Mapequick AF800

Alkali-free, liquid set accelerator for mortar and shotcrete

DESCRIPTION
Mapequick AF800 is a liquid accelerator based on alkali-free inorganic salts developed for mortar and shotcrete with very rapid setting time.

WHERE TO USE
Mapequick AF800 is formulated to be used both in dry-mix as well as wet-mix shotcrete spray systems. Thanks to its high accelerating action and the absence of alkali, it is particularly suitable for preparing quality shotcrete with high mechanical strength at very short (0-60 minutes), short (60 minutes to 24 hours) and long stages of curing (> 24 hours).

Mapequick AF800, however, not only reacts on the hydration of silicates present in cement, resulting in rapid setting time, but it enables concrete to develop high mechanical strength only a few minutes after placing the mix with almost no loss of strength during long stages of curing when compared to concrete prepared without an accelerator.

Because of the absence of alkali, Mapequick AF800 does not trigger alkali-aggregate reaction, furthermore concrete accelerated with this product is not subject to leaching, that can occur when using normal alkali accelerators. For this reason Mapequick AF800 reduces the risk of obstructing water drainage.

Mapequick AF800 is particularly suitable for shotcrete in the presence of water seepage during the tunnelling phase.

Once the product is accelerated, it does not lose its capacity of self-maintenance and development of mechanical strength even in the presence of water.

Mapequick AF800 can also be used on rocky surfaces with temperatures near 0°C, in so far as these particular conditions, which usually penalise the ability of placing shotcrete with alkali accelerators, do not represent a limited use of this product.

Some application examples
• Securing surfaces during tunnelling.
• Consolidation of rock and cliff-faces.
• Shotcrete for structural tunnel repairs.
• Shotcrete applications with high mechanical performance.
• Shotcrete applications with high mechanical strength (≥ 40 N/mm²) for final tunnel lining.

TECHNICAL CHARACTERISTICS
Mapequick AF800 is a water solution of aluminium salts complexes to be added in the nozzle during the spraying phase. The acceleration of the setting time and the development of mechanical performance vary according to the dosage of the additive, the type and content of cement, the ageing of the cement, and the water-binder ratio. The temperature of the shotcrete influences the rate of setting and early performance.
<table>
<thead>
<tr>
<th>TECHNICAL DATA (typical values)</th>
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<tbody>
<tr>
<td><strong>PRODUCT IDENTITY</strong></td>
</tr>
<tr>
<td>Consistency:</td>
</tr>
<tr>
<td>Colour:</td>
</tr>
<tr>
<td>Density (ISO 758) (g/cm³):</td>
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<tr>
<td>Dry solids content (EN 480/8) (%)</td>
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<tr>
<td>pH (ISO 4316):</td>
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<tr>
<td>Principal action:</td>
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<tr>
<td>Classification according to EN 934-5:</td>
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<tr>
<td>Alkali (Na₂O equivalent) (EN 480/8) (%)</td>
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<td>Chlorides (EN 480/10) (%)</td>
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<td>Dosage (%):</td>
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As far as the water-binder ratio is concerned (cement-fly ash, silica fume or blast furnace slag, etc.), it is essential that the water-binder ratio should be lower than 0.5 to promote durability and final mechanical performance. For this reason the addition of a superplasticising admixture is strongly recommended.

**Mapequick AF800** can be used for spraying 25 cm layers in one application. Better adhesion to the rock surface of shotcrete is another property of **Mapequick AF800**. There is reduced loss caused by rebound, therefore good penetration ability between layers. The compaction degree of shotcrete, which is measured by coring, is approx. 95% of standard shotcrete not accelerated and fully compacted.

**RECOMMENDATIONS**
Do not use **Mapequick AF800** with ordinary concrete.

**Mapequick AF800** cannot be mixed with other spraying accelerators. When using another type of accelerator (especially if alkali-based), the entire dosage equipment must be thoroughly cleaned with water.

**N.B. Do not add Mapequick AF800 directly into the cement mixer.**

**HOW TO USE**
Typical mix design to make 1 m³ of shotcrete.

- 450-500 kg/m³ of cement (of a type and dosage to be determined depending on performance requirement).

- If necessary, the addition of 3-8% by weight of cement of microfine material with pozzolanic action: for example the silica fume based product **Mapeplast SF** compound for improving rheological properties, thixotropy, permeability and resistance to aggressive chemical agents.

- Aggregate with maximum diameter between 8 and 12 mm.
• Superplasticising admixture in a dosage of 1-1.5% in volume by weight of cement to ensure a low water-binder ratio.

• Mapequick AF800 in a dosage of between 3 and 10% by weight to be added in the nozzle.

LABORATORY TESTING
Our laboratory is available for evaluating the compatibility and dosage of Mapequick AF800 with cements available on job-sites. To make the best use of Mapequick AF800, it is recommended to contact our Underground Technology Team technical services to verify and improve the properties of the concrete used, depending on the local application conditions.

COMPATIBILITY WITH OTHER PRODUCTS
Mapequick AF800 is compatible with the Mapefluid and Dynamon ranges of super-plasticisers used to reduce the water/binder ratio, increase plasticity and reduce loss of workability.

Mapequick AF800 is compatible with MAPEI set-retarding admixtures from the Mapetard range.

CONSUMPTION
Dosage by weight: from 3 to 10 kg per 100 kg of cement.

PACKAGING
Mapequick AF800 is available in 274 kg drums and 1288 kg tanks. Also available in bulk on request.

STORAGE
Store the product in closed containers at a temperature between +5°C and +35°C. If the product has been stocked for a long period, it is suggested to shake and homogenize it by using mechanised mixers and/or recirculation pumps. It is strongly suggested not to shake the product by means of compressed air. Please contact our technical service Underground Technology Team if the product is used after its expiring date (3 months) or after freezing. Although the product may change colour and turn white if stored at high temperatures for long periods or exposed to sudden temperature changes, this will have practically no effect on its characteristics. The product cannot be stored in metallic containers, except those INOX AISI 316.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION
Mapequick AF800 is corrosive and it may cause burns and damage to eyes. It is recommended to wear protective gloves and goggles and to take the usual precautions for handling chemicals. If the product comes in contact with the eyes or skin wash immediately with plenty of clean water and seek medical attention.

For further and complete information about the safe use of our product please refer to the latest version of our Material Safety Data Sheet.

PRODUCT FOR PROFESSIONAL USE.

WARNING
Although the technical details and recommendations contained in this product 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 application; 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.

Please refer to the current version of the Technical Data Sheet, available from our website www.mapei.com

All relevant references for the product are available upon request and from www.mapei.com