

# Expanscrete

## Expanding agent for shrinkage-compensated concrete



### DESCRIPTION

**Expanscrete** is a powdered inorganic product to be added to the other ingredients of concrete to compensate for drying shrinkage.

### WHERE TO USE

For the production of shrinkage-compensated concrete and mortar.

### Some application examples

**Expanscrete** is primarily used for:

- water tanks and cisterns;
- diaphragm walls;
- industrial floors and road paving;
- sewage treatment plants;
- concrete embankments;
- concrete tubes;
- tunnel linings.

### TECHNICAL CHARACTERISTICS

The degree of expansion depends on the amount of expanding agent used, the water-cement ratio, the size and type of aggregate, and the type and content of the cement.

Expansion is also affected by the mixing time, temperature, and the method and length of curing.

As a rule, all factors which accelerate the rate of hydration of the cement mix cause a decrease in the degree of expansion. Part of this reaction occurs when the mix is still in the plastic state: for example, prolonged mixing time, high temperatures or high water-cement ratios cause a decrease in the degree of expansion.

For this reason, the amount of **Expanscrete** to be used must first be tested, allowing for the above mentioned factors as well as the percentage of reinforcing called for in the concrete. The expansion must be countered by the proper distribution of reinforcing to prevent the concrete from cracking.

The minimum percentage of reinforcing, i.e. the ratio of rebars to the section of concrete cannot be lower than 0.15%.

The expansion of the concrete caused by **Expanscrete**, when countered by the rebars, generates tensile stresses in the steel and compressive stresses in the mix.

The “pre-compression” induced by the expanding agent can prevent the tensile stresses caused by shrinkage in the mix from exceeding the tensile strength of the material, thus preventing the concrete from cracking.



## RECOMMENDATIONS

- Do not use **Expancrete** for un-reinforced concrete.
- Do not use **Expancrete** for mortar cast on site without mesh reinforcing.
- Do not use **Expancrete** to make mortar for renders.
- Do not use **Expancrete** for consolidating slurry for injection.

## DIRECTIONS FOR USE

### Preparing the mix

**Expancrete** must be added to the mixer at the same time as the other ingredients (cement, aggregates, water).

Mixing time for concrete and mortar containing **Expancrete** is the same as for normal concrete and mortar.

Super-plasticising admixtures may be added as needed when the cement, the aggregate and the **Expancrete** have already been mixed with the water. The super-plasticiser is then at its most effective.

A good rule of thumb is to start adding the admixture with an automatic dispenser after at least half the water has already been poured into the mix.

### DOSAGE

**Expancrete** can be used at a dosage of 5% to 8% by weight of cement (5 to 8 kg per 100 kg of cement).

The amount used must be decided according to the degree of expansion desired in the mortar or concrete.

### Curing and expansion

Expansion in concrete admixed with **Expancrete** can only occur if curing takes place in a moist environment.

Complete expansion normally occurs within the first 2 days.

Naturally, the longer the moist cure, the better the performance of concrete containing **Expancrete**.

It is recommended that the surface of the pour should be frequently wetted with water or covered with plastic for the first seven days or apply **Mapecure E** anti-evaporation compound in water emulsion, provided the surface is not to be covered with rendering, paint, ceramic tiles, etc.

### Compatibility with other products

**Expancrete** is compatible with other Mapei products for special concrete, especially with:

- **Mapecure PZ500** powder additive based on micro-silica and super-plasticiser for “top-quality” concrete with mechanical strength, impermeability and durability;
- fly-ash for concrete with artificial pozzolan;
- the plasticisers and super-plasticisers of the **Mapeplast**, **Mapemix** and **Mapecure** product lines;
- **Form Release Agent DMA 1000**, **DMA 2000** and **DMA 3000** for easy release of formwork from concrete;
- **Mapecure E** curing compound to prevent rapid evaporation of the mix water from concrete cast without formwork (floors).

### Cleaning

Equipment used for mixing and pouring concrete and mortar admixed with **Expancrete** can be cleaned with water.

### PACKAGING

**Expancrete** is available in 20 kg buckets or 10 kg water soluble bags.

Also available in large bags or bulk on request.

### STORAGE

Store **Expancrete** in its original sealed packaging in a dry place.

### SAFETY INSTRUCTIONS FOR THE PREPARATION AND INSTALLATION

The product is irritant in contact with the skin and when inhaled. In contact with the eyes, it could cause serious damage. Do not inhale the powder and avoid contact with the eyes and skin.

For further information refer to the safety data sheet.

FOR PROFESSIONALS.

### WARNING

*N.B. Although the technical details and recommendations contained in this report 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 beforehand that it is suitable for the envisaged application. In every case, the user alone is fully responsible for any consequences deriving from the use of the product.*

## TECHNICAL DATA (typical values)

### PRODUCT IDENTIFICATION:

<b>Appearance:</b>	powder
<b>Colour:</b>	light grey
<b>Dry solid content:</b>	100%
<b>Specific action:</b>	expanding agent for shrinkage-compensated concrete and mortar
<b>Collateral action:</b>	improvement of impermeability
<b>Chlorides:</b>	absent
<b>Storage:</b>	12 months in original sealed packaging
<b>Hazard classification according to EEC 88/379:</b>	irritant. Before use consult the "Safety instructions" paragraph and the information on the packaging and Safety Data Sheet.
<b>Customs class:</b>	3824 40 00

### PERFORMANCE DATA OF EXPANCRETE IN CONCRETE \*

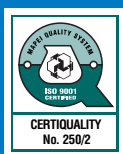
<b>Expocrete dosage % by weight of cement:</b>	6
<b>Mapefluid N200 dosage % by volume of cement:</b>	1
<b>W/C ratio:</b>	0.48
<b>Workability: slump (cm)</b>	20
<b>Mechanical resistance to compression (MPa)</b> – after 24 hours: – after 7 days:	15 40
<b>Restrained expansion (µm/m) according to UNI 8148:</b> – after 24 hours: – after 7 days:	276 350

\* Values obtained for concretes with 340 kg/m<sup>3</sup> of cement CEM II/A - L 42.5 with crushed aggregates (maximum diameter: 25 mm).



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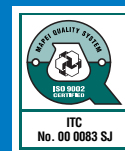
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