



# Long life for concrete

**Waterproof – Resistant – Durable**



[www.betonguard.ch](http://www.betonguard.ch)



The background of the entire page is a dark, artistic photograph of a bridge at night. A bright light source, possibly the moon or a street light, reflects off the water in the foreground, creating a shimmering path. The bridge's structure, including cables and a walkway, is visible in the background, partially illuminated.

# BUILDING FUTURE

BetonGuard is the result of a research and development project with the objective of resolving the well known issues related to water infiltrations in concrete structures, both under and above the water table. Our goal was to obtain waterproof concrete with high mechanical performances with the use of one product. The lack of a similar product on the market encouraged our technical team to search for the best solutions and implement them to create this product. The BetonGuard method is present in the Italian market and is actively promoted in many countries.

# CERTIFICATIONS

## CERTIFICATIONS OBTAINED

- 1 – Water absorbtion
- 2 – Water penetration under pressure
- 3 – Resisance to chloride and solfate penetration
- 4 – Determination of compressive strength

- **EU** Certification
- **ASTM** certification
- **Tunisian** certification
- **Switzerland** certification
- **CE** certification

**EU certification for storage  
and transportation of drinking watere**



# The advantages of BETONGUARD

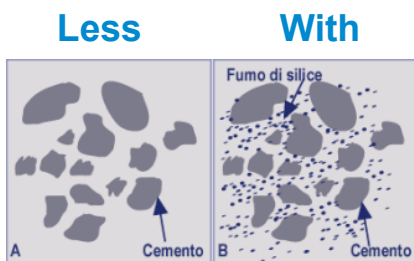
## Simple to use

Waterproofing and exceptional increases in mechanical performances are achieved at the same moment the concrete treated is poured. BetonGuard can be added at the concrete readymix plant, or in the mixing truck on the job site. There are no restrictions to where it should be added.

## Elimination of both systems and traditional products for water proofing

Waterproofing is obtained at the same moment you pour the concrete. The result is no more wasting precious time on the job site in the execution of traditional water proofing systems. All costs related to these, including labour costs, are totally eliminated.

## PERFORMANCES OBTAINED



### REACTION WITH NANO END MICRO SILICA

- WATERPROOFING IN THE MASS OF CONCRETE
- EXCEPTIONAL INCREASES IN MECHANICAL PERFORMANCES
- GREATER COHESION AND STABILITY OF THE PASTE
- NO SEGREGATION OR BLEEDING
- ANTI WASH AWAY
- RESISTANCE TO CAVITATION AND ABRASION
- RESISTANCE TO AGGRESSIVE CHEMICALS
- NO ALCALINE “POP OUT” REACTION
- EXTREME REDUCTION OF EFFLORESCENCE
- STRUCTURE DURABILITY IS DOUBLED
- CONSISTENT RESULTS



# BETONGUARD

**Multi functional waterproof compound in powder, for high performance concrete**



Betonguard is a special powder form compound that is extremely efficient for the production of high performance concretes.

This method is recognized by the EU regulation UNI EN 206-1:2006,3.1.23, type II; pozzolanic add mixtures that are capable of enhancing the matrix and creating mutations in the mass of the concrete paste. The result is a drastic reduction of concrete porosity with a much more stable, cohesive and compact paste. The consequence of this reaction is a very high degree of waterproofing coupled with remarkable increases in mechanical and chemical resistances. The raw materials that used in Betonguard, such as Nano and Micro silica, are of the highest quality and are all CE and EU approved.

## PARTICULAR ASPECTS AND THE POZZOLANIC EFFECT

The specific surface of the Nano and Micro silicates, which are one of the components of Betonguard, is very high. This is the foundation for the extraordinary hydraulic and pozzolanic efficiency that characterize this product. The special reactive fillers in Betonguard completely fill in the inter spaces between the cement grain and the aggregates. Besides all the waterproofing and resistance effects, this will also prevent segregation and bleeding of the paste.

## CHEMICAL-PHISICAL COLLATERAL EFFECTS

Betonguard, as a result of its components, reacts with the free lime or calcium hydroxide  $\text{Ca(OH)}_2$ , that represents the most soluble and unstable element of the cementitious conglomerate. The pozzolanic behaviour, that is, the densifying and filling effect, combined with the reaction of the amorphous silica – calcium hydroxide, results in a highly compact cementitious matrix and ultimately, enormous increases in mechanical and waterproofing capacities.



# BETONGUARD

## MULTIPLE APPLICATIONS

BetonGuard is used to produce waterproof and durable concrete for the following structures;

- Foundations
- Concrete tanks
- Slabs
- Channels
- Galleries
- Tunnels
- Basins
- Dams
- Underground parking







# BETONGUARD<sup>®</sup>

WATERPROOF CONCRETE



# Building Future



# THE METHOD

## Method for an efficient mixture of BetonGuard with concrete

1. Dry mix Aggregates + sand + cement
2. Add 90 % of the water to the concrete mix
3. Add BetonGuard and mix for 1 minute per 10 kg bag used
4. Add the remainder of the water



## RECOMMENDED RECIPE FOR ONE CUBIC METER OF CONCRETE

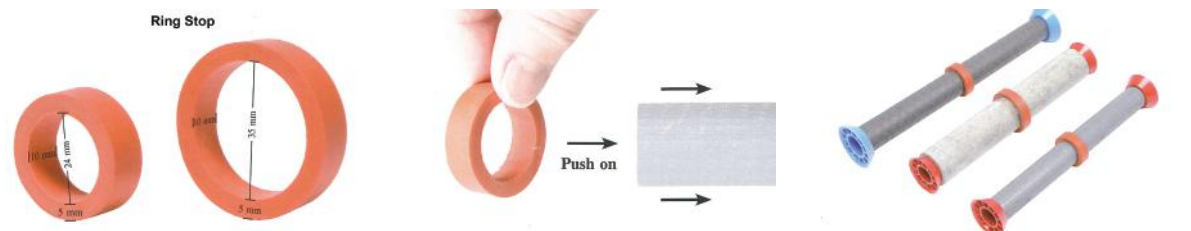
- Cement 4.25 = 330 kg
- W/C ratio = 0,40 – 0,45
- BetonGuard = 3 %
- Do not use super plasticizers

### WATER SWELL

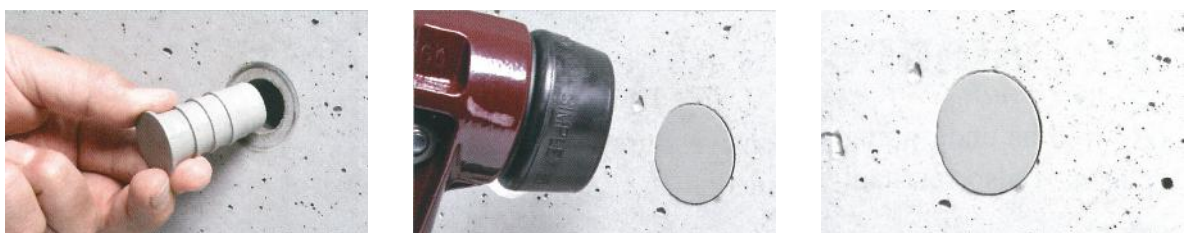
The use of BetonGuard in the concrete paste produces a high performance waterproof concrete. To maximize the final results we recommend a prolonged mixture of the concrete paste in order to avoid lumps. BetonGuard can be prepared and furnished in the ready mix plant as it can be easily stocked in silos. However; it can also be added to the mixing truck directly on the job site if necessary. In this case, we advise a mixture of at least 1 minute per 10 kg bag of BetonGuard used.

The long workability obtained with the use of BetonGuard allows you to lengthen the pouring time, and greatly increases its pumpability. To assure the waterproofing of the structure in its weak points such as joints, we recommend the use of **WATER SWELL – CORK SWELL – RING SWELL** accessories in bentonite and hydro expansive rubber.

### RING SWELL



### CORK SWELL



# BETONGUARD





**ECO COMPATIBLE**



**BETONGUARD<sup>®</sup>**  
WATERPROOF CONCRETE





**BUILDING FUTURE**

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