

# Aquastop Nanoflex<sup>®</sup>: the first ever breathable, anti-alkaline and chlorine-resistant waterproofing coating

THE FIRST  
SINGLE-COMPONENT  
BREATHABLE  
COATING



The technical and application limitations of traditional systems can now be overcome by Aquastop Nanoflex<sup>®</sup>, the new revolutionary, eco-friendly, mineral waterproofing coating. Aquastop Nanoflex<sup>®</sup> is insensitive to the aggressive nature of alkalis and chlorine and therefore waterproof, flexible and breathable over time. Result: high-performance waterproofing that guarantees the performance continuity of Biogel<sup>®</sup> No Limits<sup>®</sup> mineral gel-adhesive and Bioflex<sup>®</sup> mineral adhesive when laying tiles/stones on terraces, balconies, swimming pools and wet areas.

**KERA KOLL**  
The GreenBuilding Company

# What is the Aquastop Nanoflex® coating

## Aquastop Nanoflex®

Aquastop Nanoflex® is an innovative, low environmental impact coating, class Rating 3, result of Kerakoll®'s research for innovative GreenBuilding materials.

Aquastop Nanoflex® is a revolutionary product that is easy to apply: it creates a 100% water-repellent and breathable barrier that keeps buildings dry and healthy, assuring the living comfort championed in Kerakoll® GreenBuilding standards.



### AQUASTOP NANOFLEX®: SOLVES THE PROBLEM OF ALKALINE HYDROLYSIS

Scientific studies show that the cement plus latex systems feature high elasticity and very low modulus of elasticity, but are inadequate if used in a closed environment. The substrate of cement-based system along with adhesive is permanently damp due to infiltrations, condensation and residual humidity which results into strong alkaline environment (pH 12-14).

The solubilisation of the alkaline compounds present on the cement substrate and the adhesive, activates the chemical process of **alkaline hydrolysis**. **If the coating is formulated with inadequate polymer dispersions and cement it results into deterioration of the waterproofing layer.**



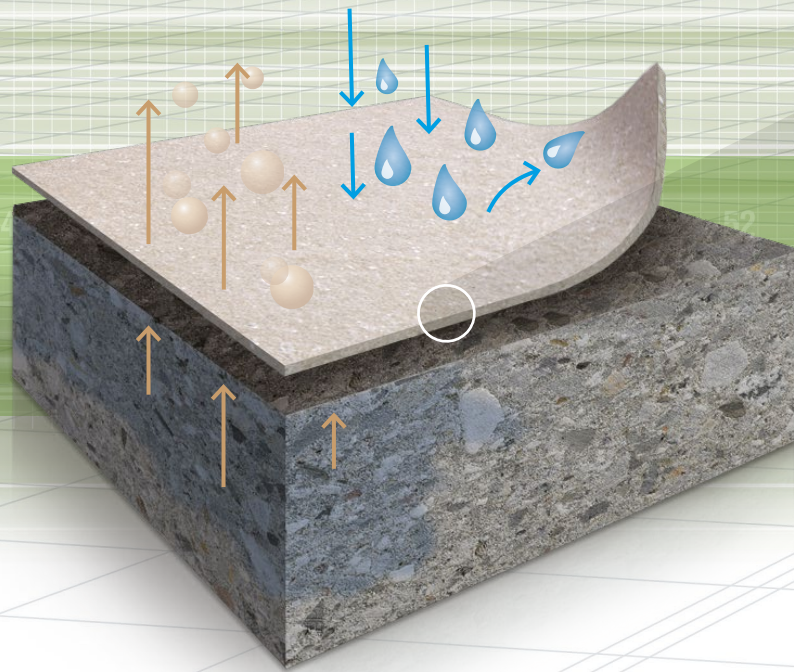
### THE REVOLUTIONARY, SINGLE-COMPONENT BREATHABLE COATING

Ever since the invention of the first single-component waterproofing coating, the researchers at Kerakoll® have never stopped. With an approach of continuous innovation, we combined the latest technology and raw materials to create solutions that protect buildings from water even under the most critical conditions. The exclusive properties of the new Aquastop Nanoflex® coating are:

- **Long-term waterproofing and breathability**
- **Insensitive to alkaline and chlorine aggression**
- **High strength and flexibility throughout the product's life**

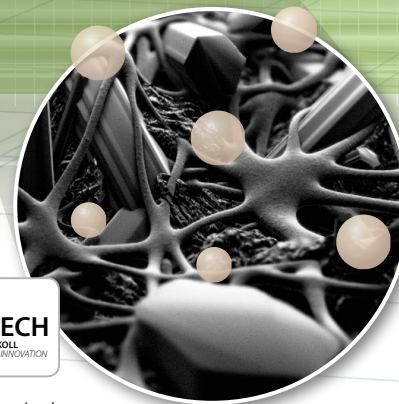
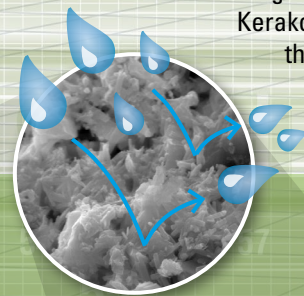
The result is a totally waterproof and breathable barrier, a perfect balance between flexibility, chemical resistance in an alkaline environment and hydrophobicity, developed in a single-component product.

# The secret of the **Aquastop Nanoflex®** coating lies in its revolutionary Nanotech lattice



## GREATER HYDROPHOBICITY

The huge challenge that Kerakoll® engineers managed to overcome was how to regulate the cement hydration process through the properties of the Kerakoll® polymer; their research produced a nano-structure lattice that is perfect both in qualitative and quantitative terms, with a maximum porosity of 40 nanometres, i.e. **50,000 times smaller than a water droplet**, creating a 100% water-repellent barrier.



## 1 BILLION NANO-PORES PER SQUARE CM

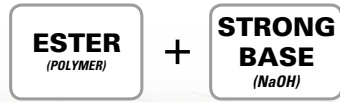
The exclusive Kerakoll® polymer generates a polymerization reaction producing a maximum 40 nanometre, open-pore, nanostructure lattice, i.e. **200 times bigger than a vapour molecule**, making the coating extremely breathable and preventing any dangerous pressure build-ups caused by residual moisture content in substrates.



*The nano-structures reveal a polymer that is perfectly dispersed in the mineral matrix and closely bonded with the inert materials and various hydration products in the clinker.*

# How does the Aquastop Nanoflex<sup>®</sup> coating work

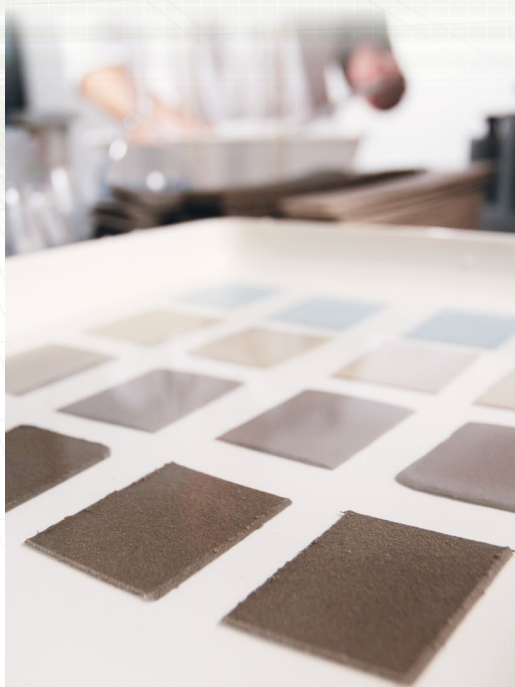
## ALKALINE HYDROLYSIS (Saponification)



**ALCOHOL**  
(VOLATILE COMPOUNDS)

**SOAP**  
(SOLUBLE COMPOUNDS)  
Carboxylic acid salts

The chemical reaction breaks down the polymer (esters) into volatile compounds (alcohols) and soluble compounds (soaps) which, when they are dispersed and washed away, cause rapid deterioration and decay.



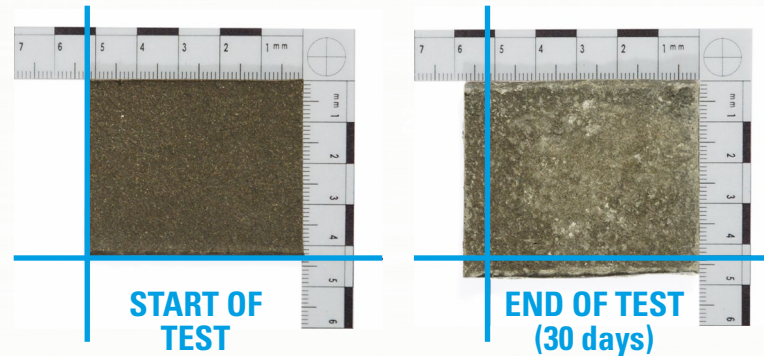
### ACCELERATED TEST ON RESISTANCE TO ALKALINE AGGRESSION OVER TIME

(immersion in a 30% Sodium Hydroxide solution for 30 days)

Kerakoll<sup>®</sup>'s research team has compared two-component cement-based waterproofing compounds and Aquastop Nanoflex<sup>®</sup> with strength tests under strong alkaline conditions. The old two-component compounds deteriorate even after a short time, losing their characteristics of waterproofing and adhesion to the substrates.

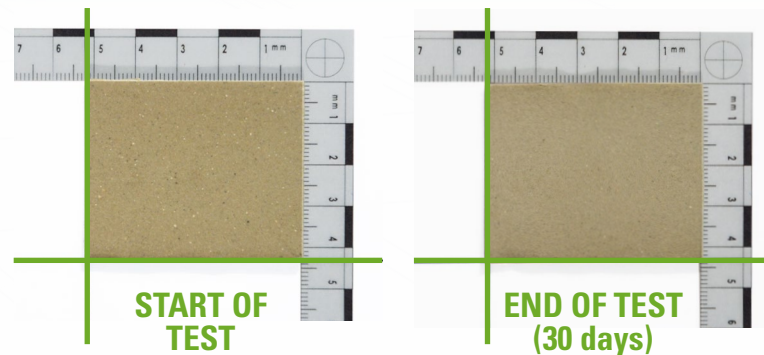
On the contrary, the new Aquastop Nanoflex<sup>®</sup> coating remains waterproof over time.

#### TWO-COMPONENT WATERPROOFING



The test sample of two-component compound has suffered strong and irreversible deterioration, highlighted by **expansion of the surface**, compromising its properties of waterproofing, cohesion, adhesion and flexibility.

#### AQUASTOP NANOFLEX<sup>®</sup>



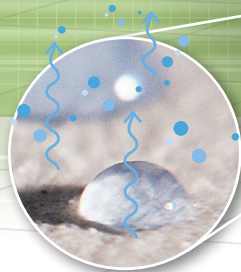
The test sample of Aquastop Nanoflex<sup>®</sup> has **retained its original dimensions**, guaranteeing high chemical-physical performance and total water-resistance even after chemical aggression.

# Aquastop Nanoflex®: 5 unique performances, 5 times as safe

## 1 Waterproofs and breathes

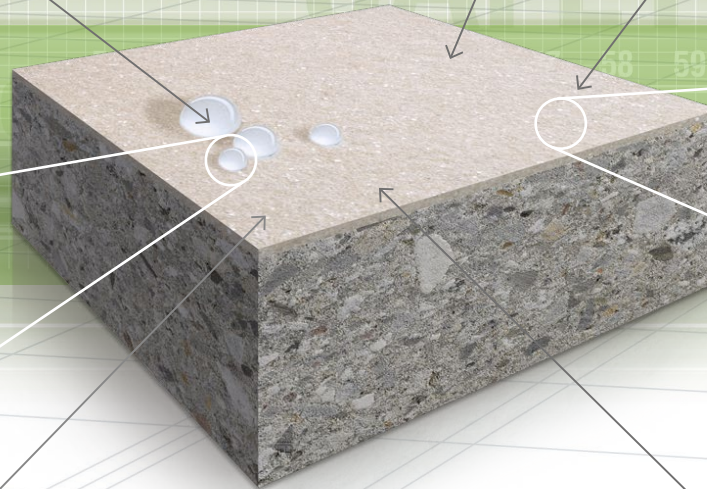
The new Aquastop Nanoflex® coating contains about 1 billion microscopic pores per square cm. These nano-pores are about 50,000 times smaller than a drop of water, but 200 times bigger than a water vapour molecule.

Thus, while the drops of water are unable to penetrate the Aquastop Nanoflex® coat, the water vapour (that is to say the damp from the substrate in gaseous form) is easily able to come out, preventing the formation of condensation and excessive vapour pressure that would cause the detachment of the coating from the surface.



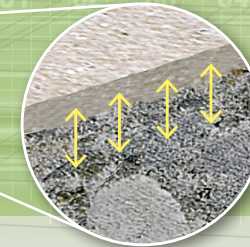
## 2 Not affected by the alkaline hydrolysis of cement

By design, Aquastop Nanoflex® is resistant to alkaline aggression in screeds and adhesives used to lay various types of coverings. Numerous laboratory tests show that the Aquastop Nanoflex® coating is not affected by the constant presence of humidity in alkaline environments (pH  $\geq$  12) hence constant protection and durability are guaranteed over time.



## 3 Withstands attack from chlorinated water

The Aquastop Nanoflex® coating is also resistant in highly aggressive environments like swimming pools. Aquastop Nanoflex® is not affected by the attack of chloride ions (chlorine), guaranteeing waterproof protection through its entire life cycle.



## 5 High initial adhesion to cement substrate

The Nanotech lattice can penetrate even the sub-microscopic airless pockets in the surface, penetrating deeper and quicker into the coating-substrate interface.

## 4 High levels of mechanical resistance and flexibility

Aquastop Nanoflex® develops higher tensile strengths than any other two-component compound, guaranteeing consistently high performance with Biogel® No Limits® gel-adhesive. Aquastop Nanoflex® doesn't deteriorate nor loses flexibility and cohesion over time, protecting coverings from any cracks in the substrate.

# Aquastop Nanoflex®: the first Integrated high-resistance System

**AQUASTOP NANOFLEX®: THE FIRST INTEGRATED WATERPROOFING SYSTEM WITH HIGH ADHESION AND SUPERIOR DURABILITY**

**Only waterproofing of the surfaces is not enough**, as it has to be covered with tiles or glass mosaic, bonded using cement-based adhesives. It is necessary to guarantee that the entire laying system is able to achieve maximum adhesion levels and maintain it over time.



## Aquastop Nanoflex®

**THE REVOLUTIONARY,  
SINGLE-COMPONENT  
BREATHABLE COATING**

Aquastop Nanoflex® develops a smooth, fluid paste that can be adjusted by varying the amount of water in order to obtain optimal workability for the particular building site conditions, guaranteeing maximum adhesion of the bonded system.



## Biogel® No Limits®

**THE FIRST HIGH-PERFORMANCE  
MULTI-PURPOSE FLEXIBLE  
STRUCTURAL GEL ADHESIVE**

Biogel® No Limits® develops full substrate and tile back coverage ensuring high resistance to shear stress as well as total safety when tiles of all formats and thicknesses are laid even in the most demanding of applications.



## Fugalite® Bio

**THE WATER-RESISTANT GROUT  
WITH HIGH COLOUR SOLIDITY**

Fugalite® Bio develops high levels of mechanical resistance in a very short time achieving high level of colour fastness and resistance to chlorinated water.

# Aquastop Nanoflex® guarantees the best performance in extreme building site conditions

## AQUASTOP NANOFLEX®: BETTER UNDER EVERY CONDITION

The **Aquastop Nanoflex® Integrated System**, developed thanks to exclusive Kerakoll® technology, is the first waterproofing, laying and grouting system that guarantees perfect compatibility and the best technical performance even in the most extreme site conditions.

The advantages obtained by this innovative system are clear from the **“package adhesion” performance levels foreseen by standard EN 14891**.

The high initial adhesion performance of Biogel® No Limits® remains practically unchanged, and the durability performance after the foreseen number of chemical attack cycles remain well above the minimum requirements of the standard, and above all double or triple the values seen in old systems using two-component mortars.

TEST for EN 14891	REGULATORY REQUIREMENT	NEW INTEGRATED SYSTEM AQUASTOP NANOFLEX® + BIOGEL® NO LIMITS®	OLD SYSTEM TWO-COMPONENT MORTAR + Class C2 Adhesive
Initial adhesion	0.5 N/mm <sup>2</sup>	2.2 N/mm <sup>2</sup>	0.8 N/mm <sup>2</sup>
Adhesion after contact with water	0.5 N/mm <sup>2</sup>	1.1 N/mm <sup>2</sup>	0.55 N/mm <sup>2</sup>
Adhesion after freeze-thaw cycles	0.5 N/mm <sup>2</sup>	1.0 N/mm <sup>2</sup>	0.6 N/mm <sup>2</sup>
Adhesion after heat ageing	0.5 N/mm <sup>2</sup>	2.0 N/mm <sup>2</sup>	1.2 N/mm <sup>2</sup>
Adhesion on contact with chlorinated water	0.5 N/mm <sup>2</sup>	0.8 N/mm <sup>2</sup>	not declared
Adhesion on contact with lime water	0.5 N/mm <sup>2</sup>	1.5 N/mm <sup>2</sup>	0.6 N/mm <sup>2</sup>
Adhesion after prolonged contact with lime water (28 days)	KK method	1.5 N/mm <sup>2</sup>	no test

# Aquastop Nanoflex<sup>®</sup>: single-component technology

## Aquastop Nanoflex<sup>®</sup>: 1 component, 4 benefits

### 1 Variable rheology

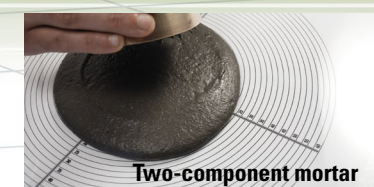
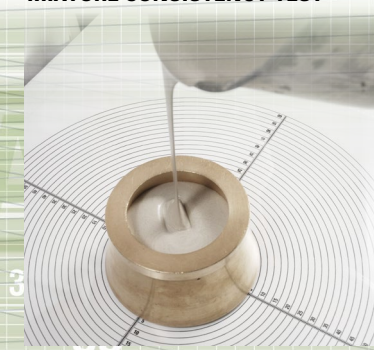
Where two-component systems cannot be used, Aquastop Nanoflex<sup>®</sup> works safely because it allows the fluid effect of the mixture to be regulated. The great thing about single component products is that you can vary material consistency (rheology) by altering the mixing ratio as they mix with water on-site. Aquastop Nanoflex<sup>®</sup> guarantees high end performance in all conditions of use.



### 2 Easier to work, less effort

The workability of a waterproofing coat is measured by the ease with which the overlaps are laid and closed to guarantee total waterproofing of the substrate. Aquastop Nanoflex<sup>®</sup> has a workability time that is more than double compared to two-component compounds. Fluidity of the material assures ease of application on-site while retaining all the waterproofing properties of the product for longer duration.

#### MIXTURE CONSISTENCY TEST



### 4 More coverage

Thanks to the innovative, high-coverage formulation, one 20 kg bag of Aquastop Nanoflex<sup>®</sup> will waterproof 30% more square meters than a two-component product. This is a major benefit for both application professionals and building sites: light, user-friendly bags.



### 3 Less plastic, less CO<sub>2</sub>

With every bag of Aquastop Nanoflex<sup>®</sup> introduced on the market to replace two-component waterproofing products in plastic cans, 1.5 kg less of CO<sub>2</sub> is released into the atmosphere.

Nanotech technology also reduces the amount of cement needed to obtain optimal performance levels, saving yet another 3.2 kg roughly of CO<sub>2</sub> per bag.





# Aquastop Nanoflex®: certified technology, eco-friendly

## AQUASTOP NANOFLEX®: INNOVATION FOR THE ENVIRONMENT

Aquastop Nanoflex® is a single component waterproofing coating, with variable rheology, that defines the new technology with the lowest possible environmental impact. Optimisation of processes allows a reduction in the use of cement, production of which generates considerable carbon monoxide emissions into the environment. The Kerakoll® polymer is the result of research that has lasted for years, with the aim of achieving the lowest release levels for volatile compounds into the environment.



Aquastop Nanoflex®, the first of its kind, passed the GEV-test measuring volatile organic compound issue, and was rated as an EC 1 Plus very low emission product.



Aquastop Nanoflex® fully satisfies all the requirements of new European standard EN 14891 for waterproofing prior to laying of ceramic coatings applied using adhesives, even at low temperatures. More specifically, Aquastop Nanoflex® achieves much higher values than the minimum requirements during durability tests.

## AQUASTOP NANOFLEX®: INNOVATION FOLLOWING STANDARD

European standard EN 14891 applies to all waterproof products consisting of cement modified with polymers, by products dispersed in water or by reactive resins, used under ceramic tiles, to be laid internally and externally on walls and floors. The standard provides product terminology, determines the test methods and the necessary requirement values, specifying the class and designation of products.

Aquastop Nanoflex® is classified by norm as CM O1P:

**CM** = cement-based modified with polymers

**O1** = Crack-Bridging Ability at -5 °C

**P** = resistant to contact with chlorinated water (for example: for use in swimming pools)

## SGS certificate



The Swiss Certification Institution SGS certifies the measurement method used in Kerakoll's environmental sustainability GreenBuilding Rating®.



## AQUASTOP NANOFLEX® GREENBUILDING RATING®



RATING SYSTEM ACCREDITED BY CERTIFICATION BODY SGS

## LOCALLY-SOURCED MINERALS

Aquastop Nanoflex® is produced using local resources, so as to cause no environmental pollution during transport.

## LOW CO<sub>2</sub> EMISSIONS

With every bag of Aquastop Nanoflex® introduced on the market to replace two-component waterproofing products in plastic cans, **1.5 kg less of CO<sub>2</sub> is released into the atmosphere**

## CAN BE RECYCLED AS INERT MATERIAL

After it has cured, Aquastop Nanoflex® can be recycled as inert waste as it does not undergo any physical, chemical or biological transformation.

## IAQ VOC

Aquastop Nanoflex® is the first certified waterproofing coating with very low volatile organic compound (VOC) emissions, ensuring better air quality.

# Aquastop Nanoflex® in building site

**Aquastop Nanoflex®: waterproofing has never been safer or easier**  
**Easily applied products, only 3 application phases, just 3 days for laying**

INNOVATION



1



2



3



1<sup>st</sup> day

2<sup>nd</sup> day

3<sup>rd</sup> day

## PHASE 1 EXPANSION AND CONNECTION JOINTS

- Fixing of Aquastop 120 tape  
with Aquastop Nanoflex®

## PHASE 2 WATERPROOFING

- Application of the 1<sup>st</sup> coat  
of Aquastop Nanoflex®  
and insertion of the  
Aquastop AR1 mesh

## PHASE 3 WATERPROOFING

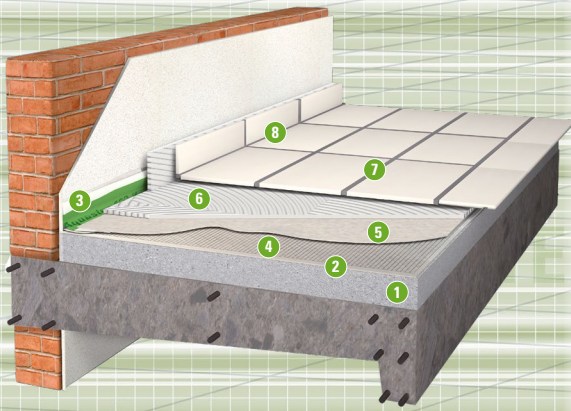
- Application of the  
2<sup>nd</sup> coat of Aquastop  
Nanoflex®

## LAYING

- Laying tile/stones  
with Biogel® No  
Limits® gel-adhesive

**Aquastop Nanoflex® is the revolutionary, totally waterproof barrier that can subsequently be coated with ceramic tiles, mosaic and natural stones. Aquastop Nanoflex® is the only product of its kind designed to make your job easier on building site: with only one component, it can be mixed with water; the extraordinary workability it possesses means the amount of water used can be customised to suit the climate and conditions on building site; guaranteed very easy and fast laying of the waterproofing system.**

# Porcelain tiles laying on terraces and balconies



- Guarantees safe laying in high temperature and difficult humidity conditions
- Ensures protection of the underlying structure
- Guarantees excellent resistance to changes in temperature
- Total water resistance
- Fast completion of work
- System with very low VOC emissions, improves the quality of air and increases the level of health protection for people



**EXPANSION JOINTS**

⑧ **Silicone Color**  rating 3 

**GROUTING**

⑦ **Fugabella® Color**  rating 4 


**LAYING**

⑥ **Bioflex®**  rating 4 

**WATERPROOFING**

⑤ **Aquastop Nanoflex®**  rating 3 

2<sup>nd</sup> coat

④ **Aquastop AR1** 

Reinforcing mesh

③ **Aquastop 120** 

Waterproofing of joints

② **Aquastop Nanoflex®**  rating 3 

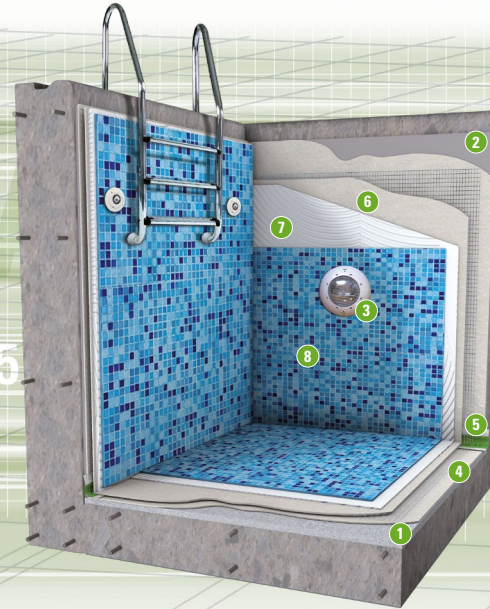
1<sup>st</sup> coat

**SUBSTRATE**

① **Keracem Eco Pronto**  rating 5 

Preparation of the screed

# Porcelain tiles and mosaic laying in swimming pool



- Ensures safe laying under continuous immersion
- High resistance to chlorinated water
- Maintains the hygiene of surfaces
- System with very low VOC emissions, improves the quality of air and increases the level of health protection for people

**GROUTING**

⑧ **Fugalite® Bio**  rating 3 


**LAYING**

⑦ **Biogel® No Limits**  rating 5 

**WATERPROOFING**

⑥ **Aquastop Nanoflex®**  rating 3 

2<sup>nd</sup> coat

⑤ **Aquastop AR1 - Aquastop 120** 



Waterproofing of joints and reinforcing

④ **Aquastop Nanoflex®**  rating 3 

1<sup>st</sup> coat

③ **Aquastop Nanosil**  rating 4 

**WALL LEVELLING**

② **GeoLite®**  rating 3 

**SUBSTRATE**

① **Keracem Eco Pronto**  rating 5 

Preparation of the screed

# Only Kerakoll® has Aquastop Nanoflex®



Aquastop Nanoflex®: the first  
single component breathable  
waterproofing coating



Together with nature we  
can build the future.

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