



# **ecOBETON**

## **TOTAL CONCRETE PROTECTION**

Ecobeton focuses on protection and durability. Specifically, it develops, manufactures, and markets products and systems for the complete protection of concrete and building materials. Using select raw materials, it offers practical solutions that are respectful of both people and the environment, tested since 1918 with documented references worldwide.

Since its inception, Ecobeton has supported corporate social responsibility by offering non-toxic, completely eco-friendly, and easy-to-use products. Its production specialises in three lines:

- Protection and Waterproofing
- Decorative Coatings
- Restoration and Reconstruction

The RESTORATION AND RECONSTRUCTION line includes systems for safely and effectively repairing, reprofiling, and beautifying concrete.

The line includes:

- Crono: high-strength, fast-setting fibre-reinforced mortar;
- Strutturale: high-performance PCC mortar for reprofiling damaged or deteriorated concrete;
- Degreaser: enhanced degreasing detergent for substrate preparation;
- Rust Buster Gel: rust converter for metals;
- Bonding Agent: multifunctional product that transforms concrete and mortar into PCC (Polymer Cement Concrete).

## What is PCC concrete ?

**Polymer Cement Concrete (PCC)** is a type of concrete or mortar that uses a polymer binder in addition to Portland cement. Adding a polymer to the mix improves both the fresh mix and the mechanical properties of the hardened concrete, enabling applications that would be difficult to achieve with conventional concrete or mortar.

Generally, PCC mixtures provide superior compressive, tensile, and flexural strengths, improved adhesion to surfaces, enhanced waterproofing, and increased durability over time.

**Bonding Agent** is a ready-to-use liquid polymer that should be added to the mixture during the mixing process.

When included, **Bonding Agent** creates a mixture that adheres and bonds exceptionally well to the substrate, facilitating effective repairs between old and new concrete. It can also be mixed with cement to form a bonding slurry, which promotes strong adhesion between the two concrete pours.

Bonding Agent replaces part  
of the mixing water



## Concrete surface restoration

When a concrete surface is damaged due to weathering, mechanical stress, or wear, it can be restored with a thin layer. To prepare for this, the substrate must be mechanically cleaned until a solid, cohesive surface is achieved. The new concrete layer, which includes **Bonding Agent**, can be just a few centimetres thick and can be smoothed using a mechanical float, just like regular concrete.

Comparison between standard C30/37 concrete and concrete with Bonding Agent in a 1:2 ratio with water.

Compressive strength + 20%

Flexural strength + 15%

Capillary absorption - 15 %



## Long-lasting repairs and restoration

To perform effective and long-lasting repairs to concrete of any thickness and shape, use **Bonding Agent** instead of the mixing water to obtain a strong mortar that bonds even in thinner areas.

Using **Bonding Agent** allows you to reduce the water/cement ratio. Reducing the mixing water and adding the copolymer will drastically reduce shrinkage cracks, improve waterproofing, and increase chemical resistance, extending the concrete's service life, especially when exposed to frost and adverse weather conditions.



## Total bonding between concrete casts

When installing a new floor over an existing concrete slab, especially if the new concrete slab is thin, it's crucial for the old and new surfaces to bond completely. This bonding is necessary to effectively transfer the mechanical loads that the new floor needs to support. To achieve this, you can create a slurry by mixing **Bonding Agent** and Portland cement in a 1:1 ratio. Spread this slurry over the old slab before pouring the new concrete. It's important that the new concrete slab is laid over the slurry while it is still wet. If the slurry dries out, you will need to apply a new layer of fresh slurry.



1. Application of adhesion promoter, Bonding Agent and cement slurry.



2. Adding Bonding Agent to the concrete directly in the mixer.



3. Laying the concrete. In this case, it was possible to create a new 4 cm thick pavement.

## Underfloor heating screeds

When installing underfloor heating, it is crucial to keep the thickness of the material above the pipes or heating elements as minimal as possible while still meeting the required mechanical performance and relevant regulations. Thicker screeds can lead to reduced thermal conductivity as well as increased installation and operational costs.

Conversely, if the thickness is too thin, there is a higher risk of cracking and mechanical failure.

At the same thickness, adding **Bonding Agent** to the screed mix will result in significantly superior mechanical performance, very little cracking, and you can even choose a decorative microcement as the final flooring.

Low-thickness screed above underfloor heating



Example of a low-thickness concrete floor installed over electric underfloor heating



## Low-thickness concrete reprofiling

By adding **Bonding Agent** to ordinary concrete, you can successfully reprofile concrete surfaces with a low thickness, sometimes as thin as a few centimeters, while minimizing the risk of the new concrete detaching from the substrate or experiencing cracking and delamination. This method enables the renovation of old concrete floors, both indoors and outdoors, without compromising their height or load-bearing capacity. If the substrate is sufficiently sound and stable, the final mechanical performance will surpass that of a traditional concrete pour.



## Repair and reprofile

When repairing a hole or concrete element, it is important to square the area being repaired. This ensures that the mortar has a minimal thickness at the edges. Repairs often detach from the substrate due to hygrometric shrinkage, which reduces the volume of the mortar. However, by incorporating **Bonding Agent** into the mix, you can extend the repair profile to the edges, creating a feather edge. This method reduces the risk of the repair delaminating over time.



## Variable thickness

Sometimes, it's necessary to create a cast or ramp with variable thickness, where one edge is thinner than the other. In these situations, there is a high risk of cracking because the thinnest part is prone to detaching from the substrate and curling up. To ensure proper adhesion to the substrate and reduce hygrometric shrinkage, it is essential to add a polymer, such as **Bonding Agent**, to the mix. This will help achieve optimal results, even in challenging conditions.



## Waterproofing

One of the most interesting features of **Bonding Agent** is its ability to waterproof the concrete or mortar to which it is added. Using an integral waterproofing system is always beneficial, as it significantly enhances the chemical resistance and overall durability of the concrete. Most importantly, it effectively prevents the annoying problems that can arise when a screed allows water to seep through, providing reassurance to the users.



## Recommended dosages for PCC concrete

When selecting concrete, it is essential to follow the designer's guidance, which will specify the appropriate exposure class. For low-thickness casts, choose an aggregate size that does not exceed one-third of the planned thickness. Bonding Agent typically replaces an equivalent amount of mixing water and can be added either directly at the plant or in the mixer just before pouring. After incorporating **Bonding Agent**, mix the concrete at maximum speed for three minutes before offloading it.

| Concrete thickness | Bonding Agent        | Max aggregate size |
|--------------------|----------------------|--------------------|
| 0 - 1 cm           | 80 kg/m <sup>3</sup> | 2 mm               |
| 2 - 4 cm           | 60 kg/m <sup>3</sup> | 8 mm               |
| 5 - 6 cm           | 40 kg/m <sup>3</sup> | 16 mm              |

## Recommended dosages for PCC mortars or screeds

First, we suggest preparing a mixture of clean water and **Bonding Agent** (pre-mix). Calculate the total amount needed for the entire job. If mixing is paused for a while or if the project takes a long time to complete, be sure to stir the pre-mix briefly before the final mixing to prevent sedimentation at the bottom.

| Concrete thickness | Pre-mix            | Max aggregate size |
|--------------------|--------------------|--------------------|
| 0 - 1 cm           | Bonding Agent pure | 2 mm               |
| 2 - 4 cm           | 1:1 with water     | 6 - 8 mm           |
| 5 - 6 cm           | 1:3 with water     | 12 - 16 mm         |

## Dosage for bonding slurry

When using Bonding Agent as an adhesion promoter between casts, mix it with Portland cement in a 1:1 ratio. For example, combine one bag of cement with a 20 kg bucket of Bonding Agent. Before application, pre-wet the surface, then spread the mixture using a stiff broom or squeegee. It's important to pour the new cast immediately without allowing the slurry to dry. If the slurry does dry before pouring, apply another coat.

**[www.ecobeton.com](http://www.ecobeton.com)**



**Ecobeton Europe** s.r.l.  
Via G. Galilei, 47  
36030 Costabissara (VI) Italy

T (+39) 0444 971893  
E [europe@ecobeton.it](mailto:europe@ecobeton.it)  
I [www.ecobeton.com](http://www.ecobeton.com)