

KOSTER NB 1 GREY

Positive and Negative side cementitious waterproofing

Technical guideline / Article number 3.021
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Uses and Components

The KOSTER NB 1 Grey Waterproofing System has been developed to waterproof cement-based substrates through the process of crystallization. KOSTER NB 1 Grey contains chemicals which react with moisture and ingredients in the substrate to form crystals which penetrate into the substrate to fill the voids and capillaries to produce the waterproofing effect. KOSTER NB 1 Grey becomes an integral part with the substrate itself.

KOSTER NB 1 Grey may be used on the positive as well as on the negative side of structures. It resists water pressures in excess of 400 feet and may be considered a permanent waterproofing system as long as the substrate remains sound. Even freezing and thawing cycles will not negatively affect the material.

It has excellent abrasion resistance.

KOSTER NB 1 Grey is supplied in powder form. It is mixed with a solution of KOSTER SB Bonding Emulsion and water. The KOSTER SB Bonding Emulsion is added to improve the curing and adhesion to steel when waterproofing between steel and concrete takes place. The KOSTER SB Bonding Emulsion also improves the abrasion resistance and elastic (lower modulus) properties of the material.

Advantages

- positive and negative side waterproofing against pressurized water
- resistant against Chlorides, Sulfates and Phosphates
- certified for drinking water environments
- penetrates into the surface where crystallization leads to inseparable waterproofing-substrate bond
- does not contain corrosion promoting ingredients
- no VOC, no emissions of environmental harmful ingredients
- works also on masonry and on very porous substrates like shotcrete, aerated concrete and cinderblock
- substrate does not have to be continually "wetted" to cure
- inhibits salt movement in the substrate when used as a system together with KOSTER Polysil TG 500
- easy application, long pot life
- seamless application

Surface Preparation

Surfaces to be waterproofed with KOSTER NB 1 Grey must be sound and solid, as well as free of bonding inhibiting agents such as grease and oil. Remove all bond breaking substances such as laitance, loose

particles, dust, formwork release oil, curing compounds etc. The substrate must be open pored so the KOSTER NB 1 Grey can penetrate.

Surface honeycombs must be opened up to ensure an uninterrupted, even coating application.

Static cracks wider than 1/32" must be opened to a minimum of 1/2" x 1/2" and repaired with KOSTER Repair Mortar at least 24 hours prior to application of KOSTER NB 1 Grey.

Moving cracks must be treated as expansion joints (see detail).

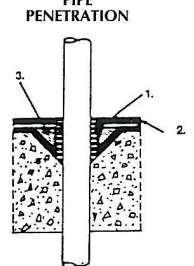
Substrates must be pre-wetted (avoid standing water) or treated with KOSTER Polysil TG 500 prior to the application of KOSTER NB 1 Grey. Dusty or salt-damaged substrates have to be brushed off and primed with KOSTER Polysil TG 500 prior to the application of KOSTER NB 1 Grey.

Never apply KOSTER NB 1 Grey over standing or running water.

Preparation

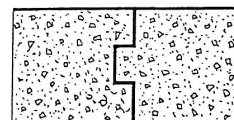
Cut back around pipes to give sufficient depth and clean off thoroughly.

1. Apply key coat of KOSTER SB Bonding Emulsion (mixed 1:1 with water and gauged with a 1:1 sand/cement mix) Let cure for 24 hours.
2. Apply standard application of KOSTER NB 1 Grey.
3. KOSTER Repair Mortar



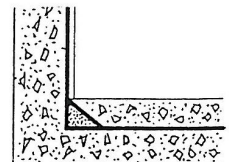
For additional information see KOSTER NB 1 Grey – CSI Specification.

CONSTRUCTION JOINT

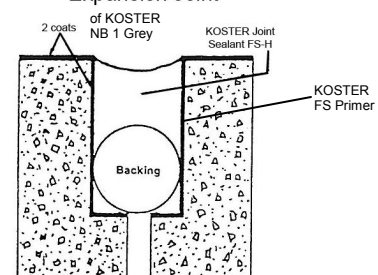


NB1—2 coats. The concrete should be poured while the second coat is still wet.

FOUNDATIONS, SPLIT SLAB APPLICATIONS



Expansion Joint



KOSTER NB 1 Grey - 2 coats. Allow KOSTER NB 1 Grey to cure a minimum period of 72 hours before applying backing and sealant.

Technical Data

Properties of the uncured material:		
Fresh mortar density	15.4 lb/gal	
Pot life at 68 °F	approx. 2 hours	
Properties of the cured material:		
Color	Grey	
Resistant to foot traffic	after approx. 2 days	
Full cure	after approx. 2 weeks	
Compressive strength (28 days)	> 3330 PSI	ASTM C109
Tensile strength (28 days)	340 PSI	ASTM C190
Abrasion resistance (28 days)	2.7×10^{-4} (gram per cycle)	ASTM 4060
Pull-off strength	> 170 PSI (100% break of in substrate)	ASTM D4541
Water permeability negative side (28 days)	200 PSI = 461 ft of water head, no signs of leakage	ARMY C-E Negative Side CRD-C-48-73
Water permeability positive side (28 days)	200 PSI = 461 ft of water head, no signs of leakage	ARMY C-E Positive Side CRD-C-48-73
Vapor permeability (28 days)	$\mu = 60$	
Microbial growth	Not supported	DVGW W270 Germany
Potable water certification	Approved	DVGW W347 Germany

Mixing

The material must be mixed using a slow speed mixer whereby the powder should be added in portions to the mixing liquid.

Mix one 50 lb bag of KOSTER NB 1 Grey with one of the following:
- 6 qt of water plus 2 qt of KOSTER SB Bonding Emulsion or
- 1 canister (8 qt) of KOSTER NB 1 Flex or
- 8 qt of water

The addition of KOSTER SB Bonding Emulsion to the mixing liquid or the use of KOSTER NB 1 Flex raises the ability of the material to retain water and prevents a premature drying of the coating in cases of unfavorable weather conditions (warm, dry, windy).

When used in drinking water reservoirs only the addition of 8 qt of water to each 50 lb bag of KOSTER NB 1 Grey is permitted. The addition of KOSTER NB 1 Flex or KOSTER SB-Bonding Emulsion will negate the Drinking Water Certification.

For negative side waterproofing applications, do not add KOSTER NB 1 Flex or KOSTER SB Bonding Emulsion

into the mixing liquid of the first coat. They can be added into the mixing liquid for the second coat.

Application

The material is applied in at least two coats with a brush or a suitable spraying device. Make sure the coating is not exposed to heat, frost and/or strong wind during the application and for at least 24 hours afterwards. The material should be brushed vertically and horizontally to work it into the substrate.

Application Examples:

Highly effective waterproofing with bituminous building materials.

When applying a combined waterproofing system made of KOSTER NB 1 Grey and bituminous coatings (KOSTER Bikuthan, KOSTER Deuxan or KOSTER KBE Liquid Film), KOSTER NB 1 Grey can be applied directly to a void free masonry with flush-filled joints. After a curing time of 24 hours, the bituminous coating is brushed, troweled or sprayed on. The substrate preparation with KOSTER NB 1 Grey increases the safety of the system significantly. It is an additional waterproofing layer. It prevents lateral movement of water and at the same time it functions as a negative side waterproofing during the construction phase.

Negative side waterproofing in case of repair of widespread moisture penetration

Active leaks and water weeping down the wall can be stopped with KOSTER KD 2. Brittle and loose material has to be cleaned out of joints and joints have to be repointed with KOSTER Repair Mortar Plus. After a waiting time of approx. 2 hours, the surface to be sealed must be primed with KOSTER Polysil TG 500 (Coverage: min. 340 ft²/gal, in case of strongly absorbent substrates up to 160 ft²/gal). After a waiting time of 30 minutes, the first coat of KOSTER NB 1 Grey is applied (Coverage: 0.3 lb/ft²). When the first coat of KOSTER NB 1 Grey has set sufficiently so that it is not damaged by the application of a second coat, a second coat of KOSTER NB 1 Grey is applied (Coverage: 0.3 lb/ft²).

Allow KOSTER NB 1 Grey to cure for a minimum period of 48 hours on positive side and 4 days on negative side before exposing it to water pressure.

Coverage

A minimum of 0.5 lb/ft² will be required for most applications. However, on dense, smooth formed concrete (positive side only) a 0.25 lb/ft² application may be adequate (consult with manufacturer).

If brush applied at 0.5 lb/ft², 2 coats will be necessary (0.25 pounds each). One 50 pound bag will cover approximately 100 ft² based on 0.5 lb/ft². Make sure KOSTER NB 1 Grey is applied evenly, leaving no areas void. Allow a minimum of 12 hours curing time between coats. Dampen first coat before application of second coat.

Limitations

KOSTER NB 1 Grey cannot be applied when temperatures are below 40°F or expected to drop below 40°F within a 24-hour period from the time of application.

Never apply KOSTER NB 1 Grey over active leaks. Protect from precipitation for a minimum period of 24 hours. Do not apply onto frozen substrates. Allow KOSTER NB 1 Grey to cure at least 7 days before exposing it to water pressures in water retaining structures.

Allow 48 hours cure before backfilling. Protect from damages through backfilling e.g. by installation of KOSTER SD Sheet. KOSTER NB 1 Grey should not be used as a wearing surface for heavy and continuous traffic.

Protect KOSTER NB 1 Grey from contact with acid and/or sulphurous attack in concentration exceeding limits for Portland Cement Type I/II.

Packaging

50 lb bag

Storage

Store the material dry. In originally sealed packages, the material can be stored for approx. 12 months.

Cleaning

Clean all mixing and application equipment with water immediately after use.

Safety Precautions

Do not take internally.
Always wear protective gloves and goggles.
Use dust respirator when mixing dry powders.
Avoid splashing into eyes and skin.
Wear protective equipment.
Use only with adequate ventilation.
Wash hands immediately after use.
Consult Material Safety Data Sheet before using the product.

For Best Results

Applications on concrete block or other very porous substrates with active leaks may require additional application considerations not covered by this specification. Please contact KOSTER American Corporation before application.

Limited Warranty

KOSTER warrants that its product shall be in accordance with the specifications published in the current revision of the products data sheet. KOSTER covenants that in the event any of its products fail to meet their published specifications, KOSTER shall replace those products proved to be defective. KOSTER shall not be responsible for any incidental or consequential damages due to the breach of its warranties. Notwithstanding the foregoing, KOSTER's sole liability hereunder shall not exceed the cost of the defective product originally purchased. EXCEPT AS SET FORTH ABOVE, KOSTER MAKES NO OTHER WARRANTIES EXPRESS OR IMPLIED AND MAKES NO WARRANTY AS TO THE MERCHANTABILITY OR FITNESS OF THE PRODUCT FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. The user must determine if the product is suited for the intended use and the user must bear the risks and liabilities associated with it.