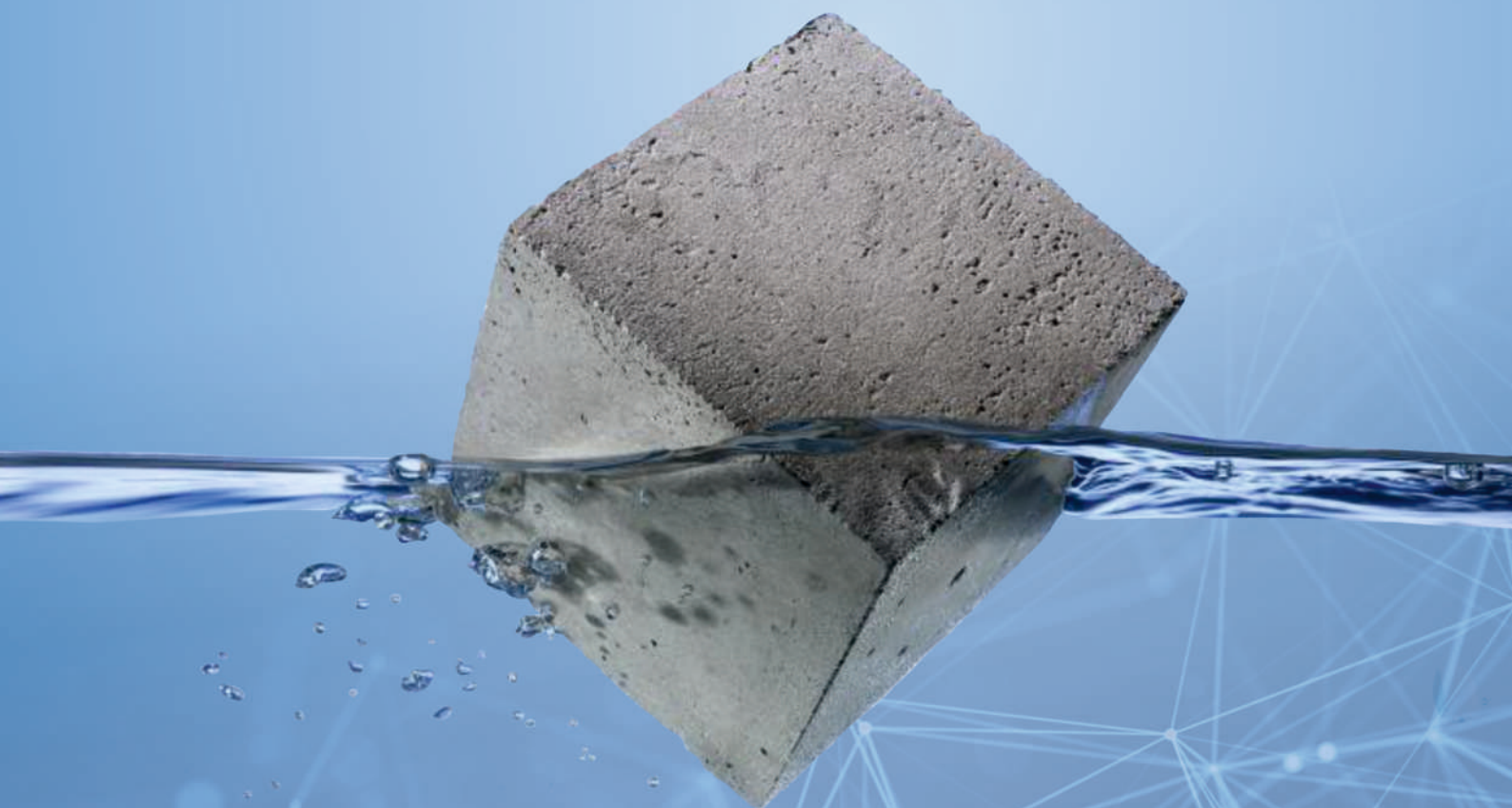


MADE IN RUSSIA

HYDROISOL

THIRD GENERATION CRYSTAL PRODUCING
CONCRETE WATERPROOFING TECHNOLOGY



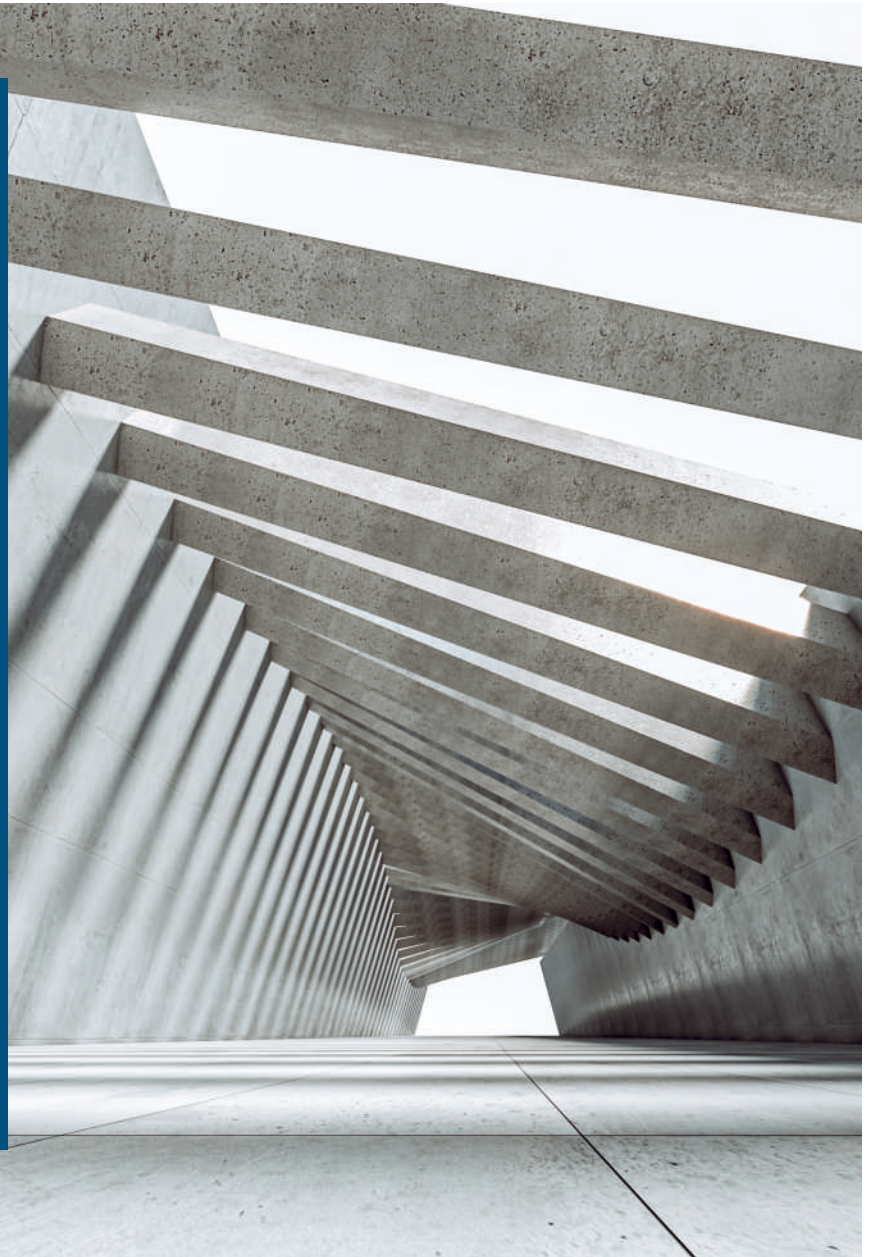
www.hydroisol.com

Both discovery and production of the formulation of HYDROISOL products are carried out by academic staff and scientists at the Ural Campus of the Russian Institute of Sciences.

Some scientific researches are conducted about the synthesis of organic monomers, the creation of new polymers and polymer-based composition materials on the basis of new catalytic systems and the development of chemical processes.

HYDROISOL is an innovative waterproofing material that has many awards in the waterproofing material category, which produces the highest quality needle-headed crystal, and offers a definite solution to the waterproofing problems of important concrete structures, in addition to the life of the concrete.

HYDROISOL products are produced in our facilities in the Russian Federation and are sold in many countries.

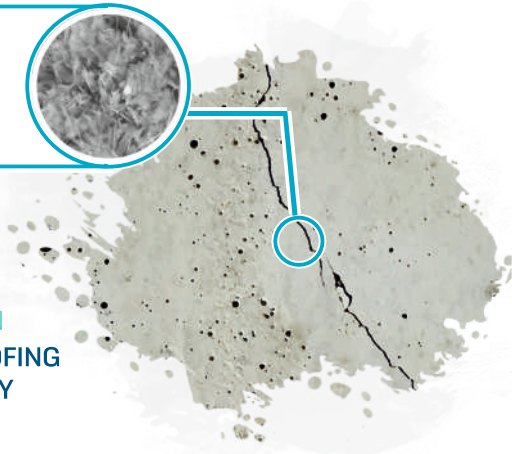


HYDROISOL Crystal Producing and Self-Healing Waterproofing Technology

MICRO
CRYSTAL
PRODUCING
TECHNOLOGY



NEW
GENERATION
WATERPROOFING
TECHNOLOGY



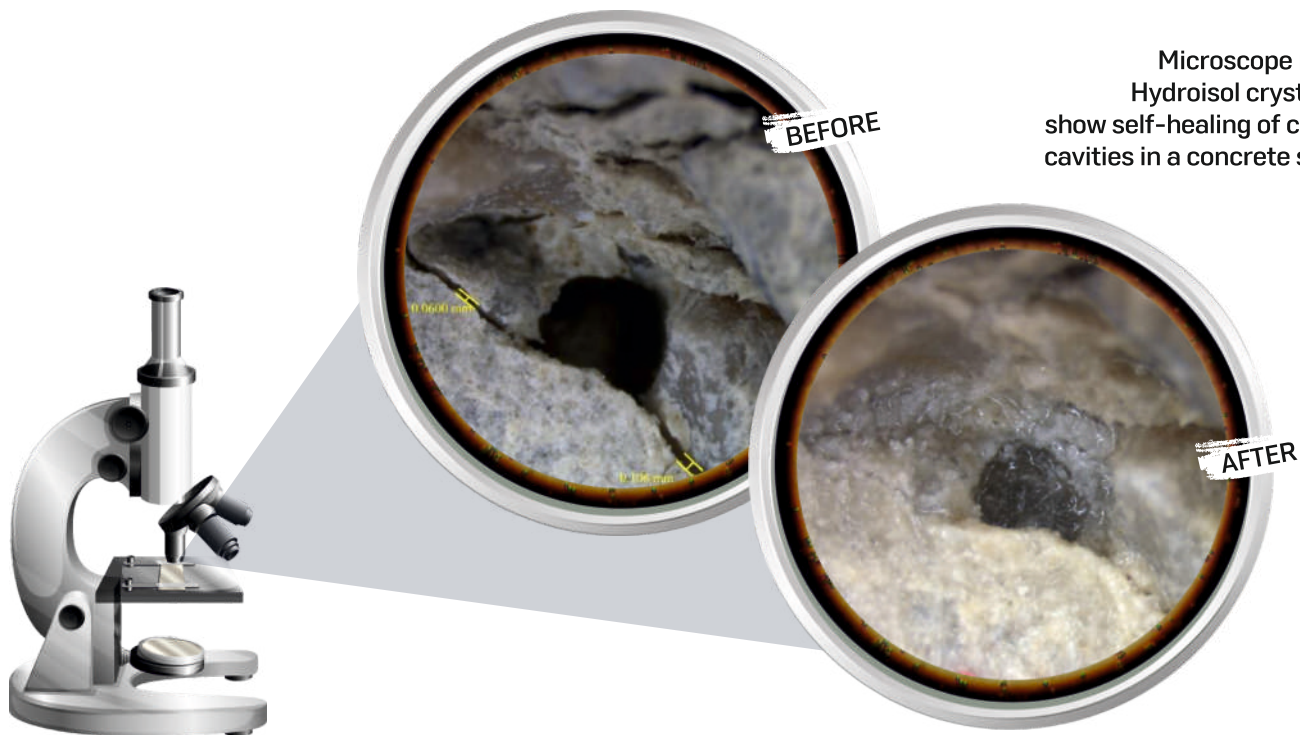
HYDROISOL consists of Portland cement and special active chemicals.

The active ingredients enter into a catalytic reaction with the cement, aggregate, concrete by-products and moisture in the concrete.

The admixture reaches all the pores and capillary cracks of the concrete, taking into account its high penetrating feature up to 90 cm, and it forms needle-headed crystal hydrates that are insoluble in water and liquid chemicals as a result of chemical reaction.

Together with its self-healing feature, it provides life-long concrete waterproofing by repairing concrete cracks that may occur later when it encounters moisture. An ideal reinforced concrete structure with increased strength can be obtained, which is vapor permeable but not water permeable on the basis of HYDROISOL technology.

Working Principle



Microscope images of Hydroisol crystals which show self-healing of cracks and cavities in a concrete structure.

The formation of cracks or cavities in needle-headed form of crystalhydrate occurs gradually in concrete with HYDROISOL admixture.

The rate of formation of these hydratecrystals in concrete varies on the basis of the factors such as wetness of the concrete, porosity and temperature.

Micro Solutions for Your Concrete Buildings

Concrete waterproofing materials should be developed in accordance with the technical features as well as ease of workmanship in construction sites, time, quality, long-term warranty and cost factors.

A "micro scale" solution is required so as to overcome the problem which is about that water and liquid chemicals penetrate the concrete through capillary suction and hydrostatic pressure.

HYDROISOL crystalliferous waterproofing technology has been optimized for many years by both scientists and a continuously developed formulation.

- 1) It solves the waterproofing problem not superficially, but by dispersing it over the entire mass of concrete.
- 2) It eliminates the need to protect the insulation surface as in traditional insulation.
- 3) It prevents all cold joint water leaks.
- 4) It increases the strength of concrete by 10-15%.
- 5) It increases the life of concrete as 60 years. It prevents the steel reinforcement from corrosion.
- 6) It is easy to mix into the concrete during dosing.
- 7) It eliminates the waterproofing labor during the pouring of the concrete.
- 8) It does not cause compatibility problems with plasticizer and retarder.
- 9) Together with these admixtures, concrete becomes impermeable to water and chemicals, in terms of positive and negative aspects.
- 10) Although the concrete is impacted mechanically, its waterproofing property does not deteriorate.
- 11) There are admixture alternatives which are developed in dry and liquid form according to the concrete plant and concrete mixer.



Our Products



POWDER FORM HYDROISOL-ITH

Crystalliferous
Waterproofing Mortar

It is cement-based crystalliferous concrete waterproofing mortar. It is a 3rd generation waterproofing system that can be applied to concrete surfaces which are completed or in progress, and it provides permanent water impermeability by producing needle-headed crystals when it encounters both water and moisture.



POWDER FORM BETOMIX-ITH

Crystalliferous
Waterproofing Admixture

It is cement-based crystalliferous concrete waterproofing admixture. It is a 3rd generation waterproofing admixture that can be applied to concrete surfaces during the pouring of the concrete, and it provides permanent water impermeability by producing needle-headed crystals when it encounters both water and moisture.



LIQUID FORM BETOMIX-ITH Gel

Crystalliferous Liquid
Waterproofing Admixture

It is crystalliferous liquid waterproofing admixture. It is a 3rd generation liquid waterproofing admixture that is added to the concrete mix as a ready liquid admixture in concrete mixers and plants and provides permanent waterproofing by producing needle-headed crystals with a long setting time.



- ▶ 5 kg P.P BUCKET
- ▶ 15 kg P.P BUCKET



- ▶ 5 kg P.P BUCKET
- ▶ 10 kg P.P BUCKET

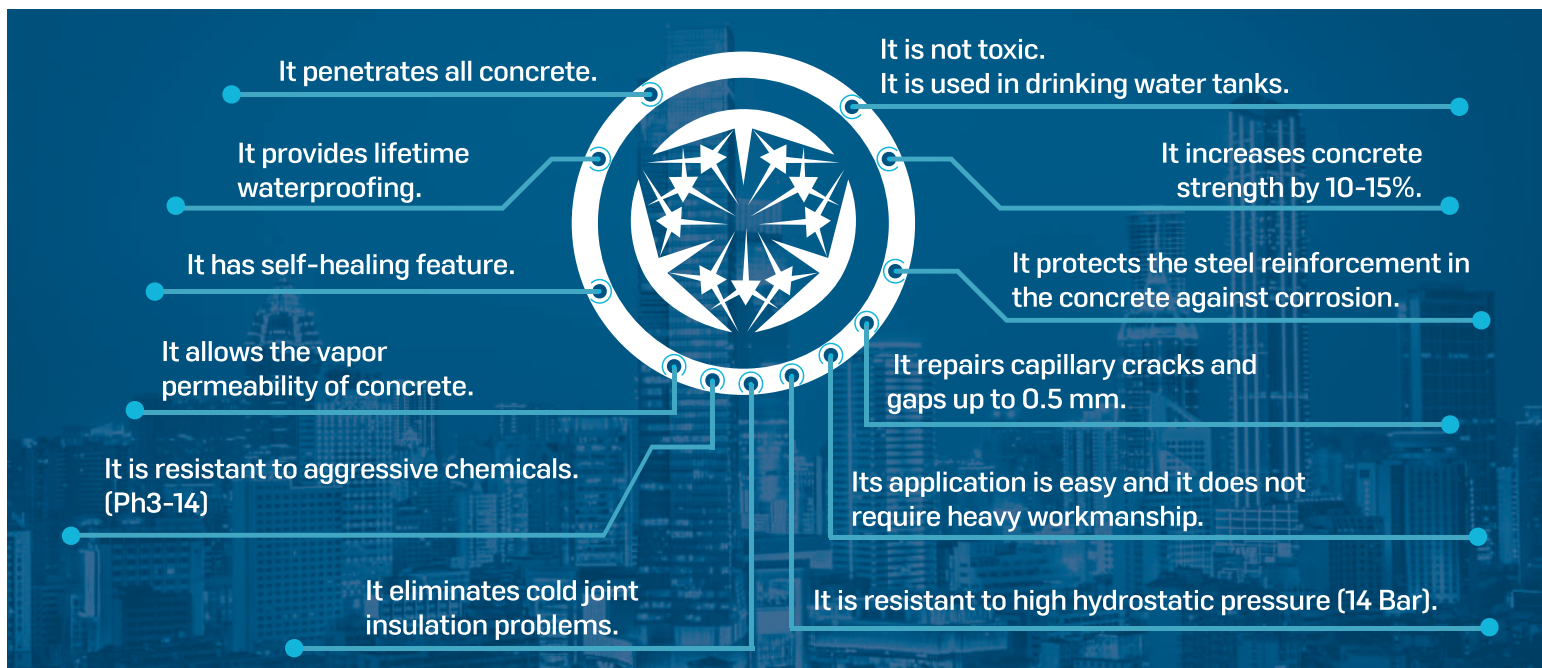


- ▶ 10 kg PLASTIC CAN
- ▶ 20 kg PLASTIC CAN
- ▶ 1150 kg Euro IBC TANK

Package Types

Technical Features And Advantages

Advanced Features



- ▶ It prevents water permeability under high pressure.
- ▶ It repairs capillary cracks and gaps up to 0.4-0.5 mm. Complete insulation is conducted after these cracks are closed with crystal.
- ▶ In case of mechanical damage or any other reason that causes water to enter the concrete, it heals the concrete by self-healing by producing crystals again.
- ▶ It provides diffusion transition in the concrete. Thanks to this feature, the moisture in the concrete evaporates through the crystal cavities and allows the wall to dry.
- ▶ It eliminates the disadvantages of surface insulation materials because it is used instead of covering type materials.
- ▶ Concrete freezing is prevented. The tensile strength increases.
- ▶ It becomes an integral part of concrete.
- ▶ It is not toxic. It is suitable for contact with drinking water.
- ▶ It is resistant to high hydrostatic pressure (14 Bar). It cannot lose its features under high hydrostatic pressure.
- ▶ It is applied to the surface of the concrete in both negative and positive ways.
- ▶ It protects the steel reinforcement in the concrete against corrosion.
- ▶ It allows concrete to breathe.

- ▶ It is resistant to aggressive chemicals (PH-3-14)
- ▶ It does not require dry ground.
- ▶ The edges of the concrete structure will not be punctured, torn or broken.
- ▶ It does not require priming or correction which increase the cost on the surface before application.
- ▶ It does not require sealing, glazing or finishing the entire surface at corner and edge joints or between covers.
- ▶ It can be applied to pre-treated or new concrete.
- ▶ It does not require any protection items in placing steel, wire mesh or other materials.
- ▶ It is reactive, it becomes active when it comes into contact with water.
- ▶ It has high resistance against the effects of aggressive environments, petroleum products and sea water.
- ▶ Its application has lower cost than other methods.
- ▶ Crystal structure does not deteriorate. It is permanent.
- ▶ It can be easily added to concrete at the power plant or construction site.
- ▶ It minimizes cracks and shrinkage in concrete.
- ▶ Its application is easy and it does not require heavy workmanship.
- ▶ It prevents ettringite formation.

Freezing and Dissolution

Water is absorbed into the porous concrete.

The water in the concrete turns into ice and expands.

The expanding pressure causes the concrete to crack, delaminate and crumble.

Steel Reinforcement Corrosion

Reinforcing steel in concrete increases tensile strength.

Liquid which contains corrosive chemicals passes through cracks, cavities and pores.

Steel rusts; rust creates extensive pressure that leads to cracking, delamination and chipping.

When corrosion begins, it is very difficult to determine the extent of damage to steel reinforcement.

Chemical Attack

Concrete is exposed to chemicals such as chlorides, sulfates, and acids.

These harmful chemicals use water as a way to get into the concrete.

Chemical reactions cause some problems such as concrete cracking, mass loss and serious damage to the concrete.

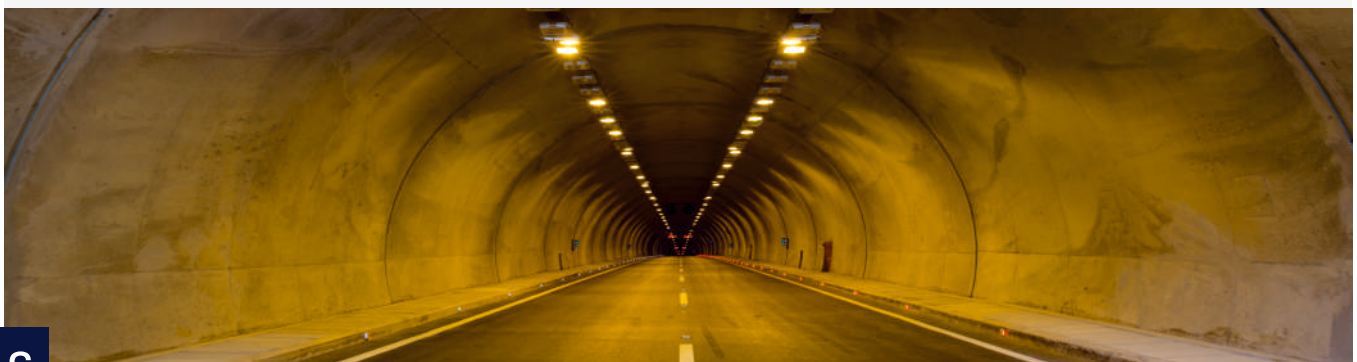
Chemical Reactions of Aggregate

A chemical reaction occurs between the alkaline cement paste and the reactive non-crystalline silica in the aggregate.

The alkali silica reaction which is the most common form of alkali-aggregate reactions, causes both severe expansion and cracking of concrete.

When the aggregate expands, it absorbs water and a gel form is obtained and it increases in volume. The resulting expansion pressure causes the concrete to crack.

Concrete loses its strength and structure deteriorates.



Application Areas

**RAFT FOUNDATION AND
SHEAR CONCRETES**

ROOF TERRACE BALCONY

WET AREA

ELEVATOR SHAFT

BASEMENT

CAR PARK

POOL AND WATER TANK

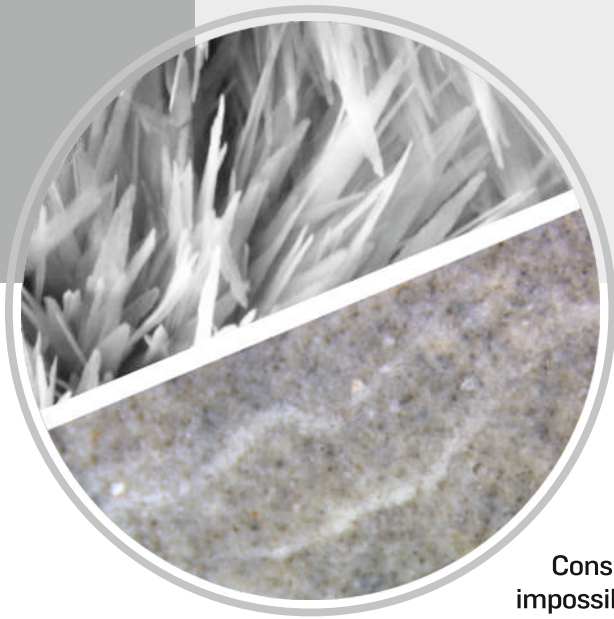
DAM

DOCK AND PIER

**TUNNEL BRIDGE AND
UNDERPASS**

**SEWAGE AND WASTE
WATER TANK**





MICROCRYSTALLINE HYDRATE FORMATION IN THE CONCRETE AND SELF-HEALING FEATURE

HYDROISOL water-soluble chemical additives in the form of aqueous solutions penetrate through the cavities of the concrete.

When HYDROISOL reacts with calcium oxide and aluminum oxide, it creates needle-head water-insoluble crystal hydrates, and these fill the capilar caves and microcracks in concrete.

Considering the crystalsalhydrates which are created in the concrete, it is impossible for water to leak into the concrete body through the capilar caves and the concrete construction is progressively waterproof.

Some of the water in the concrete cavities chemically create complex crystal hydrates. As a result, structures with low cavities emerge that help concrete to maintain its vapor permeability.

The vapor permeability of the concrete allows the moisture remaining in the concrete to be removed and the concrete to dry gradually in the next stages.

After the concrete body dries, unreacted water-soluble functional chemical additives crystallize and remain in the concrete cavities. When the new liquid source emerges, the water-soluble additives become a saturated salt solution. Thus, it creates non-water-soluble crystal hydrates in the form of pin-head and it gives the concrete "self-healing" feature.

TECHNICAL DIFFERENCES OF HYDROISOL PRODUCTS

FUNCTIONAL DIFFERENCE	HYDROISOL-ITH	BETOMIX-ITH	BETOMIX-ITH GEL
Description	Cement-based mortar	Cement-based admixture	Liquid admixture
Form	Powder	Powder	Liquid
It does not require any repair before application.	-	+	+
It does not require moistening on the concrete surface before insulation.	-	+	+
Before application, water should be added to the product and mixed.	-	-	+
The application does not require labor.	-	+	+
There is no obligation to moisture the concrete surface at the end of the insulation.	-	+	+
Consumption amount	1.0kg/m ²	1 % of the cement weight	1 % of the cement weight
Applicability and solutions in waterproofing	Positive + Negative	Positive + Negative	Positive + Negative



ENDING THE POSITIVE AND NEGATIVE INSULATION RULE WITH HYDROISOL

Insulation made from the direction the water comes from is called positive insulation, and if the insulation made from the opposite direction of the water coming from is called negative insulation in the waterproofing sector. In classical insulation products and crystallized waterproofing systems, both positive and negative waterproofing applications can be conducted considering their features and the project.

The inner surfaces of the water tank and the pools, the base of foundations, the surfaces of the reinforced concrete curtains which are in contact with the soil and the insulation made on the terraces can be given examples for positive applications.

Insulations made from the inside of the foundation curtain walls and the outer surfaces of the pools and water tanks are classified as negative applications.

Together with its deep penetrating feature into concrete, HYDROISOL provides high performance waterproofing by forming crystals up to 90 cm. This feature means that it is meaningless to apply waterproofing from positive and negative aspects. A definite and successful result are obtained in the waterproofing application made on both sides.

Waterproofing Solution In Concrete Cold Joints By Using Hydroisol

Cold joints are the parts of the concrete poured at different times, where water enters into, since the concretes are not fully fused to each other. (Example, foundation and curtain cold joints)

These joints are opened mechanically and repaired with plaster or HYDROISOL is applied on it to provide a guaranteed and lifetime waterproofing solution after chamfering. Cold joint formation and waterproofing problems are eliminated in new concrete when HYDROISOL additive is added.



Optimizing The Durability Of Concrete

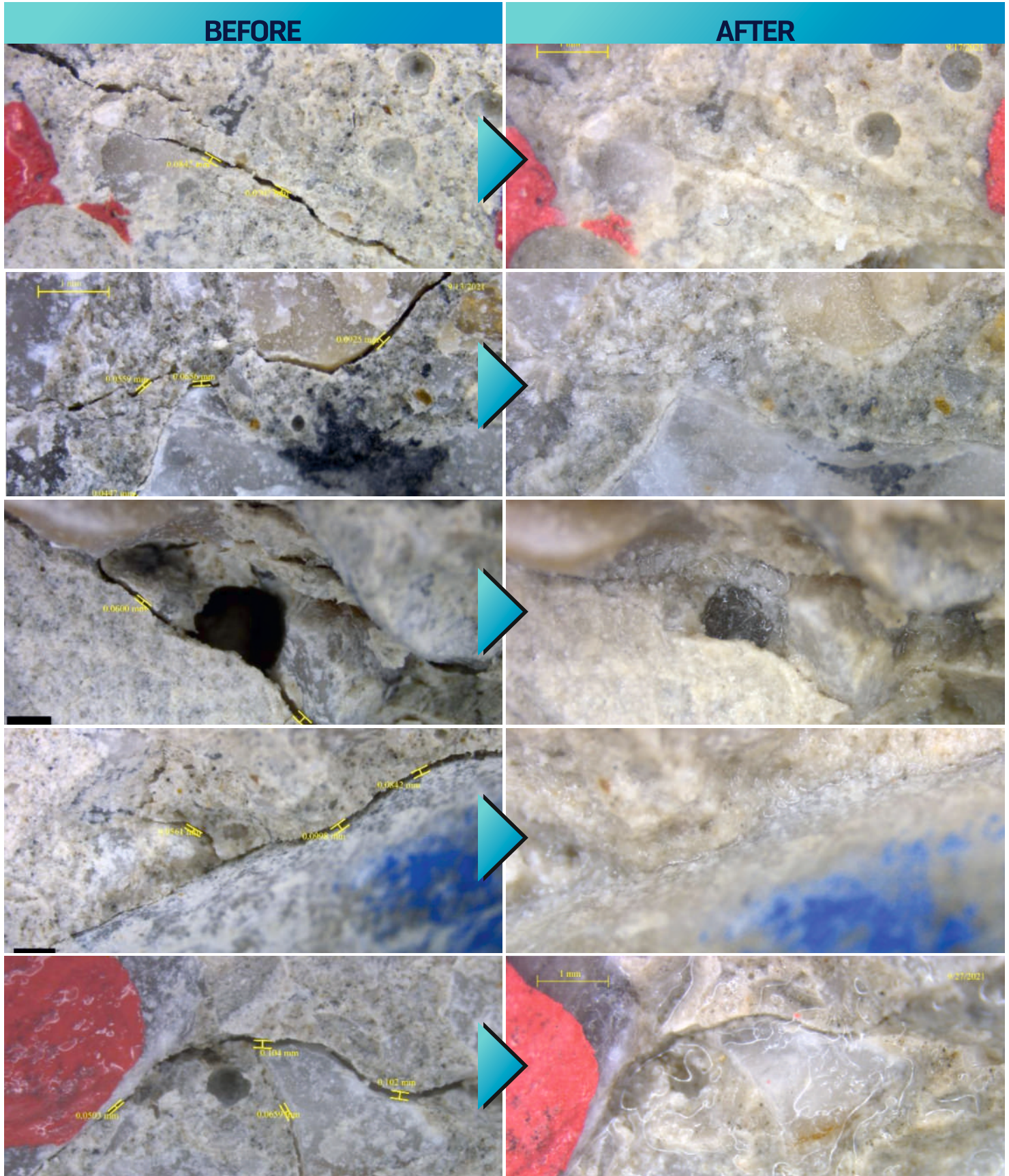
Concrete is a hard and rigid matrix. However, it is also porous and it can crack easily. Water-based chemicals which can enter into pores, microcracks and capillary channels, cause some problems that damage the concrete or the reinforcing steel.

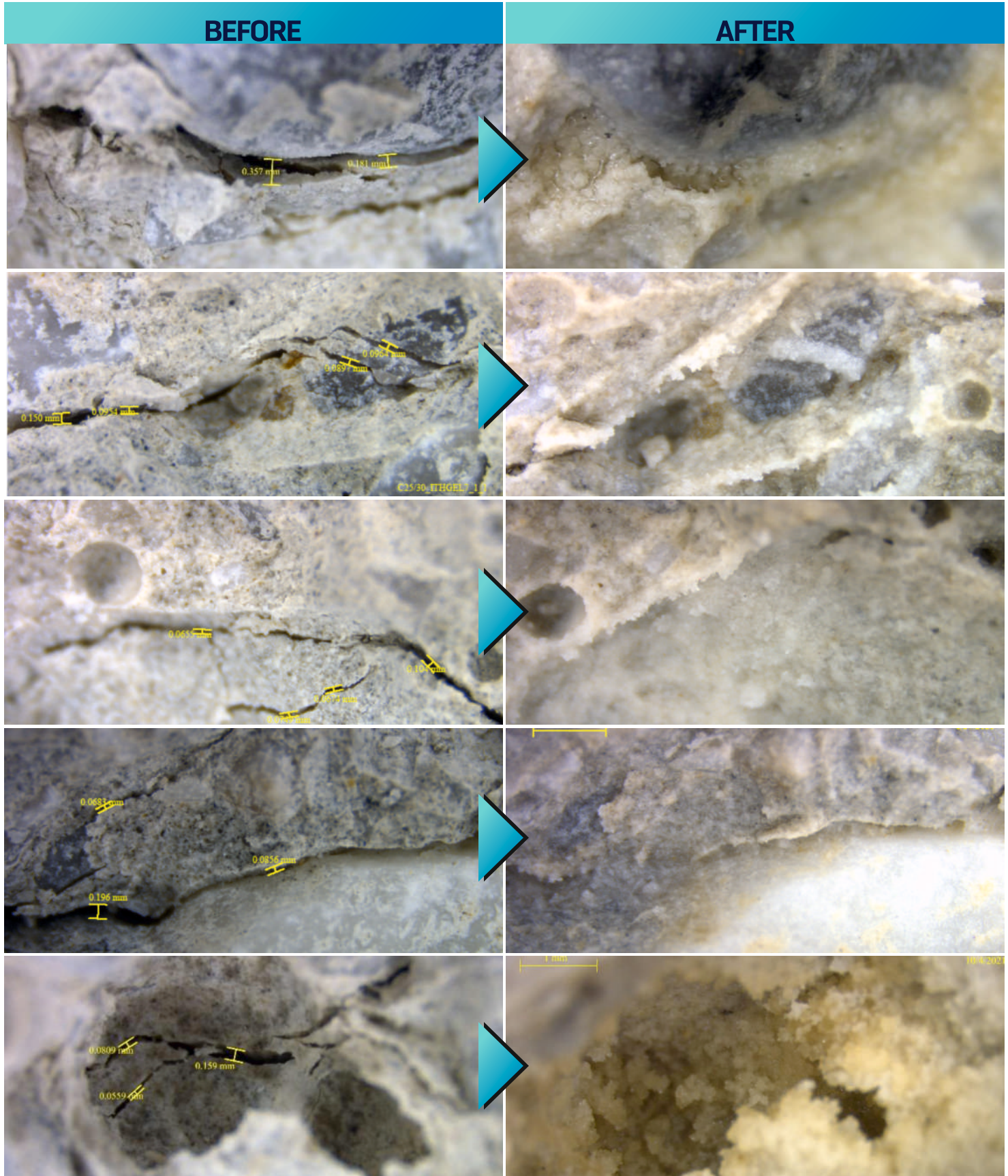
In addition to preventing corrosion in the reinforcement steel, HYDROISOL increases the strength of concrete by 10-15% by filling the cracks in the concrete and provides a long-lasting quality concrete opportunity by preventing problems such as concrete freezing.



Microcrystalline Production Technology

Microcrystalline Production and Self-Healing Stages







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