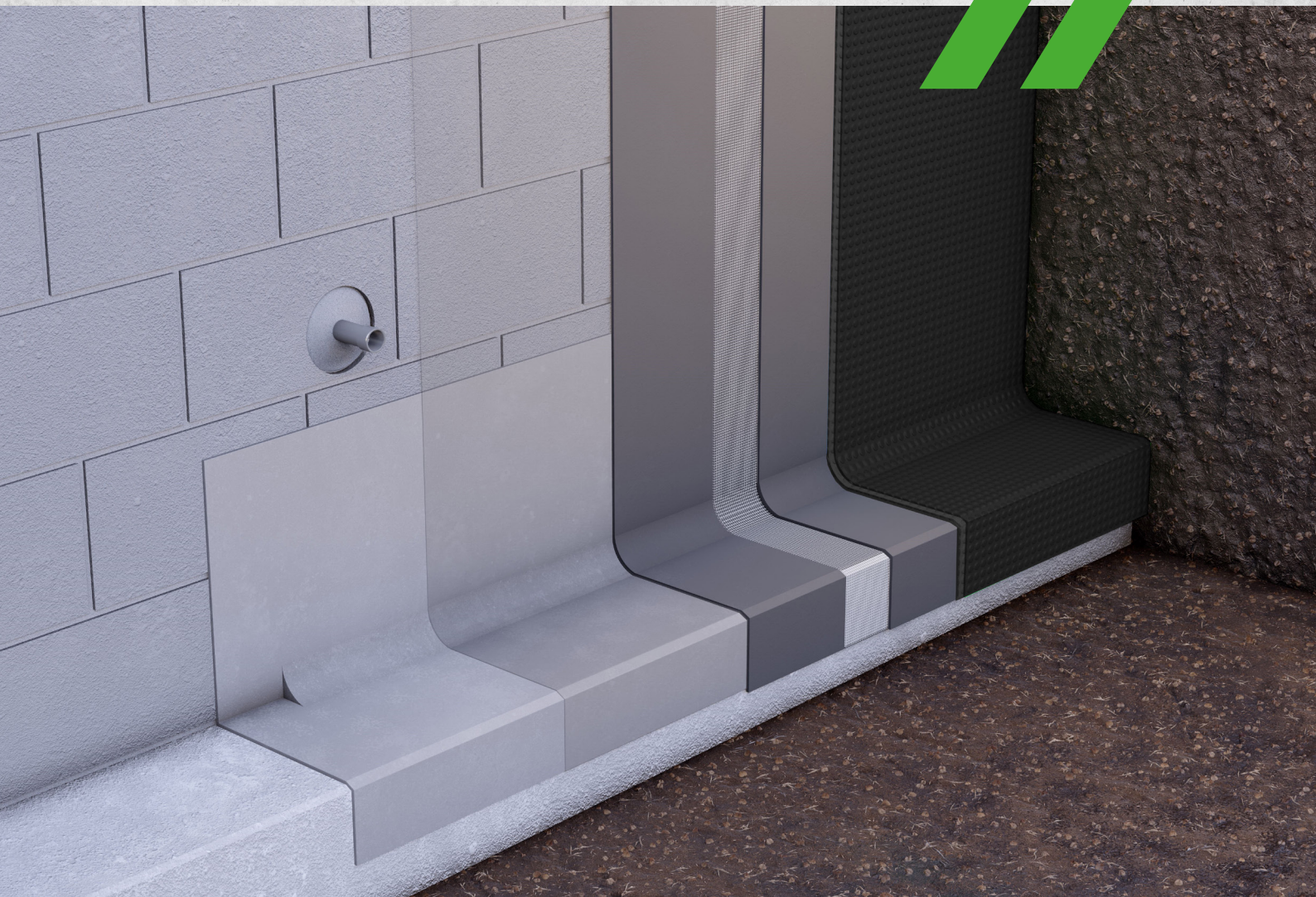


Method Statement

# Positive side waterproofing with KÖSTER NB 4000



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# 1 General information

## 1.1 Scope

This method statement is intended for use by developers, contractors and applicators as a general guideline for the application of the waterproofing system KÖSTER NB 4000.


While this document describes the tools, equipment, materials and process for preparing and installing the waterproofing system, it must be used and referred to, in combination with the technical datasheet for the product and its components.

## 1.2 Manufacturer

KÖSTER BAUCHEMIE AG

Dieselstraße 1-10 Tel. 04941/9709-0

D-26607 Aurich Fax 04941/9709-40

[info@koester.eu](mailto:info@koester.eu) [www.koester.eu](http://www.koester.eu) 



**KÖSTER**  
Waterproofing Systems

## 1.3 Definitions

### Absorption

The process by which one substance, such as a solid or liquid, takes up another substance, such as a liquid or gas, through minute pores or spaces between its molecules. An absorption process is generally reversible.

### Fillet

A concave easing of an interior corner. By employing fillets on points and lines of expected high stress, stress concentrations are reduced.

### Positive Side Waterproofing

Positive side waterproofing means that the waterproofing layer is applied to the side of the construction member which is in direct contact to the water.

### Crack-bridging

Crack-bridging waterproofing means that a waterproofing system remains intact even though the substrate has cracked. Often „crack-bridging“ is confused with „elastic“. An elastic material may be far from waterproof when stretched. An elastic material may also be waterproof under normal circumstances, but not once water pressure is applied.

### Radon Gas

Radon is a naturally-occurring radioactive gas that can cause lung cancer. Radon gas is inert, colorless and odorless. Radon is naturally in the atmosphere in trace amounts. Outdoors, radon disperses rapidly and, generally, is not a health issue. Most radon exposure occurs inside homes, schools and workplaces. Radon gas becomes trapped indoors after it enters buildings through cracks and other holes in the foundation. Radon Gas is heavier than air. Indoor radon can be controlled and managed with proven, cost-effective techniques. KÖSTER NB 4000 is tested Radon proof.

## 2 System description

### 2.1 System features

KÖSTER NB 4000 is a fast and multi-functional polymer modified mineral coating, for waterproofing of building structures inside and outside, in and under walls, as well as waterproofing under tiles. This special product combines the properties and advantages of a polymer-modified bitumen thick film coating (PMBC)\* and a flexible mineral waterproofing (MDS)\* slurry into the same product.

KÖSTER NB 4000 is a fast, polymer-modified thick coating (FPD)\* for use as structural waterproofing in indoor and outdoor areas. It is resistant to rain soon after application and can be exposed to pressurized water after 24 hours. It is viscoplastic and crack bridging.

KÖSTER NB 4000 is free of bitumen, UV stable, radon-proof and can be used for adhering insulation boards. KÖSTER NB 4000 sets quickly even at temperatures of +2 °C and is compatible with old bitumen thick coatings. Insulation boards can be adhered after 4 hours and excavations can be filled after 16 hours.

\*(PMBC, MDS and FPD) are the abbreviations for the product groups according to the German standards.

#### 2.1.1 Characteristics/Advantages

- Bitumen- and solvent-free material
- Can be sprayed, rolled and brushed
- Very early rain proof (after approx. 2 hours)
- Applicable on dry or slightly damp surfaces
- Crack bridging up to 3.5 mm
- Very fast curing even at very low temperatures (from +2 °C)
- Can be used as a slurry and filled with sand as mortar for fillets
- Paintable and coatable with foundation renders and façade plasters
- Insulation boards can be installed after approx. 4 hours
- Usable on horizontal or vertical surfaces
- Resistant to pressurized water after approx. 24 hours
- UV resistant/stable
- Can be used under cement screeds
- Can be used under tiles on wet rooms
- Slightly vapor permeable
- Can be smoothed with sand paper prior to paints
- Tested as negative side waterproofing up to 7.5 m water column according to WTA standard 4-6
- Compatible with old bituminous or mineral waterproofing systems
- Radon proof

## 2.2 Main products and components



### KÖSTER NB 4000

Multi-functional, elastic, and crack bridging two component polymer modified mineral coating for waterproofing building structures inside and outside. Quickly rainproof, can be plastered over and Radon-proof.

[See online](#)



### KÖSTER Polysil TG 500

Low viscous, substrate solidifying, salt binding, and hydrophobizing combination product on a polymer/silicate basis for the protection of mineral substrates and priming of mineral substrates before waterproofing with cementitious waterproofing slurries, PMBC, and installation of restoration plasters.

[See online](#)



### KÖSTER NB 4000 Spray Additive

Liquid additive for KÖSTER NB 4000 for improving sprayability as well as other application characteristics like cleaning of the spray equipment, skin building and increasing the application time. Consumption: max. 1 bottle of 250 g per 25 kg KÖSTER NB 4000.

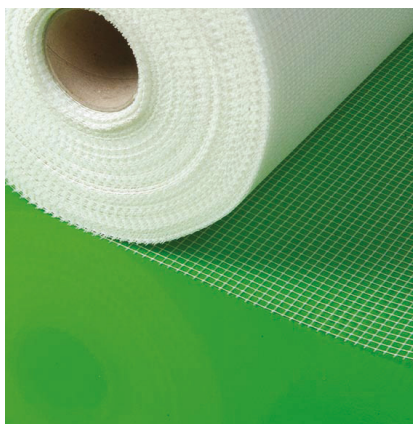
[See online](#)



### KÖSTER WP Mortar

Watertight, trowel applicable, fast setting mineral mortar for reprofiling surfaces and resistant to pressurized water when applied in a layer thickness of 4 mm. It cures quickly and is characterized by high pressure, abrasion and chemical resistance. It is also resistant to salts in the substrate.

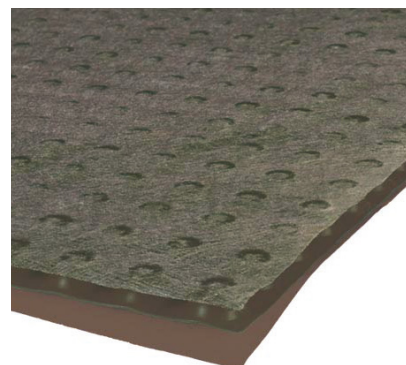
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### KÖSTER Glass Fiber Mesh

Highly tear resistant mesh for the reinforcement of waterproofing layers especially in the case of pressurized water, areas in danger of cracking as well as connections, wall/floor junctions and fillets. Resistant to dislocation, alkalis and it is plasticizer-free.

[See online](#)



### KÖSTER SD Protection and Drainage Sheet 3-400

Black HD-PE based notched protection board which combines 3 functions in one product:

1. Mechanical protection of the waterproofing layer (e.g. when backfilling the construction pit) according to the DIN EN 18533.
  2. Decoupling of the waterproofing layer from any ground movement.
  3. The hollow core leads seepage and backwater safely to the drainage.
- 2 m x 15 m, 30 m<sup>2</sup>.

[See online](#)

## 2.3 Associated products



**KÖSTER Polysil  
TG 500**

[See online](#)



**KÖSTER WP Mortar**

[See online](#)



**KÖSTER NB 4000  
Spray Additive**

[See online](#)



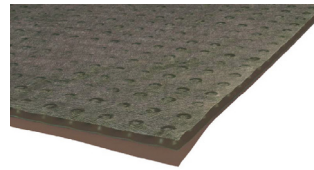
**Quartz Sand  
0.06 - 0.36 mm**

[See online](#)



**KÖSTER Glass  
Fiber Mesh**




[See online](#)



**KÖSTER SD Protection  
and Drainage Sheet 3-400**

[See online](#)

## 2.4 Associated literature

- [Product Flyer KÖSTER NB 4000](#) 
- [Product Declaration of Performance NB 4000](#) 
- [Processing protocol KÖSTER NB 4000](#) 



# 3 Tools and Equipment

## 3.1 Tools



**KÖSTER** Brush for slurries



**Rounded trowel**



**Trowel**



**Mixing vessels (30 l)**



**Finishing trowel**

## 3.2 Equipment



**Single paddle mixer**



**KÖSTER** Peristaltic Pump  
(optional for spray application)



**Pressure sprayer**



**Wagner Heavy Coat HC-970 G Spray Pack Petrol Pump**



**BMP 7 Pump**

## 3.3 Cleaning

Clean all tools and equipment immediately after use with water. Cured and hardened material can only be removed mechanically.

## 4 Environmental, health and safety

### 4.1 Personal Protection Equipment (PPE)

The following is a short overview of Personal Protective Equipment and serves only as a guideline. Contractors and Employers are responsible for meeting the occu-

pational safety guidelines in their countries, states, and localities.



#### Eye protection

Employers must be sure that their employees wear appropriate eye and face protection and that the selected form of protection is appropriate to the work being performed and properly fits each worker exposed to the hazard.

#### Head protection

Employers must ensure that their employees wear head protection if any of the following apply: Objects might fall from above and strike them on the head; they might bump their heads against fixed objects, such as exposed pipes or beams; or there is a possibility of accidental head contact with electrical hazards.

#### Foot and Leg Protection

Employees who face possible foot or leg injuries from falling or rolling objects or from crushing or penetrating materials should wear protective footwear.

#### Hand Protection

When selecting gloves to protect against exposure hazards, always check with the manufacturer or review the manufacturer's product literature to determine the gloves' effectiveness against specific workplace chemicals and conditions. Gloves commonly used are: Coated fabric gloves and Chemical - and Liquid - Resistant Gloves

#### Hearing protection

Suitable hearing protection must be provided for the job environment.

## 4.2 Material safety & First Aid

Every KÖSTER product is labeled with specific information and symbols as to the related dangers. Please consult the respective Material Safety Data Sheet for specifics.

### **If inhaled:**

Remove person to fresh air and keep comfortable for breathing. In all cases of doubt, or when symptoms persist, seek medical advice. Inhalation of dust may cause irritation of the respiratory system.

### **After ingestion:**

Do NOT induce vomiting. Rinse mouth immediately and drink plenty of water. Call a physician in any case!

### **After contact with skin:**

Wash immediately with plenty of water. Change contaminated clothing. The product develops an alkaline pH value with moisture and can cause irritation. Contains chromium (VI). May produce an allergic reaction.

### **In case of contact with eyes:**

Rinse immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Subsequently consult an ophthalmologist. Following eye contact: Risk of serious damage to eyes.

### **In case of accident or if you feel unwell:**

Seek medical advice immediately (show the label if possible). Treat symptomatically.

## 4.3 Waste disposal

### **Disposal recommendations**

Dispose of waste according to applicable legislation.

### **List of Wastes Code -**

#### **Residues/unused products (101311)**

WASTES FROM THERMAL PROCESSES; wastes from manufacture of cement, lime and plaster and articles and products made from them; wastes from cement-based composite materials other than those mentioned in 10 13 09 and 10 13 10 according to German regulations.

### **Contaminated packaging**

Completely emptied packages can be recycled.

### **List of Wastes Code -**

#### **Used product (170107)**

CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES); concrete, bricks, tiles and ceramics; mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06 according to German regulations.

# 5 Fields of application

## 5.1 General examples

- Waterproofing water tanks
- Waterproofing of swimming pools
- Pile head waterproofing
- Waterproofing of building structures inside/outside from positive/negative side
- Waterproofing of balconies and terraces
- Multi-purpose waterproofing material for the restoration of buildings
- For repair and restoration of old bituminous or mineral waterproofing layers
- For quick-dry waterproofing requirements, especially on temperatures starting from +2 °C
- Waterproofing under ceramic tiles in indoor and outdoor areas according to loading class W4-E
- Horizontal barrier under masonry walls/ used as a Damp Proof Course system (DPC).
- Repair product used to make a scratch coat or fillet mortar by filling it with kiln-dried silica sand
- Adhesion of insulation boards on retaining walls from the positive side
- Internal basement waterproofing on slab foundation

## 5.2 Example: Internal basement waterproofing on slab foundation



- |                                  |                           |
|----------------------------------|---------------------------|
| 1. Horizontal barriers for walls | KÖSTER NB 1 Grey          |
| 2. Installing fillets            | KÖSTER Repair Mortar Plus |
| 3. Primer                        | KÖSTER Polysil TG 500     |
| 4. Waterproofing layer           | KÖSTER NB 4000            |

### Installation process:

To avoid moisture rising through the wall due to capillary action, it is necessary to install a horizontal barrier beneath the wall made from KÖSTER NB 1 Grey (mixed with KÖSTER NB 1 Flex) or crack bridging materials like KÖSTER NB Elastic and KÖSTER NB 4000. At the wall floor junction, a fillet made from KÖSTER Repair Mortar Plus is

installed to prevent stresses in the subsequent waterproofing layers. To harden the substrate, the bottom slab is primed with KÖSTER Polysil TG 500. The crack bridging waterproofing product KÖSTER NB 4000 is then used to waterproof the floor slab.

### 5.3 Example: Waterproofing of balconies and terraces



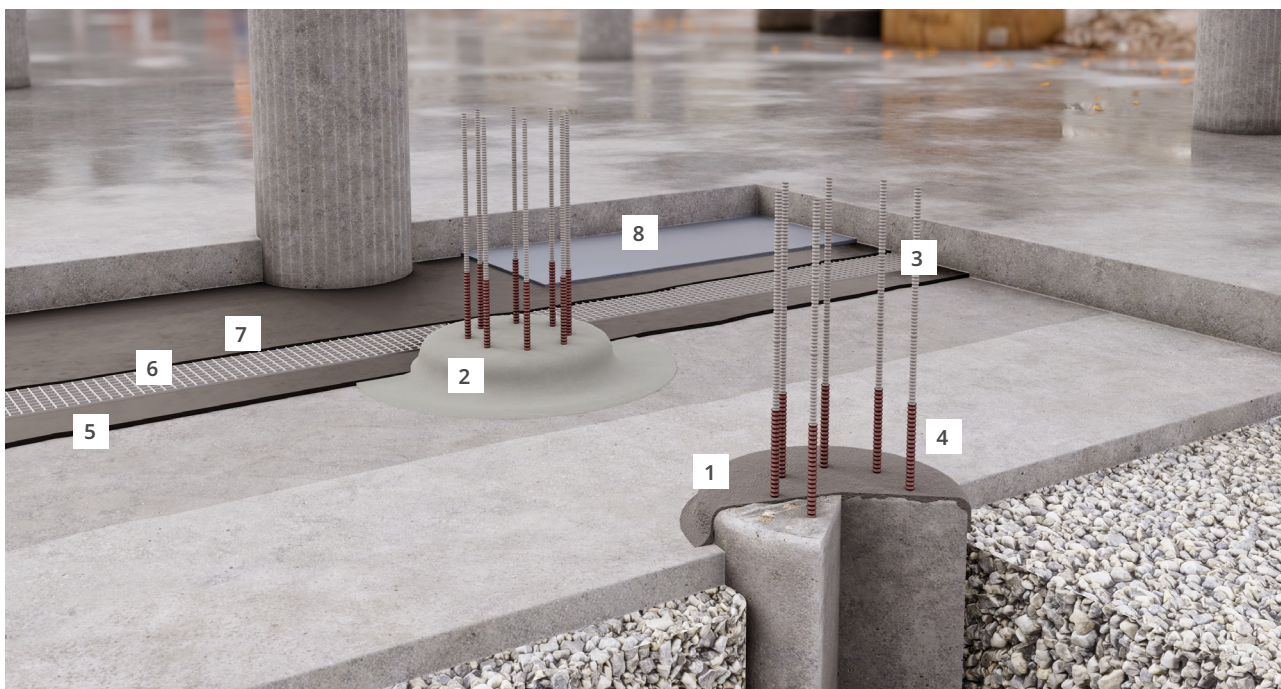
- |                                       |   |
|---------------------------------------|---|
| 1. Concrete repair                    | KÖSTER Betomor Multi A  |
| 2. Levelling underlayment             | KÖSTER Repair Mortar R4<br>KÖSTER SL Premium<br>KÖSTER SL Protect |
| 3. Primer                             | KÖSTER Repair Mortar<br>KÖSTER Polysil TG 500                     |
| 4. Waterproofing layers               | KÖSTER NB 4000  |
| 5. Reinforcement                      | KÖSTER Flex Fabric<br>KÖSTER Glass Fiber Mesh                     |
| 6. Tile adhesive                      | KÖSTER BD Flexible Tile Adhesive                                  |
| 7. Waterproofing wall/floor junctions | KÖSTER Glass Fiber Mesh   |

#### Installation process:

The mineral waterproofing of balconies and terraces is carried out with a crack bridging product like KÖSTER NB 4000, as it is resistant to occasional foot traffic and can be covered with tiles. The concrete surface must be mechanically cleaned until a solid substrate is achieved. Before installing the waterproofing system, concrete repair work is done with KÖSTER Betomor Multi A. To level the surface, the self-levelling underlayment KÖSTER SL Premium is highly recommended. Fillets are installed with KÖSTER WP Mortar. The substrate is hardened and prepared with the primer KÖSTER Polysil TG 500. Apply a

first coat of the KÖSTER NB 4000. In the wall-floor-junction and all areas in danger of cracking KÖSTER Glass Fiber Mesh is embedded into the fresh first waterproofing layer of KÖSTER NB 4000. Full area reinforcement is carried out also by embedding KÖSTER Glass Fiber Mesh into the first layer of the waterproofing material as well. Apply a second coat of the KÖSTER NB 4000 to cover the KÖSTER Glass Fiber Mesh. The final finish with the installation of tiles can be carried out with the flexible adhesive KÖSTER BD Flexible Tile Adhesive.

## 5.4 Example: Pile head waterproofing



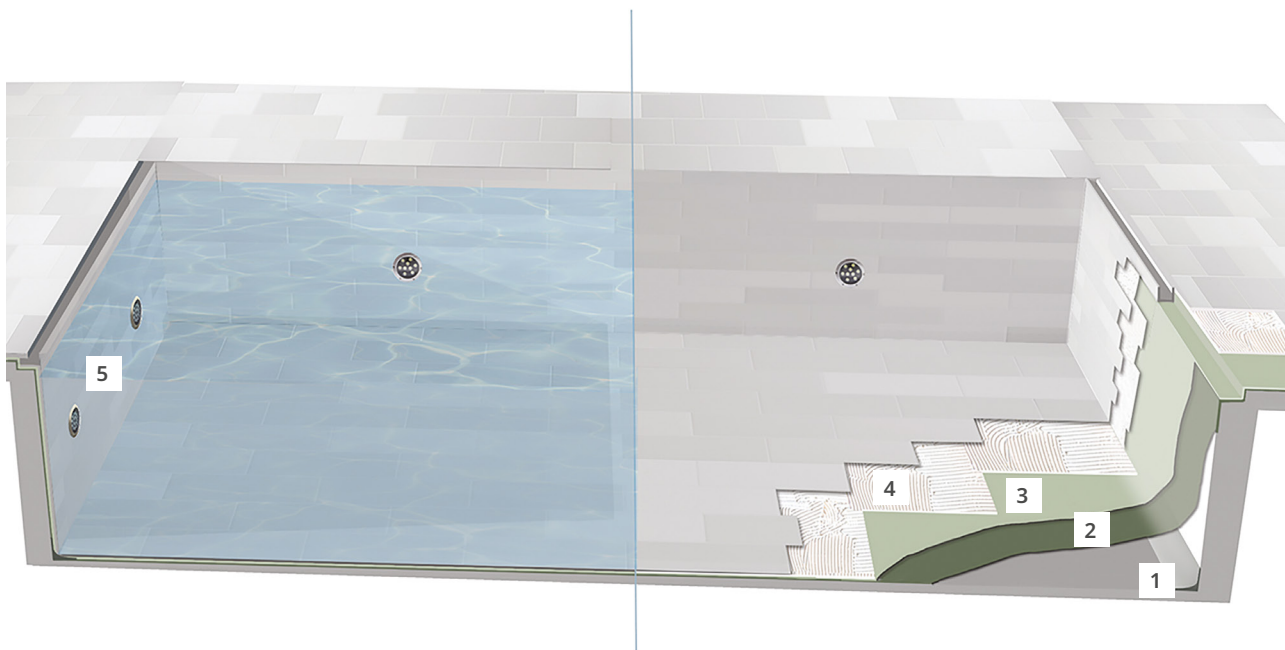
- |                                |                         |
|--------------------------------|-------------------------|
| 1. Reprofiling                 | KÖSTER Repair Mortar R4 |
| 2. Waterproofing of pile heads | KÖSTER NB 1 Grey        |
| 3. Corrosion protection        | KÖSTER Z 1              |
| 4. Corrosion protection        | KÖSTER Z 2              |
| 5. Waterproofing layer         | KÖSTER NB 4000          |
| 6. Embedded Mesh               | KÖSTER Glass Fiber Mesh |
| 7. Waterproofing layer         | KÖSTER NB 4000          |
| 8. Gliding Layer               | Customary PE-foil       |

### Installation process:

Damage in existing buildings is often caused by leaking pile foundations. Water can enter the building through the construction joints or make its way along the reinforcement steel. The waterproofing of pile heads has to withstand heavy loads from the whole building and needs to be easily connected to the area waterproofing. At first, all non-load bearing materials and separating substances have to be removed from the surface of the pile head. After that, the surface has to be levelled and reprofiled with KÖSTER Repair Mortar or KÖSTER Repair Mortar R4. This reprofiling must also include the installa-

tion of a fillet adjacent to the pile head. Then KÖSTER NB1 is used to waterproof the pile head. The waterproofing on top of the blinding layer is made with KÖSTER NB 4000. Embed KÖSTER Glass Fiber Mesh into the fresh first layer. Then apply the second layer. Before pouring the concrete for the floor slab, a gliding layer consisting of two layers of customary PE-Foil is applied between the waterproofing and the concrete. Protect the waterproofing layer from mechanical damage when continuing with the application.

## 5.5 Example: Waterproofing of swimming pools



- |                                |                                  |
|--------------------------------|----------------------------------|
| 1. Fillet                      | KÖSTER WP Mortar                 |
| 2. Negative side waterproofing | KÖSTER NB 1 Grey                 |
| 3. Positive side waterproofing | KÖSTER NB 4000                   |
| 4. Tile adhesive               | KÖSTER BD Flexible Tile Adhesive |
| 5. Penetrations                | KÖSTER KB-Flex 200               |

### Installation process:

The system is applied to substrates that are sound and solid as well as free from bond inhibiting agents. As primer, KÖSTER Polysil TG 500 is used. It hardens the substrate and reduces the mobility of salts. The installation of a fillet at the wall-floor junction is done with KÖSTER WP Mortar to prevent stresses in the subsequent waterproofing layers. The negative side waterproofing is achieved with KÖSTER NB 1 Grey. The positive side waterproofing is carried out with a crack bridging material like KÖSTER NB 4000. This waterproofing material is resistant

to occasional foot traffic and can be covered with tiles. It has also the ability to create an excellent bond to damp substrates. The installation of KÖSTER Glass Fiber Mesh is recommended between the first and second layer of the waterproofing system to enhance the movement resistance. The tiling can then be performed with the single component and flexible adhesive KÖSTER BD Flexible Tile Adhesive. Pipe penetrations are waterproofed using KÖSTER KB-Flex 200 and sealed with KÖSTER KB-Fix 5.

# 6 Substrate preparation

## 6.1 Project site conditions

### 6.1.1 Application temperature

The waterproofing system should be applied at temperatures between +2 °C and +30 °C. Do not apply cementitious waterproofing when the temperature is lower than +2 °C or expected to fall below this temperature within 2 hours from time of application. Do not apply the material in direct sunlight with temperatures over +30 °C.

### 6.1.2 Moisture content in substrate

The substrate must be prepared in such a way that it does not absorb water from the fresh coating. This can be achieved either by pre-wetting the substrate or by applying a primer like KÖSTER Polysil TG 500 to it.

When pre-wetting, the surface must be wet enough that it will remain damp for at least 10 minutes directly before being coated. Avoid standing water.

### 6.1.3 Relative humidity

Relative humidity should not exceed 95 % as it may affect the final results and curing process. Low levels of relative humidity increase the risk of water evaporation from the material, consequently increasing the risk of premature drying and shrinkage cracking.

### 6.1.4 Rain and frost

The waterproofing coating must not be exposed to mist, rain, intense heat, snow, frost and strong wind during the application and for at least 2 hours afterwards.

## 6.2 Requirements

The mineral substrate has to be sound and solid as well as free of bonding inhibiting agents such as grease or oil. It must also be free of silicate sealer, waxes, and silicate curing compounds as well as all forms of gypsum.

Remove all bond breaking substances such as old coats, laitance, loose particles, dust, formwork, release oil, etc. The substrate must be open pored so that the KÖSTER NB 4000 be installed.

## 6.3 Substrate quality testing



### 6.3.1 Scratch test

Scratch the substrate with a nail or something similar. If particles come off the surface or if the fingernail can penetrate the substrate, remove the entire weak or sinter layer.



### 6.3.2 Wipe test

Wipe with your hand over the substrate. If no particles become detached and if the hand remains clean, then the substrate is acceptable.



### 6.3.3 Water test

To evaluate the absorptiveness of the substrate, wet the substrate. Water which is applied to the substrate must not roll off the surface but it must distribute within a short period of time. Dripping moisture indicates residues of release agents. These must also be removed.

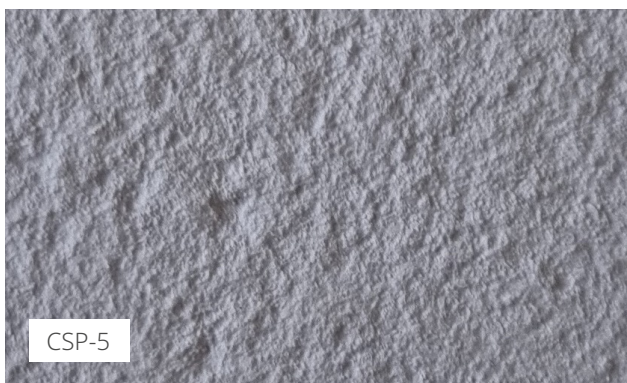
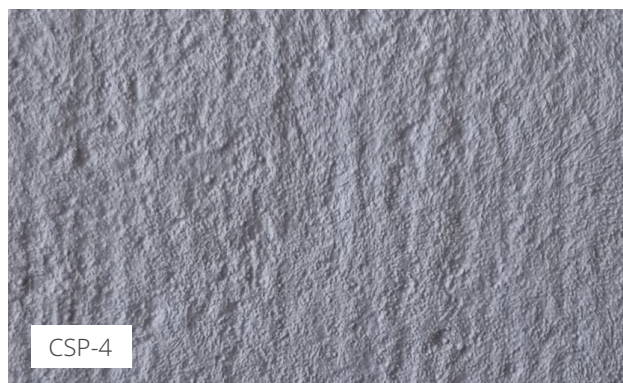
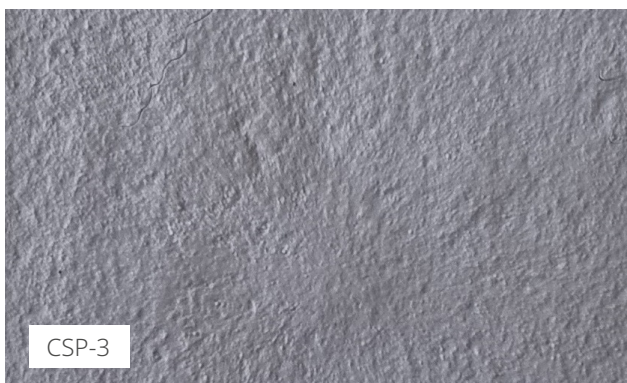


## 6.4 Preparation

### 6.4.1 Concrete surfaces

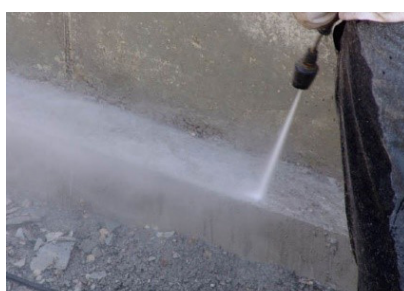
Concrete surfaces must be prepared to have an open pore surface free of laitance. The surface roughness must present a structure corresponding to a Concrete Surface Profile CSP-3, CSP-4, CSP-5 or CSP-6; according to the guidelines by the International Concrete Repair Institute (ICRI). The surface must then be intensively cleaned prior to the installation.

Suitable surface preparation methods are grinding, high-pressure water blasting (at least 350 bar) and sandblasting/shotblasting.



#### Grinding

Suitable for creating a CSP-1 to CSP-3.



#### High-pressure water blasting

(at least 350 bar)  
Suitable for creating a CSP-3 to CSP-10. In case there is formwork release oil on the surface, apply a suited detergent to the surface before cleaning with the water jet.



#### Sandblasting or shotblasting

Suitable for creating a CSP-2 to CSP-8.

### 6.4.2 Masonry

Masonry walls must be mechanically cleaned and freed from efflorescence prior to the application of the KÖSTER NB 4000. Uneven brick or block work must be first rendered flush with KÖSTER NB 4000 filled with Quartz



sand CT 483 025 (0.06 - 0.036 mm) in the ratio 2 parts of KÖSTER NB 4000:1 part of Quartz sand. Weak joints between the bricks must be removed and rendered with the KÖSTER WP Mortar or KÖSTER Repair Mortar.



### 6.4.3 Levelling & repairing the surface

Damaged concrete or plaster areas, honeycombed areas, cavities, recesses and chipped out areas as well as cracks and holes with a depth of more than 5 mm are to be repaired with KÖSTER WP Mortar or KÖSTER NB 4000 filled with Quartz sand CT 483 025 (0.06 - 0.036 mm) in the ratio 2 parts of KÖSTER NB 4000:1 part of Quartz sand.

Defects, cavities, holes smaller than 5 mm, and old bituminous substrates are prepared with an unfilled scratch coat which will also reduce the likelihood of bubbling. Scratch coats are made from 2 parts of KÖSTER NB 4000 and 1 part of Quartz sand CT 483 025 (0.06 - 0.036 mm) to cover the surface imperfections.

From CSP 3 to CSP 5, KÖSTER NB 4000 can be used as a coating material (applied in 2 coats).

It is highly recommended to apply two scratch coats on two layers. It is done by mixing 2 parts of KÖSTER NB 4000:1 part of Quartz sand CT 483 025 (0.06 - 0.036 mm).



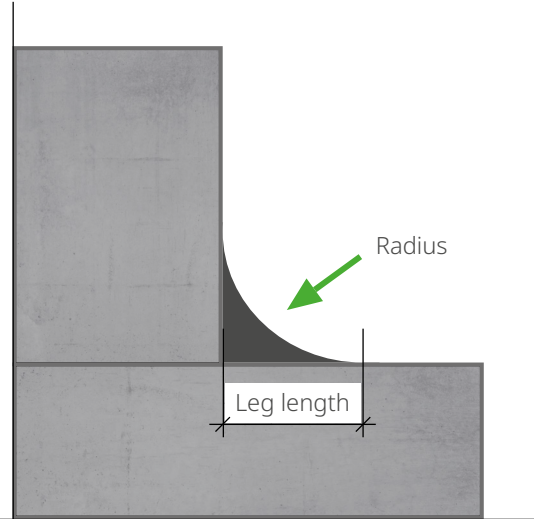
#### 6.4.4 Corners and fillets

On interior corners a rounded fillet must be installed to reduce stress concentrations in the walls, and therefore in the coating. Install fillets (leg length of approx. 4-6 cm) made from KÖSTER Repair Mortar at least 12 hours before applying the KÖSTER NB 4000.

Alternatively, they can also be made with KÖSTER Repair Mortar or KÖSTER Repair Mortar Plus, whereby up to

20 % KÖSTER SB Bonding Emulsion is added to the water.

Mixed with Quartz sand CT 483 025 (0.06 - 0.036 mm), KÖSTER NB 4000 can also be used for creating fillets (2 parts of KÖSTER NB 4000:1 part of Quartz sand).



#### 6.5 Priming the substrate

Cementitious fillets must have dried completely before primers are applied.

It is highly recommended to prime the surface before applying the KÖSTER NB 4000. In case of a strongly salt contaminated and absorbent substrates, apply KÖSTER Polysil TG 500 (consumption 100-130 g/m<sup>2</sup>, for strongly absorbent substrates up to 250 g/m<sup>2</sup> possible).

The priming layer must be allowed to dry completely.

In other cases where no salt contamination is present, applying a scratch coat of KÖSTER NB 4000 can help to homogenize the surface absorbency.



# 7 Application/Installation instructions

## 7.1 Mixing

Fill the liquid component into a mixing vessel which is large enough to accommodate the liquid and the powder component. Add the powder component to the liquid component in portions while continually mixing with a slow rotating electrical mixer. Mix both components intensively until a homogeneous, paste-like, lump-free consistency is reached. Minimum mixing time is 3 minutes. When working in very hot climates, up to 250 ml of water can be added to the mixture. Use a clean mixing vessel for each batch or respectively clean the

mixing vessel every time before mixing a new batch. For brush and spray applications, the KÖSTER NB 4000 Spray Additive is to be added initially to the liquid component. KÖSTER NB 4000 Spray Additive improves significantly the working properties of the KÖSTER NB 4000. It extends the working time and prevents rapid skin formation in summer temperatures. The additive also has a positive effect on the cleaning of hoses and pump equipment.



1. KÖSTER NB 4000 is to be mixed with a Drill Stirrer.
2. First add the liquid component.
3. Next add the powder component.
4. Strip the edge areas.
5. Mixing time: 3 minutes.

## 7.2 Brush application

KÖSTER NB 4000 is applied in 2 coats by brush, trowel or spray pump. The second coat is to be applied as soon as can be done so without damaging the first coat. The layers must be free of defects, even and in the recommended layer thickness. The actual dry layer thickness must not be less than the recommended minimum and must not exceed it by more than 100 %. Areas prone to or in danger of cracking should have KÖSTER Glass Fiber Mesh

embedded on the top of the fresh first layer. The area waterproofing of the wall must be overlapped at least 15 cm onto the front of the floor slab or the foundation. KÖSTER NB 4000 Spray Additive improves the working properties of the KÖSTER NB 4000 with brush application significantly. By brush application, It is recommended to apply the 2 coats perpendicular to each other.



### 7.3 Trowel application

KÖSTER NB 4000 is applied in 2 coats by toothed or finishing trowel. The size of the toothed trowel is commonly between 6 - 8 mm and is to be chosen according to the desired layer thickness. After distributing the material with the toothed trowel, the material can be smoothed

with the finishing trowel for an easier installation of the KÖSTER Glass Fiber Mesh reinforcement. The second coat is to be applied the same way as soon as can be done so without damaging the first coat.



### 7.4 Spray application

KÖSTER NB 4000 can be spray applied in a single or a 2-layer application. Adding the KÖSTER NB 4000 Spray Additive to the liquid component in the mixing process is required for spray applications, to adjust the consistency of the material and prolong its pot life. The KÖSTER NB 4000 Spray Additive is first added to the liquid component

of the 25 kg combipackage KÖSTER NB 4000 and stirred in evenly. Then the powder component is added. The material must then be mixed for at least 3 minutes with the KÖSTER Drill Stirrer. When processing several containers by spray application, intermediate cleaning of the pump equipment after 5 to 10 containers is recommended.



#### 7.4.1 Using KÖSTER Peristaltic Pump

KÖSTER NB 4000 can be spray applied in 1 or 2 coats with the KÖSTER Peristaltic Pump using the following settings:

Characteristics	Value
Max. hose length	10 m
Hose diameter	3/4"
Nozzle	8 mm
Speed	Adjusted according to air pressure
Voltage	230 V

#### 7.4.2 Using BMP7 Pump

KÖSTER NB 4000 can be spray applied in 1 or 2 coats with the "BMP 7 screw pump" from b&m using the following settings:

Characteristics	Value
Max. hose length	10 m
Hose diameter	3/4"
Nozzle	6.5 mm
Gear	1
Speed	Adjusted according to air pressure
Voltage	230 V

#### 7.4.3 Using Wagner HeavyCoat HC-970 G Spraypack Petrol Pump

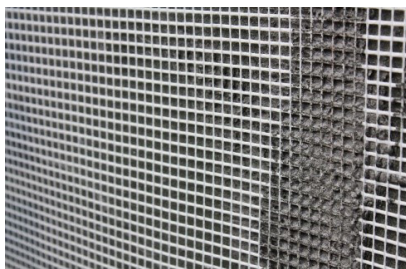
KÖSTER NB 4000 can be spray applied in 1 or 2 coats with by the Wagner HC-970 G Pump using the following settings:

Characteristics	Value
Max. hose length	10 m
HP hose DN13-PN250	1/2" NSPM-15m-PA
HP-hose-DN10-PN250	3/8" NPS-2.5m-PA
Nozzle	Recommended the 500 or 600 series
Flow rate	12 l/min

#### 7.5 KÖSTER Glass Fiber Mesh as a reinforcement

Areas prone to or in danger of cracking should have KÖSTER Glass Fiber Mesh embedded in the fresh first layer. Apply the first layer by finishing or toothed trowel. Embed the KÖSTER Glass Fiber Mesh on to the top of the

fresh first layer. Applying the second layer is possible in a very short time to cover the surface of the KÖSTER Glass Fiber Mesh completely.



## 7.6 Surface details

### 7.6.1 Pipe penetrations

Around the pipes and cable penetrations, the KÖSTER NB 4000 is reinforced using the KÖSTER Glass Fiber Mesh. First make sure that the pipe's surface is clean, free from grease, dust or any inhibiting substance. It is recommended to use sand paper at the contact area between the pipe and the concrete to improve the



adhesion of the waterproofing system. Apply a first coat of KÖSTER NB 4000, and then embed the KÖSTER Glass Fiber Mesh strip in the first fresh coat. Apply the second coat of the KÖSTER NB 4000 to completely cover the reinforcement.

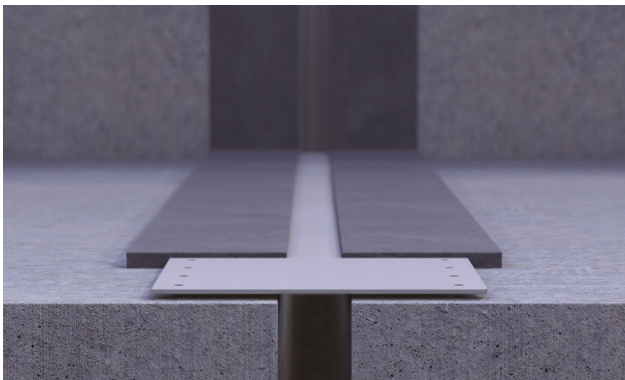


### 7.6.2 Moving joints

If dilation joints are present in the structure, these should be sealed with the KÖSTER Joint Tape 20/30 before starting with the application of the KÖSTER NB 4000. KÖSTER KB-Pox Adhesive is applied to the prepared substrate on both sides of the joint so that both sides of the KÖSTER Joint Tape 20/30 are embedded into the adhesive at least 40-50 mm. The layer thickness of the KÖSTER KB-Pox Adhesive should be approx. 1-2 mm. The KÖSTER Joint Tape 20/30 is then immediately embedded into the fresh adhesive and pressed into the adhesive using a hand roller or a similar

suited tool. Make sure that the tape has complete contact to the adhesive.

The KÖSTER Joint Tape 20/30 can be installed in the middle with a slightly concave form (omega profile) to allow for greater displacements of the joint. 24 hours after the installation of the KÖSTER Joint Tape, apply KÖSTER NB 4000 as described in the previous section, on top of both sides of the adhesive. The joint tape remains free in the middle.



## 8 General consumption guidelines

Approx. 2.4 - 4.8 kg/m<sup>2</sup>

Water exposure class	DFT in mm	WFT in mm	Consumption in kg/m <sup>2</sup>
Soil moisture and non-pressurized water according to <b>DIN 18533:2017-07</b>	3.0	3.2	approx. 3.6
Moderate exposure to pressurized water (immersion depth ≤ 3 m) according to <b>DIN 18533:2017-07</b>	4.0	4.2	approx. 4.8
Tank waterproofing up to ≤ 10 m filling height according to <b>DIN 18535:2017-07</b>	4.0	4.2	approx. 4.8
Non-pressurized water on soil-covered ceilings according to <b>DIN 18533:2017-07</b>	3.0	3.2	approx. 3.6
Splash water and soil moisture on the wall base as well as capillary water in and under walls according to <b>DIN 18533:2017-07</b>	2.0	2.1	approx. 2.4

DFT: dry film thickness, WFT: wet film thickness

For further consumption rates, please **refer to the product data sheet**.

## 9 Quality control

### 9.1 Quality control for dry film thickness

The stepped side of the KÖSTER Wet Layer Thickness Gauge is pressed into the fresh waterproofing. 20 measurements per construction site / per 100 m<sup>2</sup> have to be taken. After pulling out the gauge the layer thickness can be verified. The measuring points have to be diagonally

away from each other. In areas with penetrations more measurements should be taken. If two layers with an embedded mesh are applied, both layers have to be controlled individually.



### 9.2 Quality control for final layer thickness

Recommended suited methods for quality control of the final layer, throughout drying and the thickness of the dry layer are checked in a destructive manner, e.g. by cutting into a reference sample. The substrate should

correspond to the object substrate. Ideally, the sample should be taken from the face of the background and/or stored under comparable climatic conditions. The dry layer thickness can be determined by a wedge cut.



# 10 General notes

## 10.1 Material storage

Store the material frost free at room temperatures between +5 °C and +30 °C. Protect the material against moisture and direct sunlight. Products should always remain stored in their original and unopened containers

with the original labels and batch number tags. In originally sealed packages, the material can be stored for a period of at least 9 months.

## 10.2 Packaging



25 kg combipackage



2 x 7.2 kg powder component



2 x 5.3 kg liquid component

## 10.3 Important considerations

The product color changes from green (fresh) to dark grey (fully cured). The slight green color indicates that the polymer liquid is fresh and faultless. The intensity of the green color may slightly vary according to the light exposure (light scattering) on the construction site, and only acts as an optic effect. It does not matter in the quality or performance of the material.

The KÖSTER NB 4000 formulation has been specifically optimized for cooler, damp weather, for fast rain resistance, and early curing. In dry, sunny, windy and warm climates, the surface may quickly form a skin. In these cases, the material should be smoothed as soon as it is applied and should not be reworked.

If a longer pot life is desired, such as when working in warm or sunny conditions, a retarding agent can be provided by KÖSTER upon request.

By adding the KÖSTER NB 4000 Spray Additive, skin formation is reduced in summer temperatures and the processing time is extended.

Provide a mechanical protection (for example KÖSTER SD Protection and Drainage Sheet) before backfilling.

## 10.4 Limitations

- Do not apply the material in direct sunlight with material, substrate or air temperatures over +30 °C.
- KÖSTER NB 4000 was not developed as a high traffic coat such as a flooring system.
- No gaps caused by substrate imperfections are accepted.

# 11 Certifications

- **General construction Test certificate, PZ no. P-1202/730/20 MPA BS from May 27, 2020:**  
Mineral sealing slurries for building waterproofing according to the administrative regulation Techn. Baubest. Serial No. C 3.26.
- **General construction Test certificate, PZ no. P-1202/908/20 MPA BS of October 7, 2020:**  
Flexible polymer-modified thick film coating (FPD) for building waterproofing according to the administrative regulation Techn. Baubest. Serial No. C 3.26.
- **MPA test report (1202/543/20b):**  
Pan from April 22nd, 2020 Test according to testing principles for mineral waterproofing slurries and flexible polymer-modified thick film coatings (PG-MDS / FPD).
- **MPA test report (1202/543/20c):**  
Pan from April 22, 2020 Crack-bridging at normal and low temperatures according to DIN EN 14891:2012-07.
- **Test report from Dr. Joachim Kemski, No. 2019121601d:**  
Tight against radon with a dry film thickness of 3 mm.
- **Test report according to WTA leaflet 4-6 interior waterproofing, PB 51/21-501-1-r1 of May 4th, 2022:**  
MFPA Leipzig, 28 days at 7.5 m water pressure.

# 12 Legal disclaimer

This method statement reflects general cases with standard parameters. It is not suitable as a step-by-step guide for all and each waterproofing projects as the conditions on site at the moment of the application cannot be foreseen. It is solely the applicator's responsibility to

decide on the actual procedure considering the specific situation on the construction site. In any case, KÖSTER's Terms of business are valid and can be viewed under [www.koester.eu](http://www.koester.eu) 