquaDrain® EK surface drainage using quick adhesion mortar. Neighbouring edging end profiles are to be installed in the joint area (ProFin® profiles every 3m) with a spacing of 1 – 2mm between. The gap is covered with ProFin® profile connectors. Where field edging joints meet ProFin® profiles, this edging end profile is to be separated with an approx. 10mm expansion joint and the joint area also covered with ProFin® profile connectors.

Application 2 – For thin-layer special single grain mortar from 25 mm layer thickness in the MorTec® DRAIN system

NOTE: For further information on installation please refer to Part B Installation Guide or contact BAL TECHNICAL ADVISORY AND SPECIFICATION SERVICE.

Substrates

Need to have a minimum fall of 1.0 %. Welded bitumen lengths are not approved due to the raised overlapping joints.

For roof terraces and built-over rooms, single layer plastic membranes or alkali-resistant liquid plastic seals are to be used.

Thermal insulation must have a pressure resistance of ≥ 120 kPa and must be laid on/adhered to the substrate in a non-deflecting or stable manner.

Screeds

Only epoxy resins of agreed grain fraction can be used as binders such as MorTec® DRAIN . The MorTec® DRAIN drainage mortar/drainage screed system harmonises with the system and has been tested. Please refer to BAL TECHNICAL DATA SHEET FOR MIXING INSTRUCTIONS.

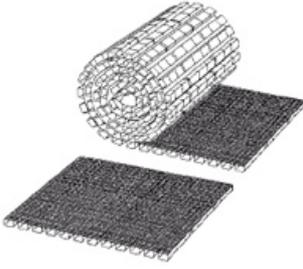
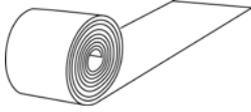
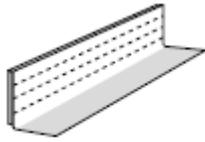
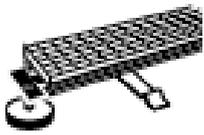
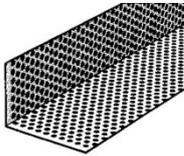
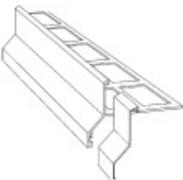
Standard drainage screeds require layer thicknesses of at least 50 mm (DNV Technical Construction Information 1.4). In the MorTec® DRAIN system, layer thicknesses from 25 mm are sufficient. This results in saving on level height and surface weight of about 60 %.

Thin layer single grain mortars on an epoxy resin base for flat covering constructions (balconies and patios) are as a general rule to be executed as screeds laid in advance and after curing, the covering is to be laid using suitable adhesive mortars such as BAL RAPIDSET FLEXIBLE FIBRE, BAL RAPIDSET FLEXIBLE or BAL STONE AND TILE PTB.

Edge area

The ProFin DP 11 and 21 mm height and the ProFin BL 24 facing plate (in 24mm height) are available for thin later drainage screeds.

OPTIONAL SYSTEM COMPONENTS

<p>AquaDrain EK drainage mat or sheet</p> 	<p>DiProTec AB-KV sealing tape</p> 	<p>AquaDrain SK joint tape</p> 	<p>AquaDrain Edge insulation tape</p> 
<p>AquaDrain TM or FLEX drain grate</p> 	<p>AquaDrain Lochwinkel Screed Angle</p> 	<p>ProRin BR guttering</p> 	<p>ProFin DP edge profile and BL facing plate</p> 
<p>ProFin V22/55 drip/drain edge profile</p> 	<p>BAL Quickset Cement</p> 	<p>MorTec DRAIN</p> 	<p>BAL Rapidset Flexible Fibre</p> 
<p>BAL Micromax2 Grout</p> 	<p>MorTec SOFT silicone sealant</p> 	<p>BAL Micromax Sealant</p> 	<p>BAL Tank-it</p> 

N.B Please consult BAL Technical Advisory and Specification Service (TAS) or a member of the BAL specification support team for a full and comprehensive product specification to meet your project requirements.

TECHNICAL ADVISORY SERVICE

For free expert guidance on use of this product, or any aspect of tiling, contact the BAL TECHNICAL ADVISORY AND SPECIFICATION SERVICE on Tel: 01782 591120 or 0845 600 1 222 or Fax: 01782 591121.

SHELF LIFE

No shelf life when stores under correct conditions. t on side of the rolls there is an overlapping mesh of 5 cm. You must not store it with the mesh down. Protect from frost, damp and sunlight.

6 YEAR GUARANTEE

Since 1990, GUTJAHR has been the only manufacturer to offer extended warranties for its drainage systems, e.g. 6 years for balconies, patios and outdoor steps with AquaDrain® drainage.

No liability can be accepted for any loss or damage arising from incorrect use of products or poor workmanship, over which BAL has no control.

Contact BAL Marketing Department for full details.

CONDITIONS OF SALE

Sold subject to the Company's Conditions of Sale. *Available on request. For sales and technical queries, contact:*

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NOTE: BAL reserves the right to update instructions, technical data and other information at any time without notice.