DESCRIPTION
Mapequick AF 118 is a liquid alkali-free accelerator based on inorganic salts developed for mortars and shotcrete with a very rapid setting time.

WHERE TO USE
Mapequick AF 118 is formulated to be used both in wet-mix as well as dry-mix spray systems. Because of its accelerating actions and the absence of alkali, Mapequick AF 118 is recommended for preparing quality shotcrete with high mechanical strength at very early (0-60 minutes), early (1-24 hours) and long (> 24 hours) curing time.

Mapequick AF 118 does not only act on the hydration of the silicates present in the cement to give a quick setting time, it also enables the concrete to develop a high mechanical resistance only a few minutes after casting, with almost no loss of resistance at the final cure when compared to concrete prepared without an accelerator.

As a result of the absence of alkali, Mapequick AF 118 does not trigger alkali-aggregate reaction. Concrete accelerated with this product is not subject to leaching, which can occur when using normal alkaline accelerators. For this reason Mapequick AF 118 reduces the risk of obstructing the water drainage system.

Mapequick AF 118 is suitable for the installation of shotcrete in the presence of water seepages. Once the concrete has been accelerated, it does not loose its self-bearing capacity and will develop mechanical strength even in the presence of water.

Mapequick AF 118 can be used on rocky surfaces with low temperatures, as these conditions, which can penalize the ability of placing shotcrete with alkali accelerators, do not limit the 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 performances.
• Shotcrete applications with high mechanical strength (≥ 40 N/mm²) for final tunnel lining.

TECHNICAL CHARACTERISTICS
Mapequick AF 118 is a water solution of aluminium based components to be added at 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 admixture, the type and amount of cement, its ageing and the water-binder ratio used. The temperature of the shotcrete influences the rate of setting and early strength.
### TECHNICAL DATA (typical values)

<table>
<thead>
<tr>
<th>PRODUCT IDENTITY</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Appearance:</td>
<td>liquid</td>
</tr>
<tr>
<td>Colour:</td>
<td>brown</td>
</tr>
<tr>
<td>Density (ISO 758) (g/cm³):</td>
<td>1.40 ± 0.03 at +20°C</td>
</tr>
<tr>
<td>Dry solids content (EN 480/6) (%):</td>
<td>54 ± 2.5</td>
</tr>
<tr>
<td>pH (ISO 4316):</td>
<td>3 ± 1</td>
</tr>
<tr>
<td>Principal action:</td>
<td>acceleration of setting time</td>
</tr>
<tr>
<td>Alkali (equivalent Na₂O) (EN 480/12) (%):</td>
<td>≤ 1</td>
</tr>
<tr>
<td>Chlorides (EN 480/10) (%):</td>
<td>≤ 0.1</td>
</tr>
<tr>
<td>Dosage (%):</td>
<td>3-8 by weight of cement</td>
</tr>
</tbody>
</table>

Where the water-binder ratio is concerned (cement, fly ash, silica fume or blast furnace slag, limestone powder, etc), it must be noted 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 super-plasticizer admixture is certainly recommended.

**Mapequick AF 118** can be used for spraying 25 cm layers in one application.

**Mapequick AF 118** improves the adhesion of the shotcrete to the rock and losses caused by rebound are reduced with good penetration ability between the layers. The compaction degree of shotcrete, which is measured by direct coring, is > 95% with respect to standard shotcrete not accelerated and fully compacted.

**RECOMMENDATIONS**

Do not use Mapequick AF 118 with ordinary concrete.

Mapequick AF 118 cannot be mixed with other setting accelerators. When using another type of accelerator, it is necessary to thoroughly clean the dosage equipment with water before use.

N.B.: do not add Mapequick AF 118 into the cement mixer.

**HOW TO USE**

Mix design to make approximately 1 m³ of shotcrete:

- 380-500 kg/m³ of cement (type and dosage to be determined according to performance requirements);

- if necessary, the addition of 3-8% by weight of cement of composition fine-graded material with pozzolanic action. For example, silica fume-based Mapeplast SF to improve the rheological properties, thixotropy, permeability and resistance to aggressive chemical agents;

- aggregates with a maximum diameter of 8 to 12 mm;

- superplasticizer in a dosage of 1-1.5% in volume by weight of cement to guarantee a low water-binder ratio;

- Mapequick AF 118 in a dosage of 3 to 8% by weight to be added at the spraying nozzle.

**LABORATORY TESTING**

The company’s laboratory is available to evaluate the compatibility and dosage of Mapequick AF 118 with the types of cement available on the job-site. To optimise the use of Mapequick AF 118, please contact the Underground Technology Team to verify and perfect the characteristics of the concrete used, according to local application conditions.

**COMPATIBILITY WITH OTHER PRODUCTS**

Mapequick AF 118 is compatible with all the superplasticizers and hyperplasticizers of the Dynamon System and the Mapelfluid range which enable the reduction of water-binder ratio, increase fluidity and reduce the slump loss.
Mapequick AF 118 is compatible with all the retardant agents of the Mapetard range, such as Mapetard D or Mapetard SD2000.

CONSUMPTION
Dosage in weight:
from 3 to 8 kg per 100 kg of cement.

PACKAGING
Mapequick AF 118 is supplied in 280 kg drums and 1316 kg tanks. Bulk quantities are also available upon request.

STORAGE
Store the product in closed containers at a temperature between +5°C and +30°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 recommended not to shake the product by means of compressed air. Please contact our technical Underground Technology Team if the product is used after its expiry date (6 months) or after freezing. Do not store the product in AISI 31 stainless steel containers.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION
Mapequick AF 118 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