Technical instruction - Product no. 209

HYDROSTOP-PROFFESSIONAL COMPOUND

Extra-adhesive dry compound for crystalline waterproofing of reinforced concrete

PRODUKT ROKU
DLA BUDOWNICTWA
Top Builder

PRODUCT PROPERTIES

- **Penetrates deep into concrete,**
- **Highly adhesive - up to 4MPa,**
- **Water permeability at a minimum of 60m of water column,**
- **One or two layers only,**
- **Fast curing,**
- Application onto wet concrete,
- Can be applied under water pressure,
- Unlimited durability of waterproofing,
- Water access renews sealing capacity,
- F50 freeze-thaw resistance increases threefold,
- Fully resistant to UV light,
- Resistant to XA1 and XA2 aggressive water,
- Also waterproofs basements from inside,
- Vapor-permeable,
- Reduces concrete carbonation,
- Concrete-compatible
- Environmentally friendly, harmless.

USE

Hydrostop-Proffessional Compound is used for making thin coatings on concrete and reinforced concrete structures against water with an aggressiveness of up to XA2. Waterproofing of structural parts is done by coating them with a thin layer of the product, which results in crystallization inside the concrete and provides an incomparably better barrier than bituminous and bentonite layers. Used for foundation slabs, spread footings, monolithic walls and reinforced floors. The product is also used to waterproof water tanks, sewage treatment plants, septic tanks, swimming pools, basement parts (cellars, shelters, underground garages) tunnels, installation pits and chambers, wet areas (e.g. baths). Applicable up to XA2 aggressiveness levels. Used both during construction and inside existing structures without having to undig them. The product can be used as indicated above in residential, industrial and public utility construction, both on the inside and on the outside. In some countries it is approved for contact with drinkable water. The product does not contain ingredients that react with oxygen. Fire safety class A1. Masonry walls, prefabricated roofs and expansion joints should be waterproofed with other Hydrostop products.

WORKING PRINCIPLE

Hydrostop-Proffessional Compound is a cement-and-sand powder to be mixed with water and applied onto (reinforced) concrete. The penetrating effect is obtained by the ingredients migrating into wet concrete to at least 10cm deep and crystallizing in the capillaries, which permanently prevents water seepage and results in drying while not stopping water vapor from permeating. The crystallizing capacity is renewed under water pressure, a self-sealing property often observed on the surface of reinforced conrete water tanks. The very low water impermeability of W2 is upgraded to at least W6 while in practice the property reaches W8 in average concrete.

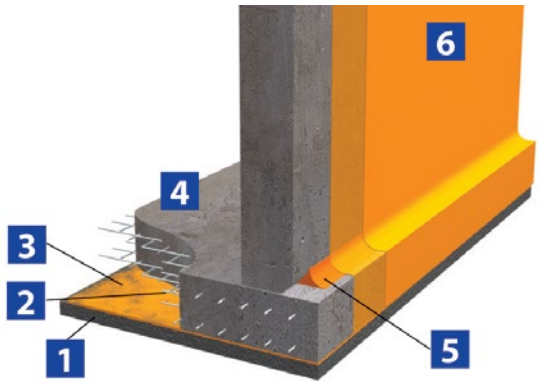

Fig. 1: Comprehensive waterproofing of basement using Hydrostop: 1 - lean concrete; 2 - reinforcement; 3 - foundation slab; 3 - evenly spread layer of Hydrostop-Mix; 4 - edge of slab sealed with Hydrostop-Proffessional Compound; 5 - wedge-shaped seal made from Hydrostop-Mortar; 6 - side of wall waterproofed with Hydrostop-Proffessional Compound.

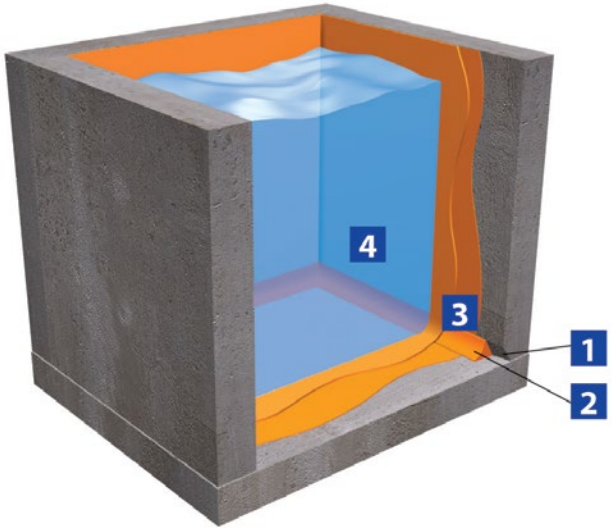

Fig. 2: Waterproofed new reinforced-concrete tank: 2 - wedge-shaped seal made from Hydrostop-Mortar; 3 - penetrating coating made from Hydrostop-Proffessional Compound.

The concrete substrate should be at least C12/15. Seldom used on conrete exceeding C35/45. Concrete subject to freezing should have an initial freeze/thaw resistance of at least F50.

PREPARATION OF THE SUBSTRATE

The substrate should be free of any dirt, paint coatings and weakly adhesive layers. If there is corroded concrete at the surface, it should be removed. Water leaks (e.g. leaking

cracks or streams that could wash off the coating being applied) should be stopped with the Hydrostop-Fix fast-setting cement. If there are defects at the surface or the reinforcement has not protected properly, the protection should be repaired with Hydrostop-Repair mortars. If there is efflorescence from mineral salts on the surface of the concrete, it should be removed using tools appropriate for the kind of work, e.g. a hand or power wire brush, pressure washer (200 bars) with a rotary head, sandblasting or hydrosandblasting machine. The glassy surface of the concrete should at least be abrased by hydrosandblasting. A strong and well sticking layer with a thickness not in excess of 1mm does not have to removed.

MIXING THE PRODUCT WITH WATER

Pour a bag of 25kg of the product into 11.5 liters of water while mixing. Once uniform, use a mortar mixer at 300 rpm for application. It is advised that the mixture be utilized within 30 minutes. For application using a plastering machine with an in-built mixer and a dosing capacity of 10 liters per minute, set the amount of water by trial without a hose, adjusting water outflow between 0 and 6 liters per minute (use a timer and a measuring container). Then put a bag amount of the product into the machine and adjust the water to obtain a semi-fluid consistency. Only then attach a short and moistened hose with a spray gun.

APPLICATION OF THE PRODUCT

Apply the wet mixture manually (usually in two layers) or using a rendering machine at approx. 10 liters per minute. Part of the water from the layer applied should evaporate before the cement starts setting, but the layer must remain moist. That means that once applied, the glossy-wet layer should turn matte-wet, which will happen at not too high humidity and with air flow. The hardening mixture should be kept moist (it is best to put plastic sheeting over it), possibly spraying with some water but not pouring or streaming water.

Methods of application:

Walls subject to water pressure and other concrete surfaces: The first layer should be rubbed into the substrate with a wide flat brush. Apply approx. 0.8 kg/m2 of a dry product, i.e. a bag of 25kg per 31 square meters. Part of the water from the layer applied should evaporate before the cement starts setting, so that the glossy-wet surface turns matte-wet. A second layer (at 0.8 kg/m2 of a dry product) should be applied crosswise with a wide brush or spray tool 2-5 hours after the first (when the brush or light touch will not affect the first layer but while it has still not bound firmly). Whether to apply one or two layers depends on the quality of the concrete, thickness of the skim, anticipated water pressure, surface smoothness and whether the waterproofing is being done on both sides of the wall. It is usual to apply two layers, with a single layer applied in circumstances described below or when the mortar is skimmed on both sides of a concrete partition, or where there is pressure from a water column of up to 1m..

Wals and floors not subject to water pressure (e.g. foundations, surfaces exposed to weather and moisture only): Agregatem lub pędzlem nakłada się jedną warstwę 209 w ilości 0,8kg/m^2 o grubości około 0,4mm.

The top of a concrete slab by sifting: A smooth, well prepared and rinsed concrete slab can be skimmed with the mortar by sifting a dry product at 1kg/m2 through a 2mm sieve. The concrete should be moist enough for the dry product to turn dark-matte-moist on falling onto it.

The top of a concrete slab by rubbing in: A freshly poured reinforced concrete slab (when a rubber boot will set in to about 2cm) should be covered with the mortar by sifting through a 2mm sieve at 0.8kg/m2 (terrace) or 1.6kg/m2 (when subject to water pressure), and then rubbed in with a steel trowel, ensuring that there remain no grooves to be filled up later left by screeds. If the concrete slab will be subject to freezing, the concrete should be made using an addition of a concrete superplasticizer (see Hydrostop's offering). If the slab is poured on ground, it should have a subgrade (e.g. crushed stone) and there should be a vapor barrier uder the slab (e.g. 0.2mm construction sheeting or vapor diffusion retarder). Waterproofing of existing structures should be done in a comprehensive manner, starting with higher-located parts not subject to flooding and moving on to the lowest-located surfaces. Before application, mark the area to be covered by each bag of the product. The waterproofing should reach 50cm above the top water levels. Thin leveling overpours are typically too weak to be waterproofed, and it is therefore recommended that waterproofing be done before these are made. Strong cement-based renders, torcrete and other reinforcing layers should be covered with the waterproofing and not put over it. It is not recommended to apply the product to surfaces subjected to intensive heating by sun or drying by wind at the time of the waterproofing.

CARE

A set coating should be kept moist (preferably under plastic sheeting) for 5 to 10 days. It may be necessary to moisten it by water spray (e.g. using a pressure washer, with the nozzle at a distance of at least 3m) several times a day, but it should not be flooded or rinsed with water. The mortar can be covered with moist soil 2 days after application; a tank can be filled with water after at least 5 days.

ADDITIONAL INFORMATION

Concrete defects not wider than 5cm and without exposed rebars can be filled up with a waterproof mortar obtained by mixing (by weight) 1 part of Hydrostop-Proffessional Compound, 1 part of grade 32.5 Portland cement and 5 parts of sharp 0-2mm sand (washed or river). For bigger defects use Hydrostop-Mortar or Hydrostop-Repair.

REMARKS

Concrete floors subject to hydrostatic pressure (even a water column of several dozen centimeters) sustain strong forces and may thus require to be thickened or reinforced to prevent breaking out once waterproofed (see the separate instruction for thickening and reinforcing a floor). The mortar may become less adhesive due to poorly cleaned substrates, exceeded times for application after mixing with water, applying thicker than 1.5mm, failure of water to partly evaporate from the mortar before it sets, application onto concrete not resistant to freeze-thaw cycles and subjected to freezing, and layers becoming dry while binding or immediately after. Floor-to-wall joints and construction joints in reinforced concrete structures require a wedge-shaped seal made from Hydrostop-Mortar. The seal is set into the wall or the floor, or it forms a round corner (fig. 3). If the length of the seal is over 5m in a straight line while the floor and the wall do not constitute a monolithic box, additional sealing is recommended due to the risk of cracking along the seal (see the instructions for Hydrostop-Mortar, Hydrostop-Superelastyczny and the tape for Hydrostop-Elastyczny Zbrojony).

FINISHING WORK

The waterproofing mortar can be covered after 2 days with ceramic tiles, and after 5 days with silicone and silicone-acrylic paints. These materials should only be applied after checking if the waterproofing has been done correctly (e.g. in a water test).

SAFETY PRECAUTIONS

Proffessional Compound contains cement clinker, which can cause drying and irritation of the skin and mucous membranes. Use of resistant gloves is therefore advised. A safety sheet and attestation can be provided upon request.

TECHNICAL DATA

Name and no.: Hydrostop-Proffessional Compound 209
Product type.: dry mixture for making thin concrete-waterproofing coatings through crystallization
Form: gray powder
Substrate: concrete (C12/15 to C35/45, W2, outside, F50)
Packaging size: 25kg,
Approx. yield: 0,8 do 1,6kg/m^2
Dry weight: 1,22 kg/dm^3±10%
Density: 1,80 kg/dm^3±10%
Water admixure: ~0,45 l of water per 1 kg, ok. 11,2 per 25 kg
Maximum coating thickness: 1,5mm
Width of non-structural crack: <0,3mm,
Adhesiveness after 3 days: ≥1,5 MPa
Adhesiveness after 28 days: from 2 to 4 MPa
Water permeability after 28 days: ≥0,6 MPa,
Freeze/thaw resistance: increases from F50 to F150
Application temperature: 2°C to 30°C
Exposure class: XA2, pH 5.5 to 12.5, including groundwater, sewage and agricultural waste, chlorine water for drinking and swimming pools (XD2), fats, mineral oils, food oils, transformer oils, rainwater, river water, lake water, irrigation water, except industrial waste aggressive on concrete (XA3 requires an additional chemically resistant layer). A separate list for chemical resistance.
Reaction-to-fire Euroclass: A1,
SCHEDULING:
From concrete pouring/repair to application of the mortar: preferably ≥7days, possible immediately
Time of mixing with water: ~3min. (300rpm)
Recommended time for application after mixed with water: 30min
Time before application of a second layer: 2 to 5 h,
Storage time at 95% humidity: 5 to 10 days
Walking over the coating: >24 h
Wheel traffic over the coating: ≥3 days
Installation of tiles/insulation: ≥2 days
Covering with moist soil:≥2 days
Application of hydrophobic paints: ≥5 days
Flooding with water: ≥5 days, recommended 10
Use before: 1 year from production (full package). Protect from moisture.
Reference documents: PZH no. HK/B/1581/06/2008; Technical approval ITB AT-15-7076/2006 + test results for the effectiveness of waterproofing through penetration of 0.3mm and smaller cracks in concrete formed after waterproofing, and test results for resistance to liquid manure; safety sheet. Updates at www.hydrostop.eu

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