

# Microcem 12000

## Micro-fine hydraulic binder with pozzolanic action for ground consolidation and ground waterproofing throughout injections of cementitious mixes

### DESCRIPTION

**Microcem 12000** is an inorganic micro-fine hydraulic binder with pozzolanic action developed by MAPEI laboratories for the consolidation and the waterproofing of ground throughout injections of cementitious-based mixes and also for the injection and seal of cracks in concrete repair job.

### WHERE TO USE

**Microcem 12000** is used either in ground consolidations and waterproofing and in restoration and repair fields with high archaeological interest.

### Application examples

- Injection of mortars for ground waterproofing.
- Injection of mortars for ground consolidation.
- Injection of mortar for the restoration and the repair of standard and high performance concrete.
- Injection of mortar for the repair of structures with high archaeological interest.

### TECHNICAL CHARACTERISTICS

Due to its micro-fine matrix (Blaine  $\geq 12000 \text{ g/cm}^2$ ), **Microcem 12000** is particularly suitable for being used in injection mixes with a high penetration factor in porous and/or fissured systems characterized by communicating voids.

Besides the particular mineral composition, the grinding and the granulometric selection, make **Microcem 12000** particularly suitable for binary mixes with low viscosity (Marsh cone efflux 31"  $\varnothing$  4.7 mm) and with high stability, able to reduce the bleeding.

The rheological properties of the mixes, obtained using **Microcem 12000**, give the fluid a very high permeable characteristic (penetration capability in cracks of 40 mm and permeability coefficient  $5 \cdot 10^{-5} \text{ m/s}$ ) with moderate injection pressures to avoid eventual structural damages.

Moreover, **Microcem 12000**, due to its characteristics, is able to reduce due the degradation actions due to aggressive agents (such as acid rains, etc.), superficial phenomena (such as efflorescence) and expansions due to alkali-aggregate reaction.

### HOW TO USE

For a homogeneous mixture it is advised to introduce water and the eventual hyper-plasticizer/super-plasticizer admixture before the **Microcem 12000** powder.

In order to obtain the maximum dispersion of binder grains, it is moreover advised to use a "high speed" mixer and to stir the mixture obtained for more than 4 minutes.

Our technical Laboratory is at complete disposal for optimising the mixing. Please contact our **Underground Technology Team** technical service for assistance in product optimisation/application.

TECHNICAL DATA (typical values)	
PRODUCT IDENTITY	
Absolute density (kg/l):	2.9 ± 0.03
Bulk density (kg/m³):	100
Blaine specific surface (UNI EN 196/6) (cm²/g):	12,500
Characteristic diameter d <sub>98</sub> (UNI 10764) (µm) (it represents the dimension, in micrometers, under which it is found a binder percentage in volume of 98%):	10
Sulphates (UNI EN 196/2) (%):	≤ 4
Chlorides (UNI EN 196/21) (%):	≤ 0.2
Pozzolanic properties (UNI EN 196/5):	positive at 8 days
Sulphate resistance class (UNI 9156):	high
Leaching resistance class (UNI 9606):	very high
Marsh cone efflux (Ø 4,7 mm) (EN 445) (s):	30-35"
Mixture:	W/C = 1 1% of super-plasticizer in weight
Storage:	6 months in uponed original packaging
Hazard classification according to EC 1999/45:	irritant. Before using refer to the "Safety instructions for preparation and application" paragraph and the information on the packaging and Safety Data Sheet
Customs class:	3824 40 00

## COMPATIBILITY WITH OTHER PRODUCTS

**Microcem 12000** is compatible with all the acrylic based hyper-plasticizer/super-plasticizer admixture of **Dynamon** and **Mapefluid** ranges, aiming at reducing the W/C ratio or the W/binder ratio maintaining the same fluidity.

**Microcem 12000** is compatible with the expanding plasticizing agent **Cablejet**, for very high volumetric stability mortars (expanding ratio: ≥ 400 µm after 48 hours).

**Microcem 12000** is compatible with the stabilizing nano-silica based additive, **Stabilgrout**, for mortars with very high volumetric stability and with elevated final durability. Adding **Stabilgrout** to **Microcem 12000** there is no decrease of

the mechanical strengths and a bleeding < 2% at 3 hours (EN 934/4).

**Microcem 12000** is compatible with the plasticizing agent **Expanfluid** for very high volumetric stability mortars.

## DOSAGE

0.75 kg of **Microcem 12000** with 0.75 kg of water for each litre of cavity to be injected.

## PACKAGING

**Microcem 12000** is available in 20 kg bags and 1000 kg big bags. On request, it is also available in bulk.

## STORAGE

Store the product in closed containers, in a dry, cool and not ventilated spot, protected

from any acid contact, for maximum 6 months.  
Manufactured in compliance with the regulations of the 2003/53/EC Directive.

### **SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION**

**Microcem 12000** contains cement which, when in contact with sweat or other body fluids, can produce an irritant and allergic alkali-reaction. Use suitable protective gloves, goggles and face masks. Please consult the product MSDS for more safety information.

FOR PROFESSIONAL USERS.

### **WARNING**

*Although the technical details and recommendations contained in this data*

*sheet correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical applications: for this reason, anyone who intends to use the product must ensure before handing that it is suitable for the envisaged application: in every case, the user alone is fully responsible for any consequence deriving from the use of the product.*

**All relevant references  
for the product are available  
upon request and from  
[www.mapei.com](http://www.mapei.com)**

**Microcem  
12000**

