

MorTec® DRAIN-ZE

ZE Trass Drainage Mortar System

Thick-bed trass drainage mortar system for exterior covering also with water-permeable covering joints



For fixed/full-surface installation and spot bedding of covering slabs in thick-bed, efflorescence-reduced trass cement drainage mortar

Areas of application

- For walkable exterior surfaces in private and public areas, e.g. on (roof) terraces, balconies, stairs, loggias, access balconies, etc.
- Capillary-breaking drainage mortar system in combination with the GUTJAHR drainage systems AquaDrain® EK, HU-EK, SD Type 1/Type 2, TerraMaxx® DS
- Usage categories N1 according to ZTV Wegebau
- For driveable surfaces in private areas up to 3.5 t vehicles

Properties

- Trass cement-bound and therefore reduced efflorescence
- 1-component factory-made dry mortar
- Allows a wedge-shaped drainage mortar cross-section, e.g. where substrate and covering surface slopes differ
- Shrinkage-/stress-reduced hardening
- Covering slabs/paving stones can be laid "fresh-in-fresh" as well as on a hardened/pre-laid drainage mortar level
- Fast hardening, walkable or ready for covering after 3 days
- The special grading curve combined with optimised binder technology allows covering surfaces with water-permeable joints. Lime leaching is thus greatly reduced.

System components

- AquaDrain® EK: capillary-passive surface drainage for fixed installation of coverings on drainable bedding mortar
- AquaDrain® HU-EK: heavy-duty, capillary-passive surface drainage for fixed installation of coverings on drainable bedding mortar, also on unbound substrates

- AquaDrain® SD Type 1: capillary-passive step drainage for laying coverings in medium-bed or on drainable bedding mortar
- AquaDrain® SD Type 2: heavy-duty step drainage for laying coverings on drainable bedding mortar
- AquaDrain® TR reinforced separating layer, PE film with integrated mesh reinforcement for better flatness, laid directly as a sliding layer on PE-compatible waterproofing levels, according to DIN 18531-2:2017-07, 5.4
- TerraMaxx® PF-FM special fixing compound, bonding contact layer and adhesive mortar for ceramic, natural stone and concrete block coverings
- MorTec® SOFT, for forming movement and connection joints, for general grouting of covering joints with large-format slab coverings and bonded installations. See technical data sheet of MorTec® SOFT

Delivery form

- MorTec® Drain-ZE: 1-component, pre-mixed ready-to-use mortar
- Drainage aggregate 1.5–4 mm, packaging: bags of 25 kg

Notes on transport and storage

Shelf life of all products, unopened approx. 12 months in dry rooms.

Substrates

Substrates according to the respective requirements of the AquaDrain® surface or step drainage system to be used

Application instructions

Application on GUTJAHN drainage systems

The application/execution of MorTec® DRAIN-ZE follows the relevant codes of practice and guidelines of the trade associations for covering beds on drainage mortar in exterior areas.

- Mix the dry mortar in a continuous, free-fall or compulsory mixer with clean water to the correct consistency; consistency earth-moist
- The correct consistency is reached when a ball formed from the bedding mortar does not fall apart and a slight sheen appears on the surface.
- For the bond, a full-surface bonding contact layer of TerraMaxx® PF-FM special fixing compound must be applied to the back of stones and covering slabs in the required thickness (other bonding contact layers, matched to covering and application area, may be used)
- Laying coverings "fresh-in-fresh" in the bedding mortar:
 - The bedding mortar must be compacted by approx. 20 % by tapping in the stones or slabs
- With large formats, pre-compaction of the mortar, e.g. by pressing down, may be necessary
- In exclusively walkable areas, coverings can also be laid on a hardened load distribution layer of MorTec® DRAIN-ZE
- Ensure sufficient compaction of the bedding mortar and adequate surface evenness
- The joint cavities of the coverings should remain largely free of bonding contact layers to ensure vertical drainage
- Covering joints
- Open covering joints may require increased maintenance/cleaning effort. Dirt entering the joint cavities reduces the water permeability.
- For covering joints, please also observe the notes under "Minimum thicknesses of MorTec® DRAIN-ZE"

From a finished mortar thickness of ≥ 60 mm, work in 2 layers, fresh-in-fresh, whereby the first layer of drainage mortar must be compacted before applying the second.

If the required minimum thicknesses cannot be maintained, it is possible to switch to the epoxy resin drainage mortar system MorTec® DRAIN-EP.

Movement joints

Movement joints in the screed surface and at rising components must be executed congruently with the movement joints of the top covering. Field movement joints must be arranged at a max. spacing of 5.00 m. Dark and large-format covering slabs require shorter movement joint spacings. Safe execution from the top of the drainage mat up to and including the top of the finished covering is achieved with the AquaDrain® RD edge insulation strip.

Drainage systems

Type and application can be found in the corresponding product links.

Surface drainage, walkable areas

- AquaDrain® EK, HU-EK

Drainage pedestals

- TerraMaxx® DS

Drainage for stairs

- AquaDrain® SD Typ 1, Typ 2

Surface drainage, driveable areas

- AquaDrain® HU-EK

www.gutjahr.com/de/Produkte/Kategorien/Drainagen



Further information can be found in the installation instructions.

Technical data

Mixing water

Approx. 1.8 l per bag

Working time

At 20 °C and 60 % relative humidity approx. 60 minutes. Higher temperatures shorten, lower temperatures extend the working time. Drying mortar can be recognised by a whitish discolouration of the surface. In this state the mortar must no longer be used.

Application temperature

min. + 5 °C, max. + 30 °C. Do not apply in direct sunlight, on strongly heated substrates and/or in strong wind. If necessary, take protective measures against sunlight and driving rain.

Drying/hardening time

At 20 °C and 60 % relative humidity:

- Walkable/ready for covering after 3 days as a pre-laid/hardened load distribution layer,
- Walkable after 3 days when the covering is laid fresh-in-fresh
- On insulation substrates the above values are extended by approx. 3 days
- Fully loadable after 28 days.
- Water exposure through open covering joints or drainage joints is possible from 14 days after completion of the covering surfaces. Early water exposure can lead to increased lime leaching. For shorter drying/hardening times or earlier loading, the epoxy resin drainage mortar system MorTec® DRAIN EP is available.

Cleaning of tools

Tools and any soiling must be cleaned immediately with water while still fresh. Hardened material can only be removed mechanically. Adjacent, sensitive components such as windows, doors, finished walls, etc. must be protected.

Consumption

MorTec® Drain-ZE approx. 16 kg/m² per cm layer thickness. TerraMaxx® PF-FM fixing compound approx. 4 kg/m² applied to the back of the covering slab with a 10 mm notched trowel.

Minimum thicknesses of MorTec® DRAIN-ZE

exclusively walkable areas/surfaces:

The standard thicknesses in Table 1 reflect the minimum layer thicknesses of cementitious drainage mortars and covering slabs as stated in the relevant guidelines of the trade associations.

Layer thicknesses of drainage bedding mortars depend on covering type, format and thickness as well as the substrate properties.

The following Tables 2 and 3 describe the permissible reductions of the minimum layer thicknesses of MorTec® DRAIN-ZE, taking into account the various covering types and substrate properties.

If the standard drainage mortar thickness is undercut, all covering joints must be executed open/ungROUTED. If the joints are to be closed, they must be executed exclusively with MorTec® SOFT to avoid cracking in the area of the joint cavities.

Table 1: Standard thicknesses of cementitious drainage bedding mortars on separating layer, surface and step drainage

Standard thicknesses of covering types*:	bound substrates				unbound substr
	private areas, balconies, terraces and roof terraces of dwellings, max. 2 units		public areas, access balconies, restaurant terraces, etc.; surfaces: usage category "N1" acc. to ZTV Wegebau		ground-contact surfaces in priv. and public areas, with load-bearing gravel formation, terraces, paths, squares; surfaces: usage category "N1" acc. to ZTV Wegebau
Ceramic tile, d ≈ 10 mm Ceramic element, self-supporting, natural stone, d ≥ 30 mm, concrete block, d ≥ 40 mm	Beton Estrich	Thermal insulation	Beton Estrich	Thermal insulation	
Standard thickness drainage mortar	≥ 50 mm	≥ 60 mm	≥ 60 mm	≥ 80 mm	> ≈ 100 mm

Table 2: Drainage mortar thickness of MorTec® DRAIN-ZE, on AquaDrain® EK/HU-EK

Slab edge lengths ≥ 60 x 60 cm	bound substrates with AquaDrain® EK/HU-EK				unbound substrates with AquaDrain® HU-EK
	Beton Estrich	Thermal insulation	Beton Estrich	Thermal insulation	Usage category "N1" acc. to ZTV Wegebau
Ceramic element, self-supporting, natural stone, d ≥ 30 mm, concrete block, d ≥ 40 mm	≥ 40 mm	≥ 50 mm	≥ 40 mm	≥ 60 mm	≥ 80 mm

Table 3: Drainage mortar thickness of MorTec® DRAIN-ZE, on step drainage AquaDrain® SD Type 1 and Type 2

Standard thicknesses of covering types*:	bound substrates			
	private areas, balconies, terraces and roof terraces of dwellings, no more than 2 units		public areas, access balconies, restaurant terraces, etc.; surfaces: usage category "N1" acc. to ZTV Wegebau	
Ceramic tile, d ≈ 10 mm Ceramic element, self-supporting, natural stone, d ≥ 30 mm, concrete block, d ≥ 40 mm	Beton Estrich	Thermal insulation	Beton Estrich	Thermal insulation
Treads and risers, lengths = full step width, or ≥ 100 cm	≥ 40 mm	≥ 50 mm	≥ 40 mm	≥ 60 mm
Ceramic element, self-supporting, natural stone, d ≥ 30 mm, concrete block, d ≥ 40 mm				
Block steps of natural/concrete block stone	≥ 30 mm	≥ 30 mm	≥ 30 mm	≥ 30 mm

* Reductions of the standard thicknesses of covering types may be possible on the basis of specialist planning or according to manufacturer specifications.

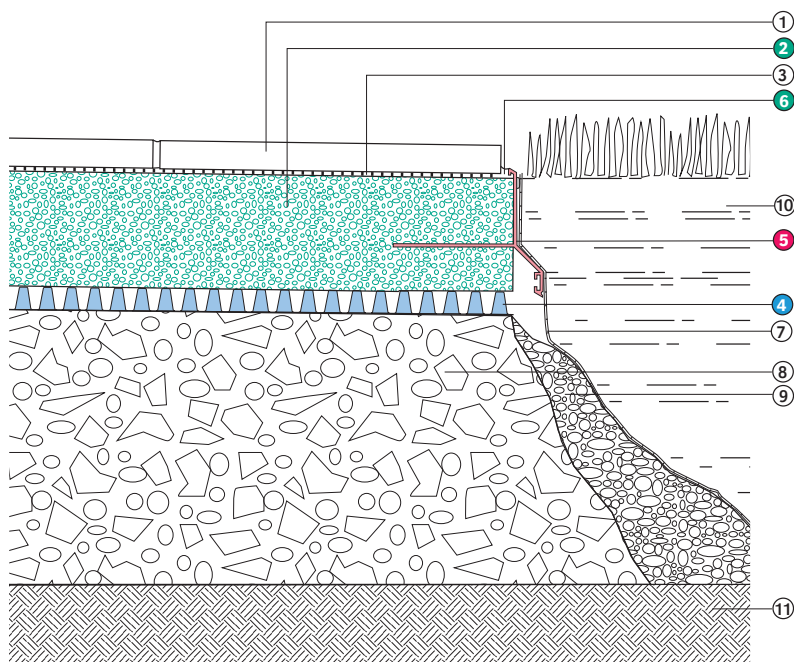
driveable areas/surfaces:

MorTec® DRAIN-ZE is only approved for vehicle traffic in private areas (e.g. driveway or parking space for max. 2 residential units), with a simultaneous load of max. 3.5 t vehicles. Loads beyond this or other areas correspond to usage category ≥ N2 according to ZTV Wegebau.

Table 4: Drainage mortar thickness of MorTec® DRAIN-ZE, on AquaDrain® HU-EK

Slab/paving edge lengths ≥ 10 x 10 cm to ≤ 40 x 60 cm	bound substrates - without insulation layers	unbound substrates, load-bearing gravel formation
Ceramic element, self-supporting, natural/concrete block stone, d ≥ 60 mm	≥ 70 mm	≥ 100 mm

Terrace edges



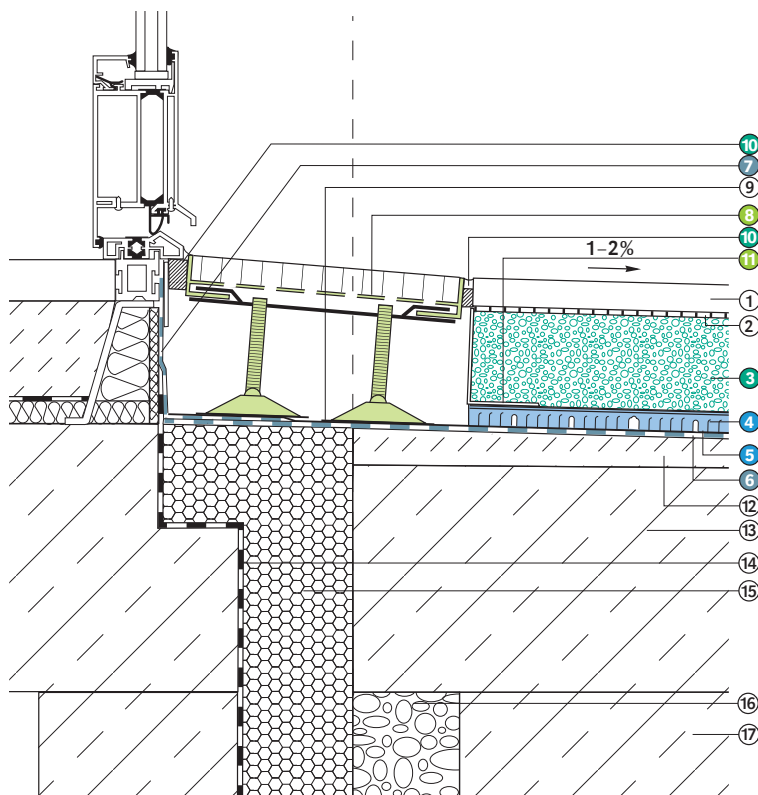
TERR 4.3.3

Edge finish

Fixed covering on single-grain mortar and AquaDrain® HU-EK

Terrace on unbound substrate without surface waterproofing

- 1 Slab covering
- 2 Single-grain mortar, e.g. MorTec® DRAIN-ZE
- 3 Bonding bridge/contact layer, full-surface notched application
- 4 AquaDrain® HU-EK surface drainage (16 mm)
- 5 ProFin® V drainage edge profile
- 6 Elastic joint of neutral-curing sealant, e.g. MorTec® SOFT
- 7 Geotextile fleece, bonded to the profile with DiProtect® FIX-MSP special sealant
- 8 Compacted, load-bearing and permeable sub-base (e.g. mineral aggregate, gravel, etc.)
- 9 Coarse gravel fill
- 10 Lawn with topsoil
- 11 Natural ground



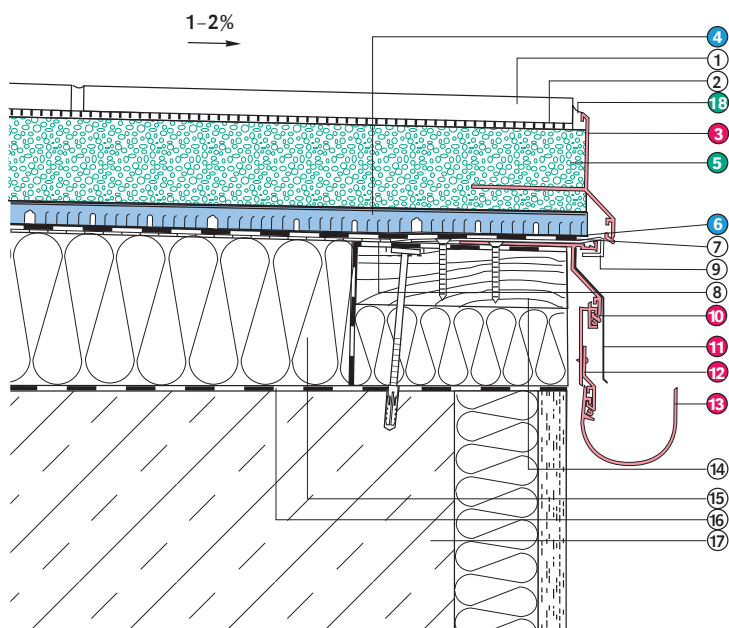
TERR 7.1.3

Barrier-free door connection according to DIN 18 040, with inclinable, cut-to-length drainage grating

Covering on single-grain mortar with capillary-breaking surface drainage

- 1 Natural/concrete block stone covering
- 2 Bonding bridge/contact layer, full-surface notched application
- 3 Single-grain mortar, e.g. MorTec® DRAIN-ZE
- 4 AquaDrain® EK drainage mats (8 or 16 mm), fins laid in slope direction
- 5 AquaDrain® TR, separating layer with integrated mesh reinforcement, according to DIN 18531, Part 2
- 6 DiProtect® KSK cold self-adhesive bitumen membrane, alternatively: DiProtect® SDB plastic quick-sealing membrane
- 7 DiProtect® KSK-AB sealing tape
- 8 AquaDrain® BF-FLEX drainage grating, adjustable inclination angle
- 9 Load-distributing intermediate plate
- 10 Elastic joint of neutral-curing sealant, e.g. MorTec® SOFT, on AquaDrain® SL joint tape
- 11 AquaDrain® perforated angle
- 12 Bonded screed to falls
- 13 Ground-contact reinforced concrete slab
- 14 Vertical waterproofing
- 15 Thermal insulation, closed-cell, pressure-resistant
- 16 Compacted, load-bearing and permeable sub-base (e.g. mineral aggregate, gravel, etc.)
- 17 Foundation

Roof terrace edges

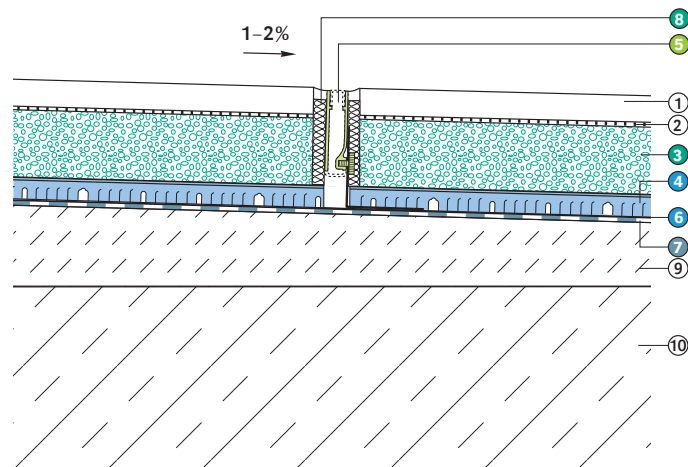


DATE 4.3.1

Edge finish with drainage edge profile and system gutter

- 1 Slab covering
- 2 Thin-bed mortar or contact layer
- 3 ProFin® V55 drainage edge profile
- 4 AquaDrain® EK drainage mats (8 or 16 mm)
- 5 Single-grain mortar, e.g. MorTec® DRAIN-ZE
- 6 AquaDrain® TR, separating layer with integrated mesh reinforcement, acc. to DIN 18531, Part 2
- 7 Waterproofing according to DIN 18531, e.g. plastic waterproofing membranes
- 8 If required: vapour pressure equalisation layer
- 9 Aluminium sheet/foil composite sheet with folded edge (matched to the respective waterproofing)
- 10 ProFin® BP coating profile
- 11 ProRin® RB/GB gutter/slope fascia system
- 12 ProRin® gutter bracket
- 13 ProRin® BR balcony gutter
- 14 Edge plank
- 15 Pressure-resistant thermal insulation, applied to the substrate without voids. Compressive strength ≥ 120 kPa (if the recognised rules of technology require a higher value, this applies)
- 16 Vapour barrier
- 17 Reinforced concrete slab
- 18 Elastic joint of neutral-curing sealant, e.g. MorTec® SOFT

Balconies



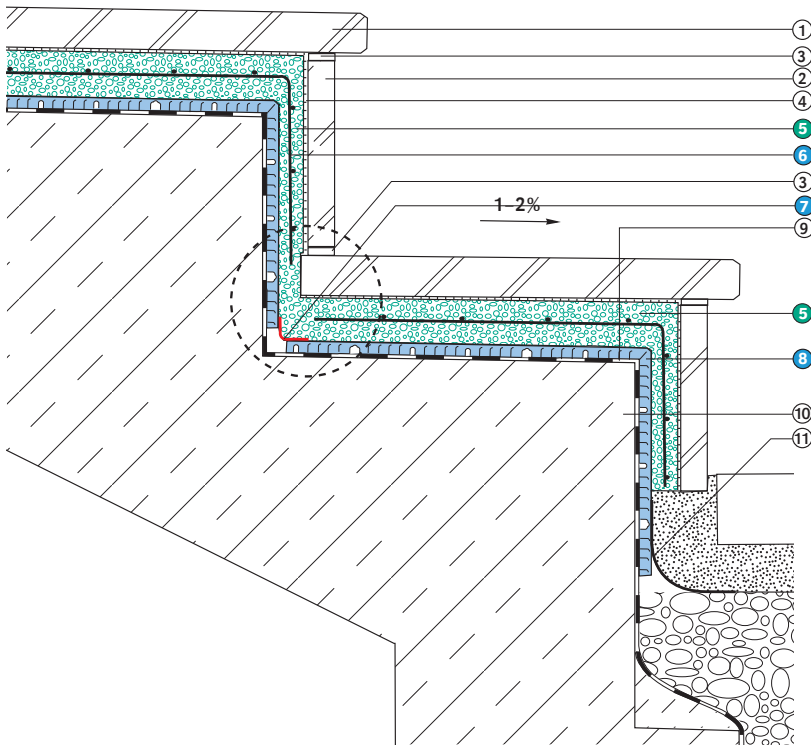
BALK 4.2.1

Construction cross-section

Natural/concrete block stone slabs on single-grain mortar and AquaDrain® EK Linear drainage with AquaDrain® SR-U

- 1 Slab covering
- 2 Bonding bridge/contact layer, full-surface notched application
- 3 Single-grain mortar, e.g. MorTec® DRAIN-ZE
- 4 AquaDrain® EK drainage mats (8 or 16 mm)
- 5 AquaDrain® SR-U height-adjustable universal slotted channel
- 6 AquaDrain® TR, separating layer with integrated mesh reinforcement, according to DIN 18531, Part 2
- 7 DiProtec® KSK cold self-adhesive bitumen membrane, alternatively DiProtec® SDB plastic quick-sealing membrane
- 8 Elastic joint of neutral-curing sealant, e.g. MorTec® SOFT, on AquaDrain® SR edge insulation strip
- 9 Bonded screed to falls
- 10 Balcony cantilever slab

Exterior staircases

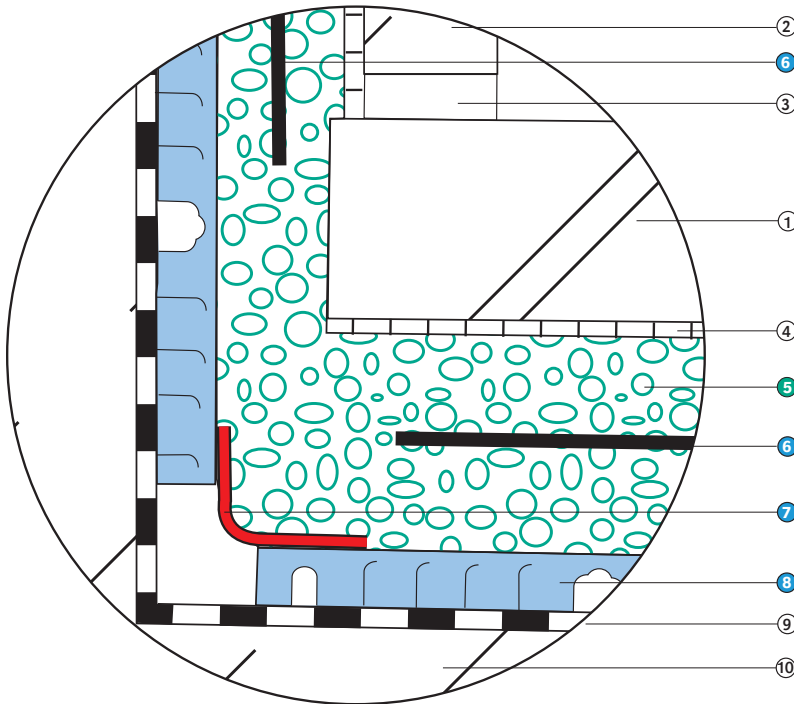


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Exterior staircase

AquaDrain® SD step drainage for natural/concrete block stone stairs

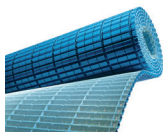
- 1 Tread of natural/concrete block stone, laid to falls
- 2 Riser of natural/concrete block stone
- 3 Butt bonding between tread and riser
- 4 Bonding bridge or contact layer, full-surface notched application
- 5 Single-grain mortar, e.g. MorTec® DRAIN-ZE
- 6 AquaDrain® SD step grating
- 7 AquaDrain® UB universal tape (full width)
- 8 AquaDrain® SD step drainage, fixed in strips in the riser area with DiProtec® FIX MSP special adhesive sealant
- 9 Waterproofing with suitable mineral sealing slurry
- 10 Reinforced concrete staircase
- 11 Fleece, water-permeable



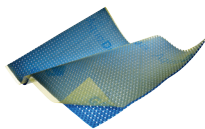
Detail illustration at scale 1:1

System components

AquaDrain® EK
rolls
8 mm and 16 mm



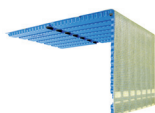
AquaDrain® HU-EK
rolls
16 mm



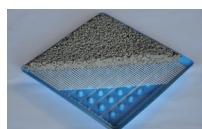
AquaDrain® PF-FM
special fixing compound



AquaDrain® SD (Type 1/Type 2)
step drainage angle element
(8 mm thick x 310/180 mm)



TerraMaxx® DS
drainage pedestal



AquaDrain® TR
separating layer with
mesh reinforcement



Material

Material technical data

- Cement according to DIN EN 197-1
- Trass according to DIN 51043
- Mineral aggregates according to DIN EN 12139
- Additives for controlling and improving the processing and product properties
- Water permeability: $> 1000 \text{ l/m}^2/\text{h}$
- Grain size: 1.5–4 mm
- Compressive strength: $\geq 20 \text{ N/mm}^2$
- Flexural strength: approx. 3.5 N/mm^2
- Shelf life, unopened: approx. 12 months in dry rooms

All data are average values determined under laboratory conditions in accordance with the relevant test standards and application tests. Deviations under practical conditions are possible.

Safety, ecology, disposal

The fully mixed, hardened product is considered concrete waste. Further information on safety during transport, storage and handling, as well as on disposal and ecology, can be found in the current safety data sheet.

Further components for the complete systems that you can execute with MorTec® DRAIN can be found by scanning the QR code or in the current price list.



The information contained in this technical data sheet is based on our careful investigations and on our experience. The many substances and materials used in the overall construction as well as the differing site and processing conditions cannot be individually verified or influenced by us. Specialist knowledge, professionally correct judgement and correct product use are the basis for permanently reliable construction work. In case of doubt, own tests should be carried out or technical application advice should be obtained. In addition to the information in this technical data sheet, the relevant codes and regulations of the responsible organisations and trade associations as well as the respective national standards for the work to be performed must be observed. With the publication of this technical data sheet, all previous data sheets lose their validity.

No liability for printing errors. Subject to change.

The currently valid versions of the technical data sheets and the current installation instructions can be found at <https://www.gutjahr.com/mediathek>



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