HYDROSTOP

INTERNATIONAL

PERMANENT WATERPROOFING

GENERAL CATALOG 2016

Is it worthwhile to know the details of construction waterproofing?

Construction waterproofing must not be treated marginally. We would like to offer you modern technologies for protection against water and damp. Please take advantage of our over 25-years' experience and take the time to discuss your project with a Hydrostop technical advisor. The necessary contact information for advisors can easily be found at: www.hydrostop.pl/kontakt-mapa.: http://www.hydrostop.eu/168-contact.

The right choice of waterproofing materials is primarily based on a knowledge of the ground conditions where the waterproofing is to be installed. It is essential that waterproofing materials be adequate for the substrate to which they will be applied. Finally, the selection of waterproofing should account for properties such as water impermeability, surface smoothness, color and other expectations that the investor may have.

There are numerous solutions to specific issues in waterproofing, just as there are multiple uses for specific materials. This catalog contains an offering of waterproofing materials ordered by subject: products for concrete substrates are followed by ones for masonry substrates, and flexible materials are proposed for cases which require their use. The entire content is supplemented with information on specialist impregnators.

Hydrostop offers you modern and reliable solutions well tested in Polish construction environments.

As people working in construction industry
we wish you many successes in carrying out your projects.

Sincerely

dr inż. Paweł Grzegorzewicz with the Hydrostop team

HYDROSTOP

Hydrostop - System Waterproofing

Hydrostop Products

- Concrete waterproofing
- Masonry waterproofing
- Concrete rapairs
- v

Video Animations

Additional Information

Note: this document contains interactive elements - links, videos.
For proper operation of all functions, we recommend using Adobe Reader: https://get.adobe.com/pl/reader/

HYDROSTOP - systemic waterproofing

This resource describes modern solutions for construction waterproofing. The experience gained over 25 years of production of waterproofing materials has allowed Hydrostop to provide effective solutions to your problems, with top-level product quality. We expect this catalog to complement the website at www.hydrostop.eu and the CD-ROM as a convenient source of information about the systems and individual products. To date, Hydrostop waterproofing has been used on more than ten thousand structures in Poland and Europe-wide where the products are sold. In total Hydrostop has waterproofed millions of square meters of construction structures.

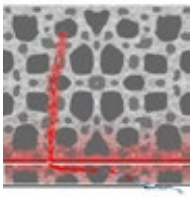
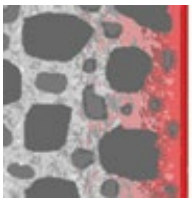
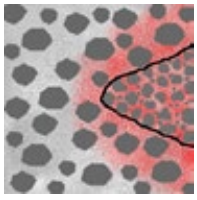
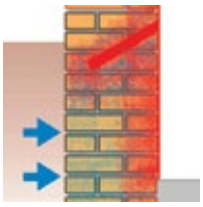
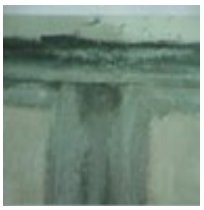
What penetrating waterproofing materials are

The Hydrostop materials share a common feature, which is the property of osmotic and capillary penetration of sealing compounds into concrete, mortar and brick. Our product offering consists of mortar additives, coatings, fast-binding cements and specialist mortars. The products are based on the most effective sealing agents.

Systems are the way to obtain quality and effect

Hydrostop materials come in system packages, i.e. groups of materials with complementary properties. Each system provides effective solutions to a range of problematic situations. The systemic approach ensures selection of materials adequate for specific needs and guarantees an outcome of the best quality. As a result, Hydrostop's customers receive comprehensive services and have their problems handled once and for all.

The main areas of Hydrostop use

Substrate-penetrating waterproofing					
Dressing for the foundation slab	Penetrating coating for concrete	Sealing with fast-binding cements and mortars	Horizontal and vertical waterproofing of masonry walls against water and damp	Reprofiling corroded reinforcement bars	Flexible waterproofing
					
Penetration into the bottom of the reinforced concrete slab to seal structural defects up to 1m from the place of application	Penetration from the coating into the substrate	Penetration from the place of application into the substrate	Penetration from injection holes into the wall	A mortar with microfibers to fill defects and passivize the steel.	Various options for elastic waterproofing of expansion and other joints as well as surfaces at risk

Hydrostop's outstanding properties

A very high sealing effectiveness for inactive cracks and the same using flexible materials for active ones. Hydrostop-Mieszanka Profesjonalna deserves particular attention, as it seals cracks occurring during use of the structure. All mineral materials ensure the waterproofing is as durable as the structure being waterproofed, hence their durability rating is higher than in the case of bituminous materials. Penetrating compounds enter the structure of substrates and thus cannot be torn away, ripped through, cut, rinsed, unglued or rubbed off. The systems presented here work well with one another.

On using water-resistant concrete

There are a few reasons why water permeates water-resistant concrete delivered by trucks as ready-mix:

- contraction cracking that results from the binding and hardening of any larger reinforced-concrete part (this does not apply to 15x15x15 testing blocks),
- cracking that results from a static force, e.g. the weight of a higher storey,
- structural defects such as corroded reinforcement bars,
- construction joints resulting when pouring concrete is stopped for 1.5 hours,
- gravel spots and similar structural inhomogeneities resulting from imperfect technological processes,
- tie-rod holes, which are potentially weak spots in waterproofing.

Using Hydrostop eliminates these dificulties and weak spots in a structure.

The basic advantages of using Hydrostop

Our effective waterproofing materials make it possible to design and build or renovate entire structures or their parts: basements with high groundwater levels (including multi-storey underground garages), water tanks, sewage tanks, terraces and balconies. The durability of the materials is an important asset. The technologies in use ensure good designs. The solutions we offer have been tested over many years in Polish weather conditions and construction environments.

Hydrostop Products

Concrete waterpoofing

Hydrostop-Proffessional Compound, prod. no. 209

Dry mixture with enhanced adhesion, intended for sealing reinforced concrete by crystallization

TECHNICAL INSTRUCTION

Hydrostop-Mix, prod. no. 203

Dry mixture applied specifically to seal surface underneath base and bottom place

TECHNICAL INSTRUCTION

Hydrostop-Fix, prod. nr 303, 304

Fast binding concrete with penetrating additive for sealing water leakage

TECHNICAL INSTRUCTION

Hydrostop-Mortar, prod. no 401

Concrete mortar with the penetrative addition for making wedges, plaster and other seals

TECHNICAL INSTRUCTION

Hydrostop-Penetrating Mat, prod. no. 541, 542

Concrete-waterproofing membrane with crystallizing layer

TECHNICAL INSTRUCTION

Masonry Waterproofing

Hydrostop-Injective, prod. no 721

Penetrating block against capillary penetration of moisture in masonry structures

TECHNICAL INSTRUCTION

Hydrostop-Injective Fluid, prod. no 742

Penetrating block against capillary penetration of moisture in masonry structures binded by any mortar.

TECHNICAL INSTRUCTION

Concrete Repairs

Hydrostop-Repair, prod. no 423

Reprofillin PCC with the polypropylene fiber

TECHNICAL INSTRUCTION

Hydrostop-Filler, prod. no 453

The reprofiling mortar PCC for making thinned protective plaster

TECHNICAL INSTRUCTION

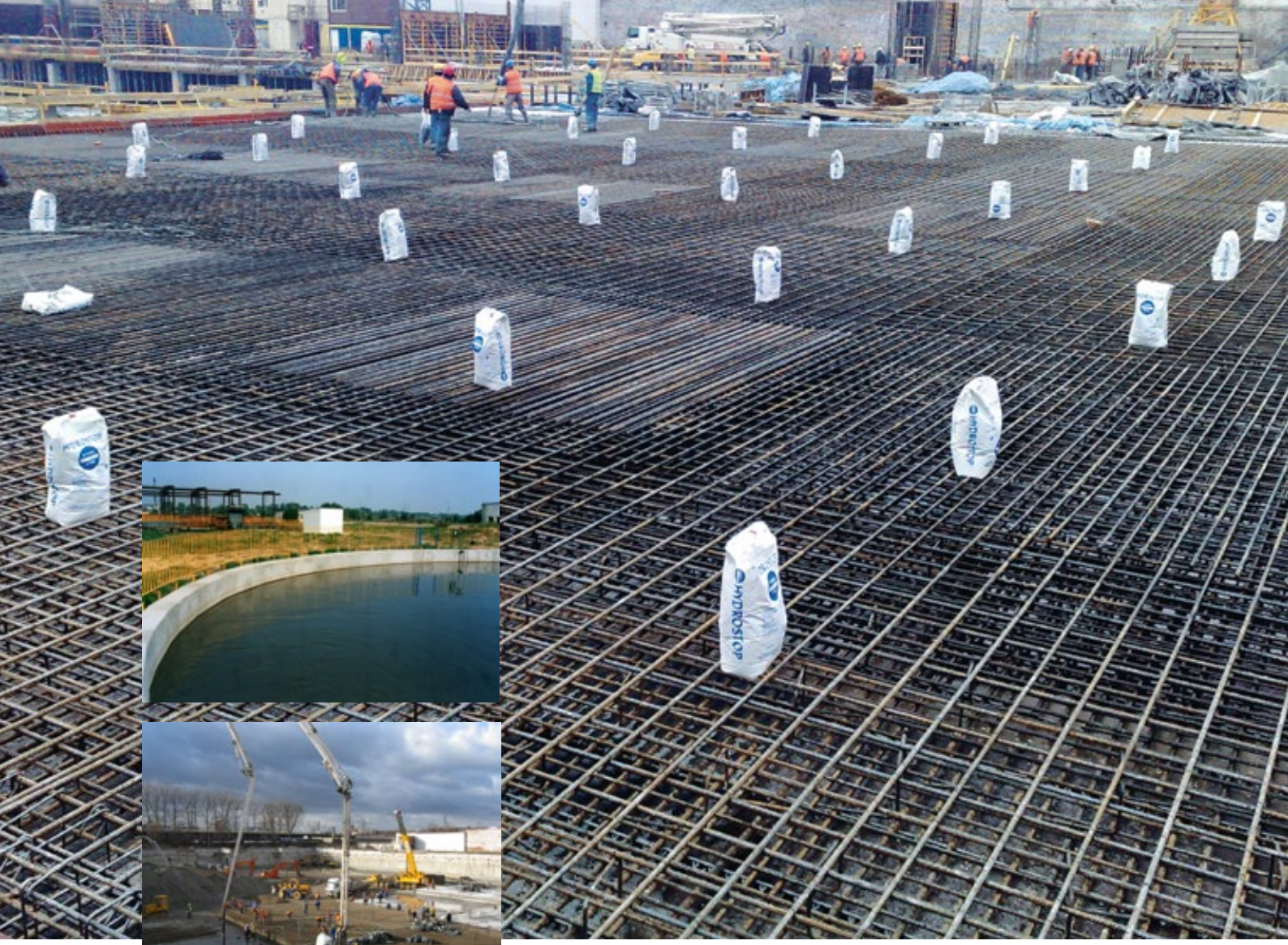
Hydrostop-Passivating, prod. no 463

Anti-corrosion protection fluid for protection of thin lagged reinforcement and for mixing with product Hydrostop - Reper

TECHNICAL INSTRUCTION

More information about the products, valid documents, video presentations available at:

www.hydrostop.eu



EXAMPLE USES FOR HYDROSTOP PRODUCTS

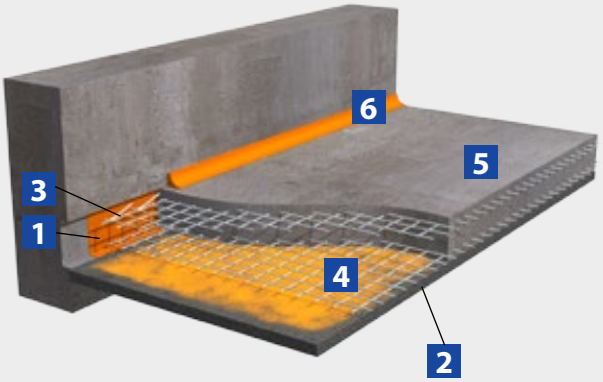
- Waterproofing of the bottom slab and slab-to-slurry wall joints
- Waterproofing of foundation slab and walls
- Stopping of active water leaks
- Sealing new water and sewage tanks
- Repair and supplementary sealing of existing water and sewage tanks
- Waterproofing of masonry walls

LIST OF PRODUCTS

EXAMPLE USES FOR HYDROSTOP PRODUCTS

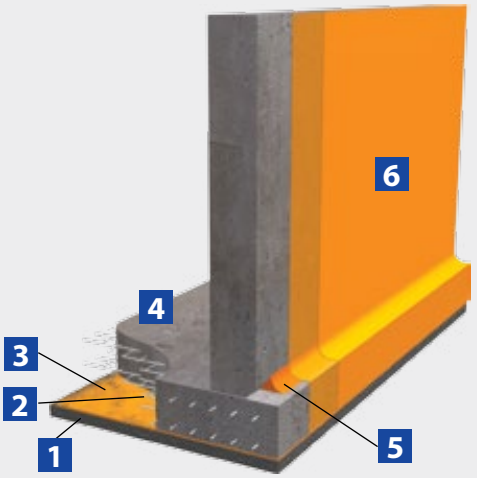
1 Waterproofing of the bottom slab and slab-to-slurry wall joints

1. Cut in a channel
2. Pour lean concrete
3. Apply the **Hydrostop-Professional** waterproofing compound to the wall
4. Spread **Hydrostop-Mix** over the lean concrete by sieve
5. Pour the bottom slab
6. Make a wedge-shaped seal along the wall joint using **Hydrostop-Mortar Waterproofing**



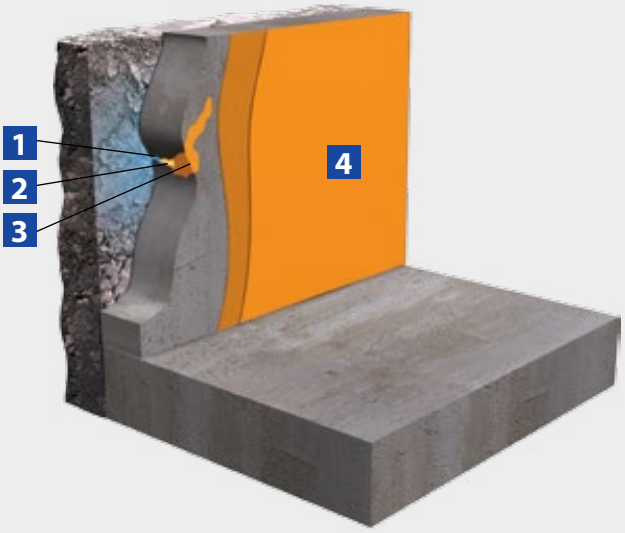
2 Waterproofing of foundation slab and walls

1. Pour lean concrete
2. Install reinforcement
3. Apply the **Hydrostop-Professional** waterproofing compound over the lean concrete
4. Pour the foundation slab
5. Make a wedge-shaped seal along the wall joint using **Hydrostop-Mortar Waterproofing**
6. Apply the **Hydrostop-Professional** waterproofing compound to the foundation wall and the edge of the slab



3 Stopping of active water leaks

1. Chisel out the concrete at the point of leakage
2. Stop the water with the **Hydrostop-Fix** fast setting cement
3. Fill with **Hydrostop-Mortar Waterproofing**
4. Apply the **Hydrostop-Professional**



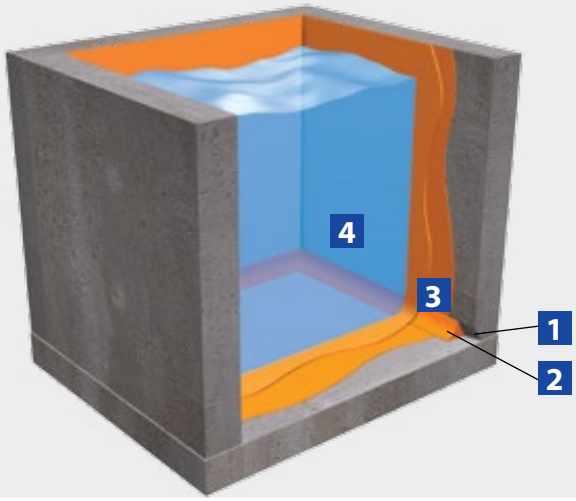
More informations at www.hydrostop.eu

LIST OF PRODUCTS

EXAMPLE USES FOR HYDROSTOP PRODUCTS

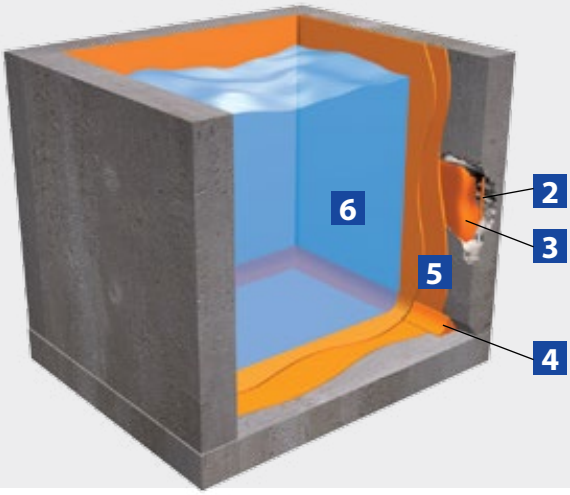
4a Sealing new water and sewage reservoirs

1. Make a groove and clean the reservoir
2. Make a wedge-shaped seal along the wall joint using **Hydrostop-Mortar Waterproofing**
3. Apply the **Hydrostop-Professional** coating to the wall
4. Fill the reservoir with water



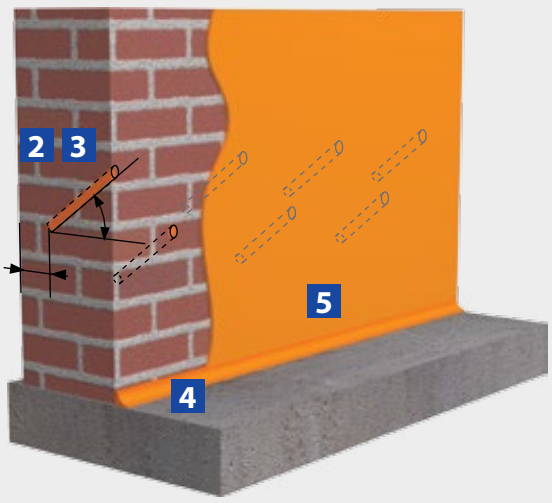
4b Repair and supplementary sealing of existing water and sewage tanks

1. Clean the reservoir surface by hydro-sandblasting
2. Passivize the reinforcement with **Hydrostop-Passivating**
3. Reprofile the damaged concrete areas with **Hydrostop-Repair**
4. Make a wedge-shaped seal along the wall joint using **Hydrostop-Mortar Waterproofing**
5. Apply the **Hydrostop-Professional** coating to the wall
6. Fill the reservoir with water



5 Waterproofing of masonry walls

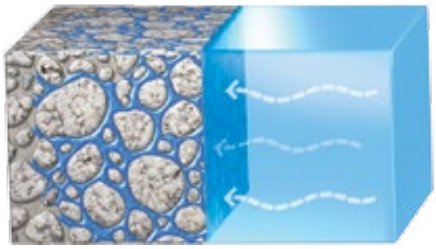
1. Remove old gray render affected by stains, bloom and spalling
2. Drill holes at 45 degrees
3. Fill the holes with **Hydrostop-Injective**
4. Make a wedge-shaped seal along the wall joint using **Hydrostop-Mortar Waterproofing**
5. Apply a vertical layer of the **Hydrostop-Injective** render



More informations at www.hydrostop.eu

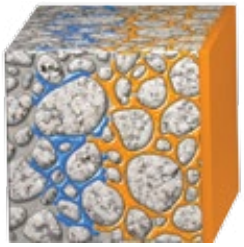
LIST OF PRODUCTS

THE WORKING PRINCIPLE OF HYDROSTOP PRODUCTS



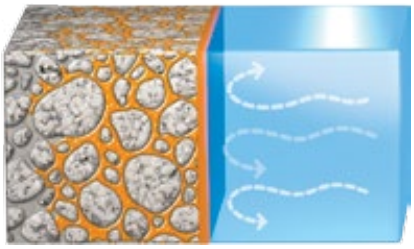
1 Leaking concrete

Ground water or water in a reservoir gradually soaks under pressure into pores and cracks in the concrete. Leaks occur and with time the concrete becomes less durable through corrosion.



2 Penetration by Hydrostop

Hydrostop active substances applied by brush or spraying are the first barrier to the water, but - more importantly - they permeate deep into the concrete structure, filling the pores with insoluble crystals.



3 Active protection

The concrete sealed with Hydrostop becomes impermeable to the water. Moreover, if new defects and microcracks appear, Hydrostop forms new crystals in these voids, thus ensuring a self-healing property of the waterproof barrier.

SELECT PROJECTS

Waterproofing a sewage treatment plant, Bielsk Podlaski, Poland.

Waterproofing a foundation slab and slab-to-slurry wall joint, Kraków, Poland.

Restoration of vertical and horizontal waterproof protection, Białobrzegi, Poland.

Waterproofing the bottom of a foundation slab, Katowice, Poland.

Waterproofing the top of the roof structure on Tunel Świętokrzyski, Warszawa, Poland.

Waterproofing concrete elements on a stadium terrace, Kielce, Poland.

HYDROSTOP INTERNATIONAL

2 nd Floor, Block H, Southgate Office Village,
286c Chase Road, London, N14 6HF,
United Kingdom

mobile: +44 7541729983
e-mail: office@hydrostop.co.uk
www.hydrostop.eu

LIST OF PRODUCTS

CONCRETE
Waterproofing System

LIST OF PRODUCTS

Technical instruction - Product no. 209

HYDROSTOP-PROFFESSIONAL COMPOUND

Extra-adhesive dry compound for crystalline waterproofing of reinforced concrete

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.

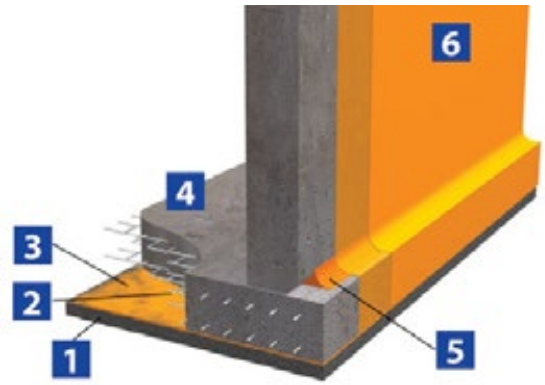


Fig. 1: Comprehensive waterproofing of basement using Hydrostop: 1 - lean concrete; 2 - reinforcement; 3 - foundation slab; 3 - evenly spread layer of Hydrostop-Mix; 4 - edge of slab sealed with Hydrostop-Proffessional Compound; 5 - wedge-shaped seal made from Hydrostop-Mortar; 6 - side of wall waterproofed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

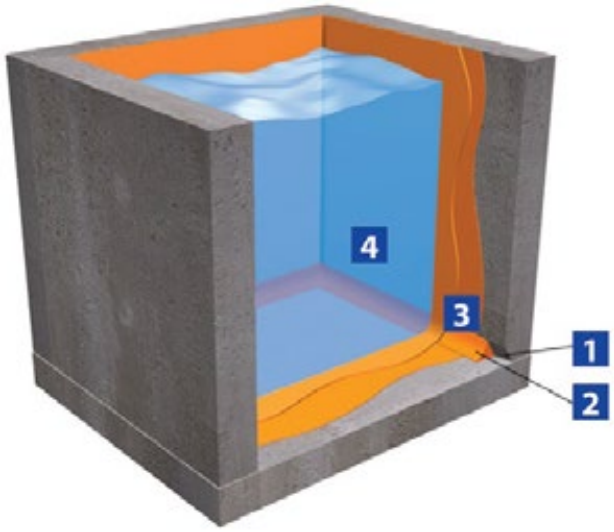


Fig. 2: Waterproofed new reinforced-concrete tank: 2 - wedge-shaped seal made from Hydrostop-Mortar; 3 - penetrating coating made from Hydrostop-Proffessional Compound.

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

LIST OF PRODUCTS

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

HYDROSTOP®
HYDROSTOP Zakład Wytwarzania Materiałów Izolacyjnych.
Information, sales and support:
ul. Bruszewska 10, 03-046 Warszawa, www.hydrostop.pl
tel. 22-8110895, tel/fax 22-6142666, tel. 602-616556

LIST OF PRODUCTS

HYDROSTOP-MIX

Dry compound for crystalline waterproofing of reinforced concrete

PRODUCT PROPERTIES

- **Penetrates concrete to at least 5cm deep,**
- **Water permeability at a minimum of 60m of water column,**
- Water access renews sealing capacity,
- Makes waterproofing slab bottoms easy,
- Unlimited durability of waterproofing,
- Resistant to XA1 and XA2 aggressive water,
- Concrete-compatible
- Also waterproofs basements from inside,
- Environmentally friendly, harmless.

USE

Hydrostop-Mix is used for waterproofing concrete structures against water pressure and for protection against environmental factors up to XA2 aggressive. The waterproofing of concrete and reinforced concrete is done by covering the bottoms of slabs with a thin layer that integrates with the slab material and crystallizes inside, which is incomparably more effective than bituminous and bentonite waterproofing. Primarily used for foundation slab bottoms, spread and strip footings, 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 for waterproofing work during construction stages. The product is used as indicated above in residential, industrial and public utility construction, both on the inside and on the outside. It is not flammable and does not contain ingredients that react with oxygen. This compound does not reduce electrical conductivity between ground and slab reinforcement. Hydrostop-Mix is mainly used as a waterproofing base prior to pouring of concrete; for waterproofing by brush or rubbing in, product no. 209 Hydrostop-Proffessional Compound is recommended. Masonry walls and prefabricated roofs should be waterproofed with other Hydrostop products.

WORKING PRINCIPLE

Hydrostop-Mix is a cement-and-sand powder that is sifted under concrete to be poured. The penetrating effect is obtained by the ingredients migrating into the wet concrete to at least 5cm 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 for higher initial values the property reaches at least W8. Once waterproofed, concrete is resistant to slightly acidic and alkaline water with a pH between 4.5 and 12.5.

Fig. 1. Waterproofing the slab bottom and slurry wall keyway: 1 - keyway; 2 - lean concrete under slab; 3 - keyway seal; 4 - reinforcement; 5 - Hydrostop-Mix sifted evenly; 6 - slab concrete; 7 - wedge-shaped seal at wall.

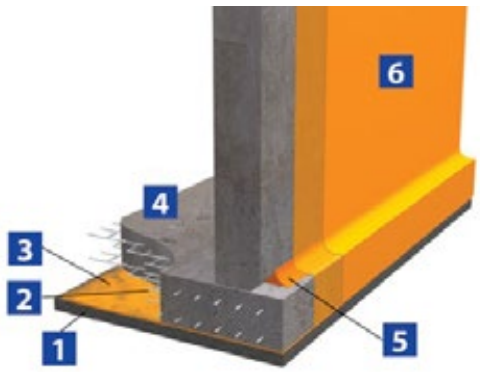


Fig. 2. Recommended waterproofing method for the foundation slab: 1 - lean concrete; 2 - reinforcement; 3 - Hydrostop-Mix sifted under slab (3kg/m²); 4 - edge of slab sealed with Hydrostop-Proffessional Compound; 5 - wedge-shaped seal from Hydrostop-Mortar; 6 - vertical waterproofing from Hydrostop-Proffessional Compound.

PREPARATION OF THE SUBSTRATE

The substrate needs to be cleaned of any dirt, mud, sawdust and debris. Pools no deeper than 1cm are acceptable prior to pouring concrete. If there is more water, it must be removed depending on the space available and access to the location of the slab bottom. A water pump or a water vacuum cleaner can be used. Sometimes a hole can be drilled in the thin concrete subbase to let the water soak into permeable ground layers. If concrete is to be poured into a dig subject to groundwater flooding, use of wellpoints is usually necessary.

APPLICATION OF THE PRODUCT

In dry weather the product is typically applied no sooner than 2 days before pouring concrete. It can also be done a few hours or immediately before pouring concrete. The work order for a foundation slab bottom is as follows:
Spread construction sheeting over compacted ground and pour a 5cm layer of lean concrete. If there are slopes that are accessible, coat them by sifting ~1.5kg/m² in two layers. Next, install reinforcement and formwork. Just before pouring the foundation slab, apply 3kg/m² of the dry pro-

duct through the reinforcement over the lean concrete using a 2mm sieve. The allowed width of reinforcement supports on the lean concrete is 5cm. Sweep the powder off the upper mesh. If there is rainfall between the sifting and the concrete pour, check the substrate and re-sift the dry product where necessary. Pour concrete ensuring that the strong stream is not aimed directly at the coating. If necessary, use 2x2cm reinforcement mesh and start pouring the concrete through it.

CARE

Waterproofing made by sifting prior to pouring concrete does not require any maintenance.

REMARKS

Concrete floors subject to hydrostatic pressure (even a water column of several dozen centimeters) sustain strong forces and must have adequate thickness and reinforcement. The waterproofing should reach 50cm above the top water levels. 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. 2, item 5). 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).

SAFETY PRECAUTIONS

Mieszanka 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-Mix 203
Product type: Dry mixture for concrete waterproofing coatings through crystallization
Form: gray powder
Approx. total yield: 2 to 3kg/m^2
Packaging size: 25kg,
Dry weight: 1,15 kg/dm^3±10%
Application temperature: same as for correct concrete pouring
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. According to ITB approval the product is resistant to sulfates, phenols and lactic acid. Resistance to industrial waste aggressive on concrete is not guaranteed.
Application by brush:
Substrate: Typically lean concrete (C8/10 to C20/25)
Reaction-to-fire Euroclass: A1,
Use before: 1 year from production (full package) Protect from moisture.
Reference documents: PZH no. HK/B/0397/01/2013; Technical approval ITB AT-15-2680/2007; safety sheet. Updates at www.hydrostop.eu

Being an excellent waterproofing product, HYDROSTOP has received numerous awards over the years. It was awarded at INBUD ’90 (medal), at NOWE MATERIAŁY ‘92 and ZŁOTA SYRENKA in 1999. In 2003 it was recognized as an eco-friendly construction material. It was also awarded at WPPK in Szczyrk in 2007 and 2011 whereas the key product, Hydrostop-Mieszanka Profesjonalna, became a product of the year at TopBuilder.

HYDROSTOP®
HYDROSTOP Zakład Wytwarzania Materiałów Izolacyjnych.
Information, sales and support:
ul. Bruszewska 10, 03-046 Warszawa, www.hydrostop.pl
tel. 22-8110895, tel/fax 22-6142666, tel. 602-616556

LIST OF PRODUCTS

Technical instruction - Product no. 303 - one-minute, and product no. 304 - two-minute

HYDROSTOP-FIX

Fast-setting cement with penetrating additive for stopping water leaks

PRODUCT PROPERTIES

- **Stops leaks instantly,**
- **Good adhesion and plasticity,**
- **Good strength and freeze/thaw resistance,**
- **Water impermeable at ≥60m of water column,**
- Resistance to XA1 and XA2 aggressive water,
- Resistance to pH > 4.5 to 12.5,
- Resistant to household sewage,
- Vapor-permeable,
- Concrete-compatible,
- Single-component for mixing with water.

USE

The Hydrostop-Fix fast-setting cements are used for stopping active water leaks in concrete structures in case of:

- contraction cracks in concrete,
- construction joints,
- mount holes,
- leaking concrete surfaces.

Hydrostop-Fix is used for sealing concrete structures subjected to water pressure, e.g. from groundwater flowing into basements, pits and channels, or water leaking out of a filled tank etc. The products are applicable as mentioned above both inside and outside in residential, industrial, public utility, and road/bridge construction. The products are inflammable. At temperatures <15°C use of product no. 303 is advised. No. 304 can also be used by divers under water. Both no. 303 and no. 304 are not designed for mounting heavy objects or sealing masonry walls, expansion joints and active cracks.

WORKING PRINCIPLE

Mixed with water and worked into putty-like consistency, the cement is pressed into a hole or a crack. The thick, pliable sealing material becomes warm and starts hardening. Penetrating additives ensure that the seal-to-concrete connection and the surrounding structure are waterproofed. With the recommended depth of the hole/crack in concrete, water impermeability is ensured at approx. 60m of a water column. The cement can also be useful in sealing connections of concrete and synthetic materials (e.g. PVC and PE) as a preparatory stage for Hydrostop-Elastyczny Zbrojony. Setting time depends on the temperature of the ingredients, amount of mixing water and ambient temperatures. This instruction gives setting times at 20°C.

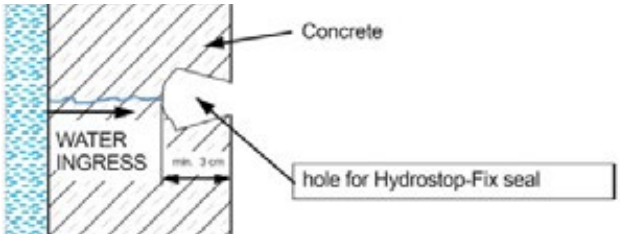


Fig. 1. A dovetail-shaped crack or hole for a shallow seal.

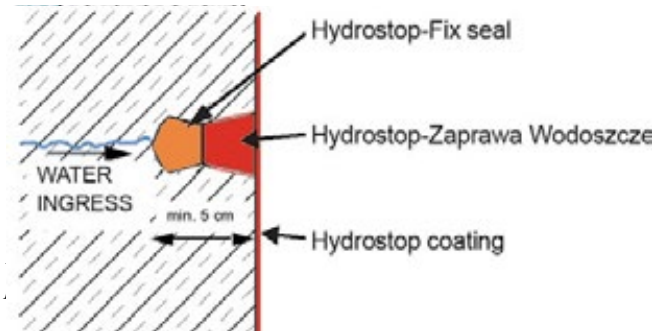


Fig. 2. A deep-set seal.

PREPARATION OF THE SUBSTRATE

The leaking hole or crack should be chiseled out and cleaned if necessary. If water is leaking over a metal rod, the rod needs to be cut at least 3cm below the concrete surface. The enlarged hole/crack should have parallel sides - preferably as shown in Figure 1. Clean the hole with a stream of water. The hole diameter or crack width should not exceed 60mm.

MIXING THE PRODUCT WITH WATER

Wear watertight rubber gloves. Mix a small amount of the cement with water in a half of a rubber ball or another vessel with a similar shape. The water and cement should be worked quickly into a thick putty-like consistency and formed into a sphere or cylinder. Use as little water as possible to obtain the desired cosistency. The less water, the more rapid the setting and strength of the seal. Hydrostop-Fix should be mixed with water in half the time specified as hardening time, hence for product no. 303 the mixing time cannot exceed 30 seconds. If the water amount turns out to be wrong once mixing has begun, the mixture should be thrown away.
Note: the Fix must be kept in tightly closed packaging if not used, as it absorbs air moisture very quickly, losing its properties.

MAKING A SEAL

Sealing is usually done at least 7 days after the concrete has been curing. If this period is shorter, it may be necessary to make corrections in areas of the highest tension. A minimum layer of the cement is 0.5cm but the user is advised to shape the seals as shown in the drawings.

Making an ordinary seal:

Once the seal starts getting thicker, press it strongly into the gap and - if there is a strong water pressure - hold the seal for about 2 minutes with the hand or a round tool. The ambient temperature affects binding times. In 0 to 10°C use water and the Fix at room temperature; in 25 to 30°C use water and the Fix out of a refrigerator. With notoriously leaking partly filled holes, you can fill/press a dry product no. 303 into the leak while heating the spot with a heat gun.

Stopping holes over dia. 60mm:

Large holes, cracks and passages with flowing water can be closed with impermeable concrete blocks, with Hydrostop-Fix used as a bond. In order to prevent excessive accumulation of water it is a good practice to leave a small hole to be vlosed at the end of the sealing work.

Stopping water at high pressure:

LIST OF PRODUCTS

Set an 3/8" or a 1/2" insert at the spot of the strongest leak using Hydrostop-Fix. Start the sealing where the leakage is weakest. At the end close the insert with a cap and put a 'cap' of Hydrostop-Fix over it.

Sealing in structures of low utility requirements:

Put some Hydrostop-Fix no. 303 onto your rubber glove and in one fluid movement press the amount against a well-cleaned and dusted surface, holding to prevent the cement from being washed off. The thicknes of the layer should be between 0.5cm to 1cm.

Sealing below water table: At depths up to 0.5m holes are sealed like above water table. Places located deeper are sealed by a diver using product no. 304.

Note: Do not press or move a fresh seal, as it will be several hours before it becomes non-brittle.

SUPPLEMENTARY WORK

If the spot sealed is sweating a day after the sealing, a bigger layer can be applied at least 0.5cm thick. If there is a water film on the wall down from a certain height, it often means there is a horizontal crack that needs to be chiseled out and sealed. It is recommended to cover the seals with Hydrostop-Mortar and a coating of Hydrostop-Proffessional Compound.

CARE

A set seal needs to be kept moist for at least 5 days by sprinkling with water and placing plastic sheeting over it.

FINISHING WORK

Seals can be covered with ceramic tiles and paints after 1 day of curing provided that the area/room continues to be kept moist. Those materials should only be installed/applied after ensuring that the sealing has been done correctly (e.g. by a water test).

SAFETY PRECAUTIONS

Hydrostop-Fix contains cement clinker and is highly alkaline. It dries and irritates the skin (mucous membranes in particular).

Necessarily wear rubber gloves. Prolonged skin exposure to the product will cause strong irritation similar to that caused by prolonged exposure to washing powder. If the hands have been in contact with the cement for over 10 minutes, wash them in a solution of 1 part vinegar and 10 parts water, rinse with water and rub in an oil-based hand cream.

TECHNICAL DATA

Name and no.:	Hydrostop-Fix 303, 304
Product type:	Fast-setting cement with penetrating additive for stopping water leaks.
Form:	gray powder
Substrate:	concrete, block masonry walls, connection of steel with concrete, provisionally connection of plastics with concrete
Approx. yield:	1kg per 30 dia. 3cm balls, 1kg per 1m of length using a dia. 2cm roller, 2kg/dm^3 for fillings,
Packaging size:	2,5, 25kg,
Dry weight:	1,35 kg/dm^3±10%
Volume density when mixed:	2,1 kg/dm^3±10%
Water amount for no. 303,304:	1,8g per 10g Fix
Maximum hole diameter/crack width:	60mm
Strength after 6 hours:	≥12MPa (compressive)
Strength after 3 days:	≥20MPa (compressive) ≥4MPa (bending)
Strength after 28 days:	≥30MPa (compressive)
Water permeability after 28 days:	≥0,6MPa
Application temperature:	0°C to 30°C
Exposure class:	XA2 groundwater, household and agricultural sewage, pH 4.5 to 12.5, XD2 chlorinated drinking and swimming pool water, mineral/food/transformer oils, rain/river/lake/irrigation water, wxcept industrial waste aggressive on concrete (for XA2 an additional chemical-resistant layer is required), XC4, XF4
Reaction-to-fire Euroclass:	A1

SCHEDULING:

From pouring concrete/bricklaying to making seals:	when stable, recommended ≥7dni
Time of mixing with water:	30 seconds for no. 303 60 seconds for no. 304
Binding time at 20°C (materials and ambient):	40 to 120 seconds for no. 303, 60 to 210 seconds for no. 3044
Storage time at 95% humidity:	≥5 days
Installation of tiles/insulation:	≥1 day
Covering with moist soil:	≥1 day
Application of hydrophobic paints:	≥1 day

Use before: 1 from production (whole package). Protect from moisture.

Reference documents: Health safety PZH no. HK/W/0809/01/2011, Technical approval no. AT-15-7076/2006, safety sheet. Document updates at www.hydrostop.eu

Being an excellent waterproofing product, HYDROSTOP has received numerous awards over the years. It was awarded at INBUD '90 (medal), at NOWE MATERIAŁY '92 and ZŁOTA SYRENKA in 1999. In 2003 it was recognized as an eco-friendly construction material. It was also awarded at WPPK in Szczyrk in 2007 and 2011.

HYDROSTOP®

HYDROSTOP Zakład Wytwarzania Materiałów Izolacyjnych.
Information, sales and support:
ul. Bruszewska 10, 03-046 Warszawa, www.hydrostop.pl
tel. 22-8110895, tel/fax 22-6142666, tel. 602-616556

LIST OF PRODUCTS

Hydrostop-Mortar

Cement mortar with penetrating additive for sealing and rendering.

PRODUCT PROPERTIES

- **Excellent to work with,**
- **Freeze-resistant, adhesive and durable,**
- **Water-impermeable to at least 100m of water column,**
- **Resistant to XA1 and XA2 groundwater,**
- Resistant to pH 4.5 to 12.5, household sewage, oils and sugar solutions,
- Vapor-permeable,
- Easy to use, environmentally friendly,
- Better properties than Hydrostop-Plast.

USE

The mortar is used for making wedge-shaped seals, rendering, and for closing holes, gaps, voids, pits and cracks. It is used as a waterproof mortar on walls made of concrete blocks, concrete and bricks without efflorescence. Use in locations where water is not flowing during the sealing. The product also replaces bituminous horizontal waterproofing on the top faces of masonry foundation walls, which permanently eliminates the risk of capillary transport of moisture. The product is for outside and inside use in residential, indutrial and public utility construction. It is inflammable. For waterproofing monolithic concrete structures use Hydrostop--Proffessional Compound; for stopping water leaking out under pressure use Hydrostop-Fix. Product no. 401 is not to be used on marble. If there is efflorescence on the wall, use Hydrostop-Injective. Waterproof rendering of large areas is usually done with Hydrostop-Plast.

WORKING PRINCIPLE

Hydrostop-Mortar is in the form of dry, gray cement-and--sand mortar. Once they bind with water, the penetrating ingredients seal the mortar's pores and the surrounding structure that is connected with the mortar. The sealing additive crystallizes inside the capillaries and permanently prevents water absorption, has a drying effect and does not stop vapor. Particularly significant is the ability to seal the connection of mortar applied and the substrate in cracks. The crystallizing capacity is renewed under water pressure, a sort of self-regulating behavior of the seal. A layer of only 0.5cm thick is impermeable to water to at least 100m of water column. The mortar remains waterproof even at a rendering consistency.

PREPARATION OF THE SUBSTRATE

The groove/rebate for a wedge-shaped seal can be made using a concrete scabbler or with the help of a profile installed prior to pouring concrete that leaves a required recess on removal. The substrate should be cleaned of any dirt, substances, paint and weakly adhesive layers. If there is corroded concrete on the surface, remove it using a hammer or a scabbler. Water leaks, e.g. leaking cracks or others that might wash off the mortar to be applied should be closed using the Hydrostop-Fix fast-setting cement. Concrete subject to freezing should have an initial resistance rated at least at F100 or be insulated. Remove dust from the surface and moisten it, e.g. using a pressure washer, before applying the product.

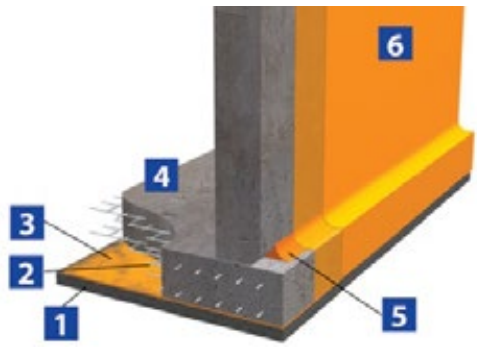


Fig 1. A wedge-shaped seal on the outside along with other waterproofing components: 1 - lean concrete; 2 - reinforcement; 3 - foundation slab; 3 - layer of Hydrostop-Mix spread evenly; 4 - edge of slab waterproofed with Hydrostop-Proffessional Compound; 5 - wedge-shaped seal made from Hydrostop-Zaprawa Wodoszczela; 6 - side of wall waterproofed with Hydrostop-Proffessional Compound.

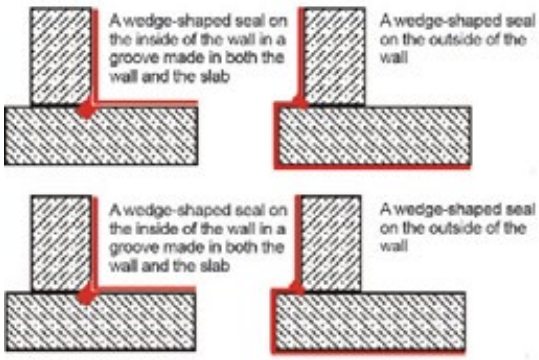


Fig. 2. Alternative solutions for rendering and a wedge-shaped seal along the wall. Such seals are also made in vertical construction gaps.

MIXING WITH WATER

A 25kg bag of the product is poured into 3.5 liters of water while mixing. Once the mix is uniform (achieved using a mortar mixer set to 300 rpm), start applying the product. When making mortar for rendering use as much water as needed for the work. Mixed with water, the product must be used within 30 minutes at most. An additional description of dry application is below.
Note: The product contains a cement with reduced binding and hardening times - therefore in higher ambient temperatures use it unheated or cooled and with cool water directly from a tap.

APPLYING THE MORTAR

The rendering mortar typically applied after at least 7 days of curing the substrate. The wedge-shaped seal waterproofing the connection with the wall of a slab poured over strip footing should be made after 4 weeks according to the instructions below. If this period is shortened, it may be necessary to make corrections in areas of the highest stresses.

LIST OF PRODUCTS

Alternative procedures

Making a wedge-shaped seal to waterproof the connections of reinforced-conrete slabs:

Figures 1 and 2 show the ways to seal connections. The sides of the wedge touching the wall and the slab can be approximately 4cm wide. If the reinforced concrete has been freshly poured, it should cure in moisture for at least 3 weeks and subsequently be dried for 10 days to stabilize the shrinking prior to making the seal. It is recommended that the seal be additionally protected with a coating of one of the Hydrostop products

- a seal of up to 5m in length in a straight line should be coated with Hydrostop-Proffessional Compound,
- between 5m and 10m in a straight line with Hydrostop-Superelastyczny,
- and if stresses are anticipated between the parts being sealed or the seal is longer than 10m it should be coated with Hydrostop-Elastyczny Zbrojony.

When sealing a floor slab, the slab concrete should be at least grade C15/20 as well as thick enough and reinforced so that it does not get broken out or moved up once waterproofed. If the floor requires anchorage or supplementary reinforcement, the guidelines are given in a separate instruction.

Filling up small defects, sealing construction joints and tie-rod holes:

Put Hydrostop-Mortar mixed with water into a moistened substrate using a putty knife. Flatten the surface with a steel trowel. The voids being filled up should not be more than 10cm wide or less than 1..5cm deep.

Making waterproof render:

Remove bituminous waterproofing, paint coatings and existing render from masonry walls. Loose fragments of bricks or blocks should be removed as well. The wall grouts should be chiseled out to approx. 1cm deep. Clean the wall of dirt and dust. Keeping the wall moist, cover it with a layer made from cement mixed with sand at a 1:1 ratio. After at least 3 days apply a layer of Hydrostop-Mortar at least 0.5cm thick and not thicker than 1.5cm outside the grouts. The render should not be floated with a felt trowel but only smoothed with a steel trowel.

CARE

The mortar should cure in moisture in a temperature of at least 2°C during the forst 24 hours. The set mortar should be kept moist for at least 4 days, and a layer of render for 7 days at a humidity of >90%. The high humidity should be maintained by sprinkling with water and covering with plastic sheeting.

Note: If there is an excessive amount of mixing water and not enough curing time in moisture, cracks may appear due to shrinkage.

FINISHING WORK

The mortar can be covered with ceramic tiles and hydrophobic paints after 1 day of curing provided that the area/room continues to be kept at a high relative humidity of over 90%. It is recommended that those materials are only applied after ensuring that the waterproofing has been done correctly (e.g in a water test).

SAFETY PRECAUTIONS

Hydrostop-Mortar contains cement clinker, which can dry and irritate the skin and mucous membranes. Use of rubber or vinyl gloves is therefore advised. A safety sheet and health attestation can be provided on request.

TECHNICAL DATA

Name and no.:	Hydrostop-Mortar 401
Product type:	Cement mortar with penetrating additive for waterproof sealing and rendering
Form:	gray cement-and-sand mortar
Substrate:	concrete, brick and concrete block walls,
Approx. yield:	12kg/m^2 of render at 0.5cm thick, 3.5kg/m of wedge-shaped seal, 2kg/dm^3 for fillings,
Packaging size:	25kg,
Dry weight:	1,47 kg/dm^3±10%
Mixture density:	2,2 kg/dm^3±10%
Water admixure:	3 to 3.7 liters per 25kg
Maximum layer thickness:	1,5cm
Maximum void/filling width:	<10cm
Width of non-structural crack:	<2cm
Strength after 3 days:	≥25MPa (compressive) ≥5MPa (bending)
Strength after 28 days:	≥35MPa (compressive)
Water permeability after 28 days:	≥1MPa dla 0,5cm
Application temperature:	2°C do 30°C

Exposure class: XA2 and pH 4.5 to 12.5 groundwater, household and agricultural sewage, XD2 chlorinated drinking and swimming pool water, mineral, food and transformer oils, rain/river/lake/irrigation water, sugar solutions, except industrial waste aggressive on concrete (chemical protection required), XC4, XF4

Klasa reakcji na ogień: A1

SCHEDULING:

From setting of concrete or building the wall to filling small defects: immediately possible, recommended ≥7dni

From pouring the wall on a foundation slab: ≥7dni

From making the floor to making the wedge-shaped seal around the floor over a strip footing: 28 days for regular concrete, 14 days for rapid-hardening concrete

Time of mixing with water:	~4min. (300rpm)
Time for application once mixed:	30 min.
Storage time at 95% humidity:	4 days for defects, 7 days for render
Unlimited walking over mortar:	>24 h
Wheel traffic over mortar:	≥2 days
Installation of tiles/insulation:	≥1 day
Covering with moist soil:	≥12h
Application of hydrophobic paints:	≥1 day
Flooding with water:	≥12h

Use before: 1 year from production (full package). Protect from moisture.

Reference documents: Technical approval ITB AT-157578/2013, PZH HK/B/1581/03/2008, safety sheet. Document updates at www.hydrostop.eu

HYDROSTOP®

HYDROSTOP Zakład Wytwarzania Materiałów Izolacyjnych.
Information, sales and support:
ul. Bruszewska 10, 03-046 Warszawa, www.hydrostop.pl
tel. 22-8110895, tel/fax 22-6142666, tel. 602-616556

LIST OF PRODUCTS

HYDROSTOP-PENETRATING MAT

Concrete-waterproofing membrane - sheeting with a layer of crystallizing compound

PRODUCT PROPERTIES

- **Rolled waterproofing membrane,**
- **Waterproofs due to a layer of plastic and deep penetration,**
- **No gluing or heat-sealing required,**
- Easy to apply,
- Penetrates concrete to at least 5cm deep,
- Ensures an unlimited durability of the barrier,
- Eliminates carbonatation in concrete.

USE

Hydrostop-Penetrating Mat is laid on horizontal, sloped and vertical surfaces prior to pouring reinforced concrete slabs, walls, strip footings etc. The membrane waterproofs reinforced concrete elements and structures after fresh concrete is poured over it. It features a layer of penetrating agents which crystallize inside the concrete, sealing the pores that appear as more storeys are constructed and seasonal thermal stresses occur. This provides an incomparably more effective protection than bituminous layers or bentonite membranes. To be installed on: foundation slab sides, strip footings, spread footings, monolithic walls and the bottoms of reinforced floor slabs.

The product has been designed for waterproofing the basements of buildings and other structures (cellars, underground parking lots), water reservoirs, sewage treatment plants and pumping stations, septic tanks, swimming pools. It is mainly used in locations hard to reach for this purpose. Installation is only done while construction is in progress. This item's range of applications as outlined above is utilized in residential, industrial and public utility construction.

Other parts of structures are often constructed using Hydrostop-Proffessional Compound and Hydrostop-Mix. Masonry walls and expansion joints are to be waterproofed with other Hydrostop products.

Pic. 1. The side of a foundation slab and an elevator shaft pit waterproofed with Hydrostop-Penetrating Mat.

HOW IT WORKS

Hydrostop-Penetrating Mat features construction sheeting with a rough layer of penetrating compound. A fresh concrete mix poured over the membrane bonds with the penetrating layer. The membrane waterproofs through coating and penetration. In the waterproofing penetration the ingredients diffuse into the wet concrete to a depth of at least 5cm and crystallize inside the pores, which permanently prevents water from permeating the concrete.

The concrete to be poured should be at least class C12/15 for strength and W2 for water permeability.

Photo. 1. The side of a foundation slab and an elevator shaft pit waterproofed with Hydrostop-Penetrating Mat.

Photo. 2. Concrete being poured over a wall, with the surface covered with Penetrating Mat.

APPLICATION OF MEMBRANE TO SUBSTRATE

On surfaces which are horizontal and sloped at up to 25% the membrane can be secured with concrete blocks supporting the reinforcement. On severely sloped and vertical surfaces the membrane should, if possible, be secured at the top edge of the surface. In the case of Berlin walls or permanent wooden formwork e.g. roofing nails with washers can be used above the concrete pouring area. With steel formwork, the membrane can be secured with double-sided adhesive tape sticked to a degreased substrate, or better with slats to support the membrane at the top edge of the formwork. Adjacent sheets should have an overlap of ca. 5cm. The overlapping areas of the membrane are not to be glued together, and discontinuities of up to 5cm wide do not cause loss of waterproofing properties due to the membrane's penetrating effect. Once installed, the membrane should be checked for ponding every two days prior to pouring concrete. If water puddles deeper than 1cm are found, the water needs to be removed with a pump or drained under the sheeting through a hole made for this purpose.

LIST OF PRODUCTS

POURING CONCRETE

Concrete should be poured from the middle of the sheet toward the edge, avoiding ridge formation and detachment of the membrane from the substrate.

CARE

Hydrostop-Penetrating Mat ensures the right humidity of the concrete surface when curing and facilitates removal of formwork from newly made walls.

ADDITIONAL INFORMATION

Hydrostop-Penetrating Mat is resistant to rain and small water puddles in birdbaths on horizontal surfaces. Prior to pouring, regular checks should be done in accordance with this instruction as described above in order to remove excess water.

FINISHING WORK

If a surface covered with the membrane requires subsequent layers, it is recommended to drill holes up to 5cm deep and use wall plugs. If it is necessary to fasten using deeper holes, every hole needs to be injected prior to anchor/plug installation with 1cu.cm of Hydrostop-Proffessional Compound diluted with water until a creamy mix is obtained or a 10cm long strip of Hydrostop-Penetrating Mat needs to be inserted into the bottom of every hole, with a width equal to that of the hole diameter.

HEALTH AND SAFETY

Hydrostop-Penetrating Mat is as safe in terms of work health and safety as regular construction sheeting. The safety sheet and certificate are available upon request.

TECHNICAL DATA

Name and no: Hydrostop-Penetrating Mat 541
Type of product: sheeting with a layer of crystallizing sealant
Type: roll
Fresh concrete: developed to a minimum strength class of C12/15 and water permeability class of W2
Package size: 20m x 2m roll (40m^2)
Thickness: >= 0.3mm
Approx. yield: 1.05m^2/m^2
Unit mass: 0.35kg/m^2
Width of crystallized non-structural crack: <=0.3mm
Water permeability after 28 days: >=0.6MPa
Installation temperature: -15°C to 50°C
Exposure class: XA3
Reaction to fire Euroclass: F

SCHEDULING

Time from pouring concrete to removal of formwork with pre-applied penetrating membrane: once concrete has hardened.
Concrete should be poured within 60 days of when membrane was installed.
Between membrane installation and concrete pouring checks should be done every 2 days for water puddles over 1cm, which need to be removed.
Use before: 2 years from production date for complete packages.

References: PN-EN 13967:2012, Certyfikat ZKP Nr 1454-CPR-1022, Atest Higieniczny PZH HK/B/1089/01/2015, Safety sheet.
Document updates available at: www.hydrostop.eu

HYDROSTOP®
HYDROSTOP Zakład Wytwarzania Materiałów Izolacyjnych.
Information, sales and support:
ul. Bruszewska 10, 03-046 Warszawa, www.hydrostop.pl
tel. 22-8110895, tel/fax 22-6142666, tel. 602-616556

LIST OF PRODUCTS

MASONRY
Waterproofing System

HYDROSTOP-INJECTIVE

Penetrating barrier against capillary distribution of moisture in masonry structures

PRODUCT PROPERTIES

- **Systemic barrier: horizontal, vertical and to water pressure,**
- **High waterproofing effectiveness,**
- **Penetrates even to 25cm from the hole,**
- Environmentally friendly and odorless,
- Resistant to XA2 groundwater, pH 4.5 to 12.5, household sewage, soap and detergents,
- Physical and chemical properties are compatible with walls and bonding mortar,
- Unique set of features.

USE

Hydrostop-Injective is used for stopping horizontal and vertical capillary water distribution throughout structural walls. It is suitable for new walls and old walls made of red ceramic brick affected by damp, concrete blocks and cinder blocks bonded with at least M5 cement-and-lime mortar. Worki is done without having to expose the foundation. Vertical waterproofing applied as render can be used on stable walls made of red bricks, cinder blocks, concrete blocks, GGBS concrete blocks and stone. The product is used in residential, industrial and public utility construction, with drills made on the inside or the outside of the structure. It is inflammable. Where there is no efflorescence, rendering is usually made from Hydrostop-Mortar or Hydrostop-Plast. For injection in silicate bricks, AAC blocks and bricks bonded with lime-and-sand mortar or in stone, Hydrostop-Injective Fluid is used instead of Hydrostop-Injective.

WORKING PRINCIPLE

In clay-rich and damp soils, brick foundations easily soak in the water after rainfall and at periodic increased groundwater levels. The water collected at the low layers of the bricks is transported upward through the capillaries even several meters high. For a horizontal barrier holes are drilled in the existing wall to be filled with the product mixed with water. For permanent vertical waterproofing Hydrostop-Injective mixed with sand and water is applied as render onto the cleaned wall. The barrier-forming compounds are hydrophilic, so they attract moisture and spread in its presence up to 25cm from the place of application, filling out the bricks and grouts. The layer of bricks and the mortar that bonds them around the injection points effectively stop the capillary upward transport of moisture and become moist themselves. With horizontal waterproofing there is vertical waterproofing at the same time to a height of at least 20cm above the top row of holes. If the ceramic red brick wall is no more than 25cm thick, vertical waterproofing applied as a 30cm-high strip will cause the formation of a horizontal barrier without the need for drilling holes.

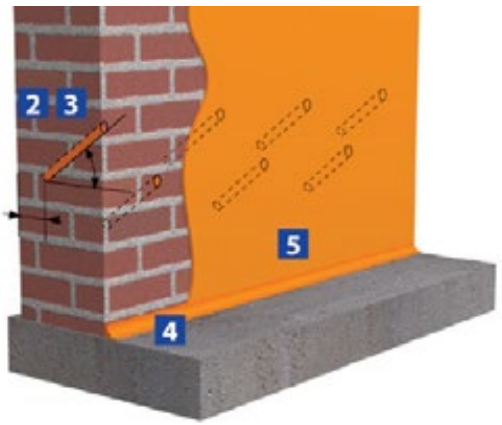


Fig. 1: An illustration of waterproofing: 3 - injection holes, 4 - wedge-shaped wall seal, 5 - vertical waterproofing.

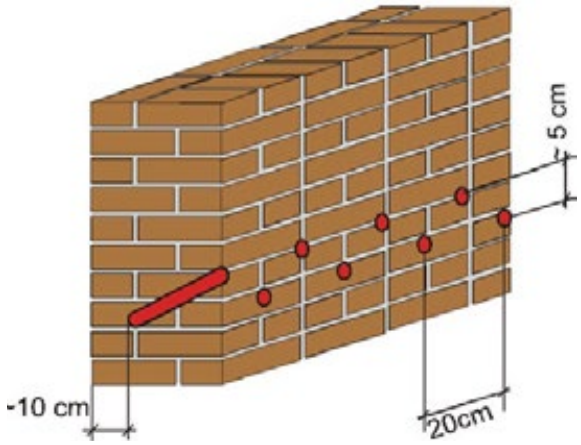


Fig. 2. Hole spacings for a horizontal barrier.

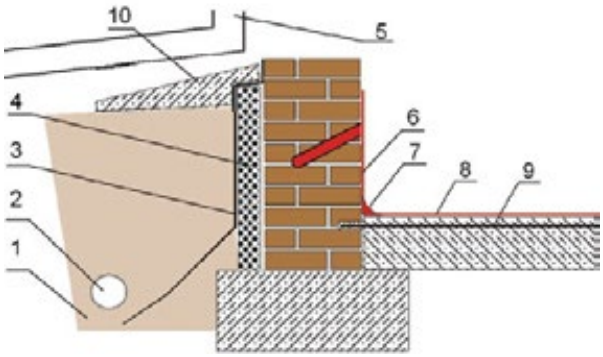


Fig. 3. A wall section with possible drainage.

1 - sand or gravel filetr, 2 - drainpipe (not required) wrapped in filtration layer, 3 - construction sheeting for vapor-impermeable barrier, 4 - insulation to prevent excessive heat loss in walls, 5 - discharge pipe to transport rainwater away from the building, 6 - vertical waterproofing made from Hydrostop-Injective, 7 - wedge-shaped wall seal made from Hydrostop-Injective mortar, 8 - coating made from Hydrostop-Proffessional Compound, 9 - floor reinforcement bar (if hydrostatic pressure from below is high), 10 - concrete apron to reduce amount of water soaking in at wall.

LIST OF PRODUCTS

CHOICE OF LOCATION FOR DRILLING HOLES

The height at which to drill holes is determined based on where the damp is most extensive (see Fig. 2). In order to assess that, the render needs to be removed in the location to see at what height the bricks become clearly darker in color. The height is typically no more than 1m above the strip footing and should not be above ground level, but if the building stands on clay-rich ground or if the foundation wall is not waterproofed across its entire area against moisture form the ground, holes are typically made at ground level. On the other hand, if the existing vertical barrier is known to be performing effectively or if it was made from Hydrostop-Plast or Hydrostop-Mortar, holes can usually be drilled from the inside at a level of 40-50cm above the basement floor. With walls thicker than 24cm holes are drilled from inside or outside the building in two rows with a hammer drill (not a rotary hammer) using a dia. 20-24mm drill (see Fig. 2) at an angle of approx. 45º, without drilling through the wall. The minimum number of holes is ten per 1m of wall length - thus five per row. Holes can also be drilled from both sides of the wall or at a different angle, but always in such a manner that approx. 3.8kg of Hydrostop-Injective be used per 1m2 of horizontal waterproofing (1m2 of horizontal cross section area of the wall), with maximum spacings between the holes being not more than 20cm.

FILLING THE HOLES

The mixture with Hydrostop-Injective can be introduced using a watering can with a narrow spout or a funnel until the naturally moist or pre-moistened holes are fully filled. In the case of concrete blocks holes are drilled in a single row only in vertical grout joints. The render should be removed from the floor to 20cm above the top holes, the grout joints should be hollowed out a bit and vertical waterproofing applied as described below.

VERTICAL WATERPROOFING

The wall should be carefully cleaned of traces of render and efflorescence, preferably using a small diamond disc on an angle grinder with adjustable speed. The grout should be hollowed out to a depth of 0.5-1cm. The cleaning can be done with a scabbler, drill-mounted brush or using another method. Vertical waterproofing is made from mortar composed as follows (by weight): 1 part Hydrostop-Injective, 3 parts coarse washed sand and 0.6 parts water. In mixng the mortar a lot of dryness can be observed intitially - Hydrostop--Injective gradually dissolves in water for 2-3 minutes. The amount of water can be slightly different depending on the moisture content in the sand. In practice the amount of water should be such as to yield mortar that will stick to the bricks and will not flow down with a layer thickness of 2.5cm. The first layer of the mortar is pressed into the pre-moistened substrate with a putty knife. Once this first layer starts binding, the rest of the compound is applied. The applied mix of Hydrostop-Injective and sand should be worked in like ordinary render, ensuring that the minimum total thickness is not less than 0.6cm and the maximum not more than 1.2cm. A wedge-shaped seal is made at the joint between the wall and the floor instead of the render (see Fig. 3, item 7). The yield of Hydrostop-Injective is about 3.8kg/m2.

NOTES

The rooms waterproofed must be well ventilated during use. It is recommended not to let warm, humid air into the basement from inside higher parts of the building because if the walls are cool, water condensation will take place. It is better to install ducts for outside air inflow. Poor ventilation results in increased humidity in the air and subsequently water vapor condensation on top of the render made from Hydrostop-Injective no. 721. If it is impossible to ensure proper ventilation, it is recommended that an extra layer of Hydrostop-Plast or Hydrostop-Mortar be applied. Apart from these steps it is good (especially for water-impermeable ground) to install outside heat insulation for the building, a vapor barrier and to transport rainwater farther from the building (as in fig. 3), with a possible drainage installed as well. Moisture barriers are usually made for the outside walls of a building. However, it needs to ensured that the partition walls do not soak with water, either. For this it is usually sufficient to make a 30cm-wide strip of vertical waterproofing (using Hydrostop-Injective) on the partition wall along the connection of the outside wall with the corner of the partition wall. For partition walls thicker than 25cm vertically arranged holes are drilled, with a minimum of ten holes per 1m of length, and vertical waterproofing is additionally made. The outside walls of the building should have heat insulation if possible up to a level of at least 50cm above the top row of injection holes as shown in Fig. 3. Depending on the local conditions, such insulation should be made of extruded polystyrene (XPS) or expanded polystyrene (EPS), or possibly hard mineral wool. The minimum thickness of the external insulation is 10cm.

FINISHING WORK

Vertical waterproofing can be covered with ceramic tiles and paints after curing for 5 days provided that the area continues to be kept moist. Silicone or other hydrophobic paints are recommended. Do not use plaster renders, plasterboard or cement-and-lime renders. If the layer of render needs to be evened out, thickened or added in places not threatened by damp, use of Hydrostop-Mortar or Hydrostop-Plast is advised.

TECHNICAL DATA

Name and no.: Hydrostop-Injective 721
Product type: penetration waterproofing vertical and horizontal barrier against capillary water movement in masonry structures
Form: gray powder
Substrate: masonry walls made of red bricks/cinder blocks using M5 cement-and-lime mortar, concrete blocks
Approximate yield for horizontal waterproofing: 1.5kg/m for 40cm-thick wall
Approximate yield for vertical waterproofing: 3.8kg/m^2 at 0.6cm wide
Packaging size: 25kgs
Dry weight: 1.15 kg/dm^3±10%
Density for horizontal waterproofing: 1.6kg/dm3±10%
Amount of water for horizontal waterproofing: 18 liters per 25kgs
Amount of water for vertical waterproofing: 15 liters per 75kgs of sand and 25kgs of Hydrostop-Injective
Vertical waterproofing layer thickness: 0.5cm to 1.2cm
Water permeability for vertical layer at 0.5cm wide after 28 days: ≥0.5MPa
Application temperature: 2°C to 30°C indoors, -30 to +40°C outdoors
Exposure class: XA2 groundwater, pH 4.5 to 12.5, household sewage, XD2 chlorinated drinking/shower/swimming pool water, mineral/food/transformer oils, rain/lake/river/irrigation water
Reaction-to-fire Euroclass: A1

SCHEDULING

Time of mixing with water: approx. 4 minutes at 300 rpm
Time for application once mixed with water: 60 minutes
From installing floor (on spread footing) to making wedge-shaped seal (from mortar) around floor: 28 days (regular concrete), 14 days (rapid-hardening concrete)
Curing time: none for injection waterproofing, 10 days for vertical waterproofing at ≥85% humidity
Covering with tiles from inside: ≥5 days
Covering with hydrophobic paints from inside: ≥5 days
Installing heat insulation from outside: ≥1 day
Use before: 1 year (best) from production (whole package)
Protect from moisture.
Reference documents: Technical approval ITB AT-15-6382/2004 (currently the law does not require an approval or a declaration of conformity for this type of product), health safety attestation PZH no. HK/B/0357/03/2008, safety sheet.
Document updates at www.hydrostop.eu

Being an excellent waterproofing product, HYDROSTOP has received numerous awards over the years. It was awarded at INBUD '90 (medal), at NOWE MATERIAŁY '92 and ZŁOTA SYRENKA in 1999. In 2003 it was recognized as an eco-friendly construction material. It was also awarded at WPPK in Szczyrk in 2007 and 2011.

HYDROSTOP®

HYDROSTOP Zakład Wytwarzania Materiałów Izolacyjnych.
Information, sales and support:
ul. Bruszewska 10, 03-046 Warszawa, www.hydrostop.pl
tel. 22-8110895, tel/fax 22-6142666, tel. 602-616556

LIST OF PRODUCTS

HYDROSTOP-INJECTIVE FLUID

Hydrophobic barrier against capillary water transport in masonry structures

PRODUCT PROPERTIES

- **Barrier to capillary moisture,**
- **Odorless and environmentally friendly water-based solution,**
- Resistant to XA1 and XA2 groundwater..

USE

Hydrostop-Injective Fluid is used horizontally for stopping capillary movement of water through structural walls. The barrier is designed for both new and old walls built from red brick and lime-and-sand brick affected by damp, stone, cinder blocks and AAC blocks bonded by any mortar. Applications include residential, industrial and public utility construction by drilling from the inside or from the outside of structures. The product is inflammable. For red brick walls bonded by strong cement-and-lime mortar product no. 721 Hydrostop-Injective is typically used. Hydrostop-Injective Fluid is not suitable for walls contaminated with detergents, soap or nitrates at a density in excess of 2g/dm3.

WORKING PRINCIPLE

On clay-rich and wet soils brick foundations easily soak after rainfall or during periodic increases of groundwater levels. The water collecting in the low layer of the bricks is transported through the capillaries upward even to several meters high. In order to obtain a horizontal barrier, an existing wall has holes drilled in the bricks to be filled with Hydrostop-Injective Fluid no. 742. Once the wall has been treated with the liquid, the hydrophobic ingredients contained in it gradually settle on the sides of the capillaries inside the wall. On drying, they form a barrier to capillary water..

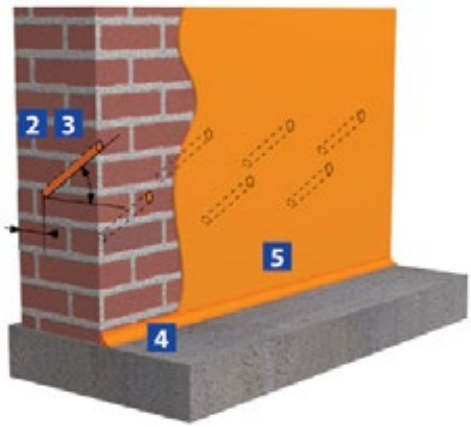


Fig. 1: An illustration of the waterproofing: 3 - holes injected with Hydrostop-Injective Fluid, 4 - wedge-shaped seal, 5 - vertical waterproofing made from waterproof mortar.

CHOICE OF LOCATION FOR DRILLING HOLES

The height at which to drill holes is usually set just above the floor but ensuring that the strip footing not be drilled into (see Fig. 2). Two rows of holes are drilled in the wall from the inside of from the outside of the building using a hammer drill (not a rotary hammer) with a dia. 20-24mm drill at an angle of approx. 30ºC without drilling through the wall (see Fig. 2). The minimum number of holes is ten per 1m of wall length, with five holes per each row

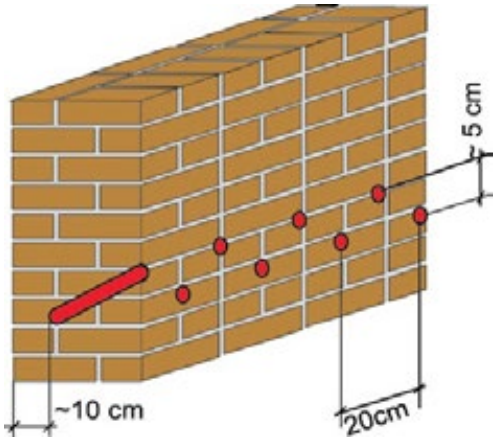


Fig. 2. Hole spacings for the horizontal waterproofing.

Hole spacings in each row are 20cm. The holes can also be drilled from both sides of the wall or at a different angle, but the maximum distance between holes inside the wall should not exceed 20cm.

FILLING HOLES

Hydrostop-Injective Fluid can be poured in using a watering can with a narrow spout or a funnel. The holes should be filled up several times. Use around 12kgs of the product per 1m2 of the horizontal cross section of the wall, i.e. a 40cm--thick wall requires about 5kgs per 1m of length. For other wall thicknesses use proportional amounts. If utilization appears lower, check if the drill diameter is correct and use a piece of wire to check if the depths of the holes are correct. If a hole cannot be filled due to the fluid running out into a crack in the wall, use polyurethane window foam for an initial fill. Once the foam has hardened, re-drill the hole and fill it with Hydrostop-Injective Fluid mixed with water. With low pressure injection it is acceptable to drill smaller diameter holes provided that the amount of the product used remains unchanged. Remove old render from the floor up to the level of apparent efflorescence and render deterioration and hollow out grout joints to apply the vertical waterproofing as described below.

MAKING VERTICAL WATERPROOFING

The wall should be carefully cleaned on the inside and on the outside by removing traces of render and efflorescence using a diamond disc on an adjustable-speed angle grinder. The grout joints should be hollowed out to 0.5-1cm. The cleaning can be done with a scabbler, drill-mounted wire brush and other tools. In case of severely damp-ridden structures vertical waterproofing is done using mortar composed as follows (by weight): 1 part Hydrostop-Injective (no. 721), 3 parts washed coarse sand and 0.6 parts water. Waterproofing

LIST OF PRODUCTS

from outside and in case of structures affected by little damp from inside, use cement-and-sand mortar with an addition of Hydrostop-Plast no. 403. The connection of the wall with the floor is not rendered but a wedge-shaped seal is made instead (see Fig. 1, item 4). Approximately 3.8kg/m^2 of Hydrostop-Injective no. 721 (powder) should be used for vertical waterproofing. The amount for Hydrostop-Plast is 0.25kg/m^2. Hydrostop-Plast can also be substituted with Hydrostop--Mortar, using about 15kg/m2.

CARE

Horizontal waterproofing made using Injective Fluid Iniekcyjny does not normally require any care. However, vertical waterproofing made from Hydrostop-Injective no. 721 requires a humidity of >85% for at least 10 days. After that time it is recommended for the room to dry for at least 2 weeks with proper ventilation and heating, or using freon condensation dryers. The materials and work should be prepared very carefully, constantly supervised by the investor and documented on camera at every stage (initial state, drilling locations, hole depths, wall cleaning, applied vertical waterproofing). Three weeks after vertical waterproofing was done, the entire surface should be tap-tested to make sure that the mortar adheres well to the wall.

NOTES

The moisture barrier stops capillary water flow but it does not stop vapor passing from the ground. If possible, construction/dimpled sheeting should be used on the outside face. Waterproofed rooms must be ventilated during use. It is recommended not to let warm, humid air into the basement from inside higher parts of the building because if the walls are cool, water condensation or efflorescence will occur. The moisture barrier is most often applied to outside walls of structures. Care needs to be taken, though, to protect partition walls from soaking - analogous waterproofing solutions are used in such cases, only holes are usually drilled closer to the floor than in the case of outside walls.

FINISHING WORK

It is best if painting is only done using silicone paints and other hydrophobic paints. Do not use plaster renders, plasterboard or cement-and-lime renders. If the layer of render needs to be evened out, thickened or added in places not threatened by damp, use of Hydrostop-Plast is advised.

SAFETY PRECAUTIONS

Hydrostop-Injective Fluid is strongly alkaline due to the KOH it contains. It irritates the skin and mucous membranes. When working, use face protection, protective clothing (e.g. cotton) and watertight rubber gloves. Partly rubberized gloves or thin latex gloves are not recommended. Hydrostop-Injective Fluid is odorless and does not contain petroleum-derived ingredients. In case of light irritation to the hands, wash the skin in water, rinse with a 1:10 solution of food vinegar and apply an oil-based cream. In case of severe irritation, consult a doctor

TECHNICAL DATA

Name and no.: Hydrostop-Injective Fluid 742
Product type: penetration waterproofing horizontal barrier to capillary water transport in masonry structures
Form: colorless liquid, ready for use
Substrate: masonry walls from stone, red bricks, lime-and--sand bricks, cinder blocks and AAC blocks
Approximate yield for horizontal waterproofing: approx. 5kg/m of 40cm-thick wall
Packaging size: 10kgs, 1000kgs
Specific weight: 1.02kg/dm^3±2%
Wall temperature: 5°C to 40°C
Storage and transportation temperature: ≥0°C
Exposure class: XA2 groundwater, pH 4.5 to 12.5, XD2 chlorinated drinking/shower/swimming pool water, rain/lake/river/irrigation water
Reaction-to-fire Euroclass: N/A (water-based solution)

SCHEDULING

Curing time for vertical waterproofing made from no. 721: ≥10 days
Drying time for horizontal waterproofing: ≥14 days
Covering with tiles/insulation: ≥5 days
Covering with hydrophobic paints: ≥5 days
Use before: 1 year from production (whole package)
Reference documents: Health safety attestation PZH no. HK/B/0568/01/2010. Currently the law does not require an approval or declaration of conformity for this type of product.
Document updates are available at www.hydrostop.eu

Being an excellent waterproofing product, HYDROSTOP has received numerous awards over the years. It was awarded at INBUD '90 (medal), at NOWE MATERIAŁY '92 and ZŁOTA SYRENKA in 1999. In 2003 it was recognized as an eco-friendly construction material. It was also awarded at WPPK in Szczyrk in 2007 and 2011.

HYDROSTOP®

HYDROSTOP Zakład Wytwarzania Materiałów Izolacyjnych.
Information, sales and support:
ul. Bruszewska 10, 03-046 Warszawa, www.hydrostop.pl
tel. 22-8110895, tel/fax 22-6142666, tel. 602-616556

LIST OF PRODUCTS

CONCRETE

Repairs

LIST OF PRODUCTS

Technical instruction - product no. 423

HYDROSTOP-REPAIR

Reprofiling PCC mortar with polypropylene fiber

PRODUCT PROPERTIES

- **Highly thixotropic,**
- **Low shrinkage and reduced elastic modulus,**
- **Highly adhesive,**
- **Water-impermeable and freeze-resistant,**
- Concrete-compatible.

ZASTOSOWANIE

Hydrostop-Repair is used for renovating corroded reinforced--concrete structures. It is also used for corrections on structures under construction in case of voids, backward slopes, formwork-related defects and exposed reinforcement with supplementary use of Hydrostop-Passivating. Typically the product is used when the core structural parts and the strength of the structure are not at risk. In other cases it is necessary to get an expert opinion concerning the safety and stability of the structure. The product is used in residential, inductrial, public utility as well as road and bridge construction both on the inside and on the outside of structures. It is inflammable.

WORKING PRINCIPLE

Hydrostop-Repair is an enhanced PCC composite - resistant to freezing, with reduced shrinkage, faster curing and polypropylene fiber for even distribution of stresses in the process. Reper is in the form of uniform mortar with fiber as shown in Fig. 1..

Fot. 1. The appearance of dry Hydrostop-Repair with visible polypropylene fiber.

Reper together with the Hydrostop-Passivating mixing liquid ensures strong passivation of steel surfaces and is therefore suitable for filling defects with reinforcement rods exposed.

PREPARATION OF THE SUBSTRATE

The concrete substrate should be at least grade B15. Concrete subject to freezing should be at least F100. The substrate needs to be cleaned of corroded concrete in the first place. The thickness of the layer being removed should be chosen such as to expose healthy concrete with a bond strength of over 2MPa determined by a pull-off test. Repair layers can also be applied onto weak concrete with a bond strength of at least 1MPa, but the properties of the repair materials will not be utilized in full in such cases. The surface should also be cleand of any dirt, oils, paint coatings and weakly adhesive layers. Water leaks (e.g. leaking cracks or streams) should be stopped with the Hydrostop-Fix fast-setting cement. If there are defects at the surface or the reinforcement is 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 or steel should at least be abrased by hydrosandblasting and rinsed. The rods' thin concrete protection should be well soaked with Hydrostop-Passivating. Hydrostop-Repair can also be applied onto masonry walls made from bricks, concrete blocks or clay blocks. It is most often used for filling grooves not wider than 40cm and not deeper than 5cm that have appeared along partially corroded reinforcement. In case of strips wider than 40cm being covered with a layer of 1.5cm and thicker, the surface being reprofiled should have corrugated-wire mesh mounted onto it to prevent cumulation of shrinkage. The grid parameters should be allowed based on the following guidelines: Layers about 1.5cm thick are to be reinforced with approx. 4mm-wire mesh with 15cm spacings, layers around 2cm to 6cm thick are to be reinforced with 6mm to 8mm wire with 10cm spacings. The mesh should be anchored using rods set in a strong substrate.

MIXING WITH WATER

The ingredients for the mixture should not be warmer than 20°C before mixing. Pour 25kgs of the product into 3.15 to approx. 3.3kgs of water while mixing at 300 rpm. Keep mixing until the compound is uniform (about 4 minutes). The consistency of the mixture should be such that when applied by hand it bonds well with the wall and does not flow down at a thickness of 5cm. The mixture should be utilized within 30 minutes of mixing the product with water.

APPLYING THE MORTAR

At least 3 days after pouring concrete Hydrostop-Repair can be applied manually or mechanically. The ambient temperature during the work should not exceed 30°C. I n temperatures above 20°C, it is advised that Reper stored in a cool area be used with cool water drawn directly from a well or with Hydrostop-Passivating from a refrigerator.

CARE

The binding layer of Reper should be kept moist, preferably covered with transparent PE sheeting. In order to prevent water from evaporating out of the Reper it may be necessary to water-spray the mortar several times per day; however, pouring water directly onto the mortar is not advised.

ADDITIONAL NOTES

The coating may not adhere well if: the substrate was poorly cleaned, the time for application of a mixed product was exceeded, a layer over 2cm thick was put over a width of over 40cm without mesh, the product was applied onto concrete not resistant but subjected to freezing, or the layers became dry while binding or directly afterwards.

LIST OF PRODUCTS

FINISHING WORK

The reprofiling layer can be covered with such coatings and materials as those used on concrete,but it is advised that a 3mm to 5mm layer of Hydrostop-Filler be used. The latter product has good weather resistance, makes the surface uniform and stops further carbonation of reinforced-concrete structures.

SAFETY PRECAUTIONS

Hydrostop-Repair contains cement clinker, which can cause drying and irritation of the skin and mucous membranes. A safety sheet and health attestation can be provided upon request

TECHNICAL DATA

Nazwa: Hydrostop-Repair 423
Product type: reprofiling mortar with polypropylene fiber
Recommended substrate characteristics: concrete ≥B15, F100 for outdoor applications, bond strength recommended ≥2MPa (acceptable ≥1MPa), concrete blocks, bricks, reinforced reprofiling layers (product properties will not be fully utilized with worse substrate characteristics
Packaging size: 25kgs
Approximate yield: 2kgs/liter and 20kgs/1m^2 per 10mm of thickness
Water amount: 3.3to 3.7kg/25kgs
Dry weight: 1.50kgs/dm^3±10%
Mortar density: 2.15kgs/dm^3±10%
Layer thickness in crack up to 40cm wide: up to 5cm
Layer thickness for larger areas: up to 1.5cm without steel mesh, up to 6cm with wire mesh over corroded surface
Bending strength after 3 days: ≥4MPa
Compressive strength after 3 days: ≥25MPa
Ambient temperature for application: 2°C to 30°C
SCHEDULING:
From pouring concrete to repairs: ≥3days
Time of retaining working properties: approx 30min,
Storage time at 95% humidity: ≥5 days,
Use before: 1 year from production (full package).
Reference documents:
technical approval ITB AT-157242/2007, health attestation PZH HK/B/1581/01/2008, safety sheet.
Document updates at www.hydrostop.eu

HYDROSTOP®
HYDROSTOP Zakład Wytwarzania Materiałów Izolacyjnych.
Information, sales and support:
ul. Bruszewska 10, 03-046 Warszawa, www.hydrostop.pl
tel. 22-8110895, tel/fax 22-6142666, tel. 602-616556

LIST OF PRODUCTS

HYDROSTOP-SZPACHLOWY

Zaprawa reprofilacyjna PCC do wykonania pocienionego tynku ochronnego

Instrukcja techniczna – Produkt 453

WŁASNOŚCI PRODUKTU

- Łatwość nakładania ręcznego i maszynowego,
- Niski skurcz, obniżony moduł sprężystości,
- Dobra przyczepność do podłoża,
- Mrozoodporność,
- Kompatybilność z betonem i Hydrostopem-Reperem.

ZASTOSOWANIE

Hydrostop-Szpachlowy stosuje się do wykonywania pocienionego tynku w ramach prac reprofilacyjnych w budowlach nowych i na skorodowanych konstrukcjach żelbetowych.

Kilkumilimetrową warstwą pokrywa się beton surowy oraz naprawiony produktem Hydrostop-Reper. Uzyskuje się ochronę całej powierzchni, wygładzenie i zamaskowanie miejsc po naprawach. Niniejszy produkt stosuje się w powyżej podanym zakresie w budownictwie mieszkaniowym, przemysłowym, użyteczności publicznej, drogowym, od wewnątrz i z zewnątrz konstrukcji. Produkt jest niepalny.

SPOSÓB DZIAŁANIA

Hydrostop-Szpachlowy jest uszlachetnioną zaprawą cementową, mrozoodporną, ze zredukowanym skurczem, przyspieszonym dojrzewaniem oraz dodatkami redukującymi moduł sprężystości i karbonatyzację. Hydrostop-Szpachlowy ma postać jednorodnej szarej zaprawy cementowej jak na fot 1.

Fot. 1. Wygląd zaprawy w trakcie szpachlowania.

PRZYGOTOWANIE PODŁOŻA

Podłoże betonowe powinno mieć markę minimum B15. Betony narażone na zamarzanie powinny mieć mrozoodporność minimum F100. Podłoże należy oczyścić przede wszystkim ze skorodowanego betonu. Grubość zdejmowanej warstwy zaleca się tak dobrać, aby odsłonić zdrowy beton o przyczepności badanej przez oderwanie powyżej 2MPa. Warstwy naprawcze, to jest Hydrostop-Reper i Hydrostop-Szpachlowy, można też nakładać na słaby beton o przyczepności minimum 1MPa, ale wtedy nie wykorzysta się w pełni parametrów materiałów do napraw. Powierzchnię należy oczyścić również z wszelkich zabrudzeń, tłuszczów, powłok malarskich i warstw o słabej przyczepności. Przecieki wodne, np. cieknące szczeliny lub sączenia, należy zatamować cementem szybkowiążącym Hydrostop-Fix. Jeśli na powierzchni betonu znajdują się wykwity z soli mineralnych, słaba warstwa mleczka cementowego to należy je usunąć narzędziem stosownym do zakresu robót np: ręczna lub mechaniczna-obrotowa szczotka druciana, myjnia ciśnieniowa 200 atmosfer z głowicą rotacyjną, aparat do piaskowania lub hydropiaskowania. Szklistą-błyszczącą powierzchnię betonu należy co najmniej zadrapać i spłukać. Zazwyczaj powierzchnia skorodowanej budowli jest groszkowana, naprawiana produktem Hydrostop-Reper z zacieraniem a ostro, a następnie finalnie wygładzana Hydrostopem-Szpachlowym.

Podłoże powinno być przed nakładaniem Szpachlowego odpylone i matowo-wilgotne.

Cienkie betonowe otuliny prętów należy obficie nasączyć Hydrostopem-Pasywującym.

Hydrostop-Szpachlowy można nakładać również na ściany murowane.

MIESZANIE Z WODĄ

Składniki do wykonania zaprawy powinny mieć przed zmieszaniem temperaturę nie wyższą niż 20°C. Do wody w ilości od około 4kg wsypywać mieszając 25kg Hydrostopu-Szpachlowego przy użyciu mieszadła mechanicznego 300 obr/min. Mieszać aż do ujednorodnienia (około 4min.). Konsystencja gotowego zarobu powinna być taka, że dość łatwo rozprowadza się pacą stalową po ścianie i jednocześnie nie przykleja się do tej pacy. Zaczyn zużyć najdalej w ciągu 30 minut od zmieszania z wodą.

NANOSZENIE ZAPRAWY

Prace można wykonać na wilgotnym surowym oraz na naprawianym Reperem betonie na związanym podłożu.

Temperatura otoczenia nie powinna przekraczać 30°C w trakcie robót. W temperaturach >20°C zaleca się stosować Szpachlowy składowany w chłodnym pomieszczeniu, i używać chłodną wodę natychmiast ze studni.

PIELĘGNACJA

Wiążąca warstwa Szpachlowego powinna być utrzymywana w stanie wilgotnym najlepiej pod przykryciem z przezroczystej folii PE minimum 4 dni. Aby nie dopuścić do odparowania wilgoci może zachodzić konieczność nawilżania mgłą wodną kilka razy dziennie, ale nie zaleca się zlewać zaprawy wodą.

UWAGI DODATKOWE

Pogorszenie przyczepności powłoki mogą spowodować: słabe oczyszczenie podłoża, przekroczenie czasu przydatności po zmieszaniu z wodą, nałożenie powłoki grubości >6mm, nałożenie na beton nie mrozoodporny poddany zamrażaniu oraz wysuszenie warstw w trakcie wiązania lub bezpośrednio po związaniu.

PRACE WYKOŃCZENIOWE

Nie są konieczne żadne dodatkowe wykończenia, ale powłokę z warstwy szpachlowej można pokrywać takimi powłokami lub materiałami, jakie stosuje się na beton, na przykład przeznaczonymi do tego farbami silikonowymi i akrylowo-silikonowymi.

ZALECENIA BHP

Hydrostop-Szpachlowy zawiera klinkier cementowy i może wysuszać oraz podrażniać skórę oraz błony śluzowe. Na życzenie dostarczany jest Atest PZH i Karta bezpieczeństwa.

LIST OF PRODUCTS

DANE TECHNICZNE

Nazwa: Hydrostop-Szpachlowy 453
Rodzaj prod.: Zaprawa reprofilacyjna PCC do wykonania pocienionego tynku ochronnego.
Postać: szara drobna zaprawa
Zalecane parametry podłoża: Beton ≥B15, na zewnątrz F100, Wytrzymałość na odrywanie ≥2MPa, bloczki betonowe, warstwy wyrównawcze zbrojone i naprawcze; przy słabszych parametrach podłoża własności produktu zostaną nie w pełni wykorzystane,
Wielkość opakowania: 25kg,
Dopuszczalna grubość warstwy: od 2 do 6mm
Orientacyjne zużycie: 1,8kg/1m^2/1mm grubości,
Ilość wody: około 4kg/25kg
Ciężar nasypowy: 1,35 kg/dm^3±15%,
Gęstość objętościowa na mokro: 1,9 kg/dm^3±10%,
Wytrzymałość na zginanie po 28 dniach: ≥2,5MPa,
Wytrzymałość na zgniatanie po 28 dniach: ≥20MPa,
Temperatura otoczenia przy stosowaniu: 2°C do 30°C
Czasy harmonogramowe:
Od wylania betonu do wygładzania Szpachlowym: można natychmiast po stwardnieniu
Od nałożenia Hydrostopu-Reper do wygładzania Szpachlowym: można natychmiast po stwardnieniu
Czas zachowania własności roboczych: około 30min,
Czas sezonowania w wilgoci 95%: ≥4 dni,
Okres przydatności: w całych opakowaniach 1 rok od daty produkcji.

Dokumenty związane: Aprobata Techniczna ITB AT-15-7578/2013. Atest PZH HK/B/1190/03/2013. Karta bezpieczeństwa. Aktualizacje dokumentów pod adresem www.hydrostop.pl

HYDROSTOP®
HYDROSTOP Zakład Wytwarzania Materiałów Izolacyjnych.
Informacje, konsultacje i sprzedaż:
ul. Bruszewska 10, 03-046 Warszawa, www.hydrostop.pl
tel. 22-8110895, tel/fax 22- 6142666, tel. 602-616556

LIST OF PRODUCTS

Technical instruction - Product no. 463

HYDROSTOP-PASSIVATING

Anti-corrosion fluid for thin-coated reinforcement and mixing liquid for Hydrostop-Repair.

PRODUCT PROPERTIES

- **Strongly anti-corrosive,**
- **Penetrates concrete by seepage and diffusion,**
- **Quickens curing of Hydrostop-Repair,**
- Durable passivation effect,
- Compatible with cement and concrete.

USE

As a strongly anti-corrosive agent, Hydrostop-Passivating is used in combination with other Hydrostop products to protect steel from corrosion in reprofiling work. It works by soaking concrete surfaces in areas where reinforcement bars' protective coating is too thin. Applications include residential, industrial and public utility construction both on the inside and outside of structures. The product is inflammable.

WORKING PRINCIPLE

Hydrostop-Passivating is a water-based solution of corrosion inhibitors and agents facilitating penetration of conrete pores/steel. It is in the form of a transparent (lightly straw-colored) liquid. The penetrating action results from diffusion of the product in the pores of mortar or concrete and over the surface of steel. Contact with steel surfaces causes a multiple anti-corrosive effect by: passivation, catalytic surface galvanizing and blocking access to the surfaces. The active ingredients of the product do not evaporate and are effective for many years. Because the product is soluble in water, it is necessary that the passivating film be covered by at least several millimeters of a waterproof material, e.g. Hydrostop products no. 423, 453 or 401.

Fig. 1. Soaking concrete around a rod whose protective coating is not sufficient. After this procedure the surface will be reprofiled.

PREPARATION OF THE SUBSTRATE

The surfaces of exposed reinforcement rods should be cleaned on at least 50% of the area to second cleaning level. Other surfaces near the rods, steel parts set in concrete and thin rod coatings should be soaked in large amounts of Hydrostop-Passivating.

MIXING WITH HYDROSTOP-REPAIR

Both products should be mixed the same way as mixing with water. Make sure that the temperature of either component does not exceed 20°C.

APPLYING HYDROSTOP-PASSIVATING

In case of soaking the thin protective coating on reinforcement, apply the product to the wall several times for as long as the substrate soaks it in or until the maximum amount of the product has been used, i.e. 3kg/m2. The surface of steel treated with Hydrostop-Passivating can after 10 minutes be covered with Hydrostop-Repair mixed with Hydrostop-Passivating. In the case of setting in anchor rods, clean the hole with pressurized air, fill with a mix of Hydrostop-Filler and Hydrostop-Passivating (instead of water). Stir the mortar quickly, for example by using a drill with a diameter 2mm smaller than the normal diameter of the rod, and then hammer/screw in the anchoring rod.

CARE

A coating made from Hydrostop-Passivating mixed with the Hydrostop-Repair reprofiling mortar or with Hydrostop-Filler should be kept moist in accordance with the instruction for the given reprofiling mortar.

SAFETY PRECAUTIONS

Hydrostop-Passivating must not be disposed of into water reservoirs. The effective utilization of redundant amounts of the product is done by mixing it with products no. 423, 453, 401 or Portland cement. Once it binds, it can be treated as construction rubble and disposed of as such. The amounts of the product no longer needed can also be sent to the manufacturer for disposal. A health safety attestation and safety sheet can be provided upon request. Use protective goggles and watertight gloves when working with the product. Do not pour it onto the ground, into the sewage or water reservoirs.

LIST OF PRODUCTS

TECHNICAL DATA

Name and no.: Hydrostop-Passivating 463
Product type: anti-corrosive liquid for thinly coated reinforcement and mixing liquid for Hydrostop-Repair
Form: transparent, straw-colored liquid
Packaging size: 1kg, 10kgs
Approximate use for mixing with product no. 423: 3.5kg/25kg
Approximate use for mixing with product no. 453: 4kg/25kg
Approximate use for soaking concrete: up to 3kg/m^2
Approximate use for anchoring (per 1 anchor):
0.07kg of no. 453 + 0.013kg of no. 463 for Ø8mm,
1kg of no. 453 + 0.02kg of no. 463 for Ø10mm,
0.15kg of no. 453 + 0.024kg of no. 463 for Ø12mm
Density: 1.0kg/dm^3±1%
Application temperature: 2°C to 30°C
SCHEDULING
Use before: 2 years from production date (unopened packs).
Reference documents: Technical approvals ITB AT-157242/2007 and IBDiM AT/2008-03-0446, safety sheet, health safety attestation PZH no. HK/B/0357/04/200.
Document updates at www.hydrostop.eu.

HYDROSTOP®
HYDROSTOP Zakład Wytwarzania Materiałów Izolacyjnych.
Information, sales and support:
ul. Bruszewska 10, 03-046 Warszawa, www.hydrostop.pl
tel. 22-8110895, tel/fax 22-6142666, tel. 602-616556

LIST OF PRODUCTS