

# Mapeplast SF

**Silica fume-based  
additive with  
pozzolanic action**



## DESCRIPTION

**Mapeplast SF** is a powdered additive with pozzolanic action to be used in combination with plasticisers or super-plasticisers for high quality mortar, grout and concrete with thixotropic, plastic, fluid or super-fluid consistency.

## WHERE TO USE

**Mapeplast SF** can be used for the following applications:

- High quality thixotropic mortar that is resistant under the most severe environmental aggressions (for new structures and the restoration of deteriorated structures).
- Special concrete and grout to be applied with a pump.
- Mortar and grout to be applied with a spray gun.

## Some application examples

- Repair of deteriorated concrete structures attacked by sulphates and chlorides (dry docks, highway viaducts).
- Tunnel linings executed using sprayed mortar or grout. Because of their excellent thixotropic and adhesive properties, sprayed mortar or grout prepared with **Mapeplast SF** often does not require the addition of setting accelerators that can weaken the quality of the final product, as is well known.
- Underwater concrete with extremely high cohesion and resistant to washout.

- Repair of canals and hydraulic projects in general.

Mortar and concrete prepared with **Mapeplast SF** can resist leaching because the silica fume reacts with the free lime produced by the hydration of the cement.

## TECHNICAL CHARACTERISTICS

**Mapeplast SF** is a dark grey-coloured powder composed of amorphous silica in the form of spherical sub-micron sized granules.

The extremely small size of the graded particles (many of them smaller than 0.1 mm) enables the spherical granules of **Mapeplast SF** to lodge in the interstices between the larger sized cement granules (0.1 to 100 mm).

As a result the cement matrix is denser and more compact.

Using a combination of **Mapeplast SF** and the various super-plasticisers of the **Mapefluid** product line, concrete can be obtained with a range of rheological properties that is waterproof in the fresh state and durable after hardening.

## HOW TO USE

Pour **Mapeplast SF** into the cement mixer together with the other ingredients of the concrete (cement, aggregate, and water) in an amount varying from 20 to 60 kg/m<sup>3</sup>, depending on the type of material desired. To obtain maximum product performance, **Mapeplast SF** should be combined with a super-plasticiser or plasticiser because the small size of the particles require a greater amount of water.

# Mapeplast SF



Spray application of mortar admixed with Mapeplast SF

TECHNICAL DATA (typical values)				
<b>PRODUCT IDENTIFICATION</b>				
<b>Consistency:</b>	powder			
<b>Colour:</b>	dark grey			
<b>Mass in pile:</b>	0.6 kg/l			
<b>Principal action:</b>	pozzolanic			
<b>Secondary action:</b>	filler			
<b>Dry solid content:</b>	100%			
<b>Storage:</b>	12 months in a dry place in original sealed packaging			
<b>Hazard classification according to EEC 88/379:</b>	none			
<b>Customs class:</b>	3824 40 00			
<b>PERFORMANCE DATA OF MAPEPLAST SF IN CONCRETE *</b>				
<b>Dosage of Mapeplast SF (kg/m<sup>3</sup>):</b>	0	20	40	60
<b>W/C ratio:</b>	0.60	0.60	0.60	0.60
<b>W/C ratio + Mapeplast SF:</b>	0.60	0.55	0.53	0.50
<b>Workability:</b>				
– initial slump (cm)	20	19	18	16
– slump after 30 min. (cm)	14	14	13	11
<b>Mechanical resistance to average compression (MPa) after:</b>				
– 1 day	6	6	7	7
– 3 days	16	17	19	19
– 7 days	22	25	28	29
– 28 days	29	36	42	51
<b>Water penetration (mm) according to DIN 1048 after 28 days of curing:</b>	30	15	10	5
<b>“Impermeability” to water according to UNI 9858 and ENV 206:</b>	no	yes	yes	yes
<b>Durability: resistance of the concrete to UNI 9858 and ENV 206 environmental exposure classes:</b>	1 2a	1 2a, 2b 4a 5a	1 2a, 2b 4a 5a	1 2a, 2b 4a, 4b 5a, 5b

\* This sample data represents average values recorded using concrete with 320 kg/m<sup>3</sup> of CEM II - A/L 32.5R cement, with alluvial aggregate (max. diameter: 30 mm). For environmental exposure classes 2b, 3, 4b, 4% by volume of air in the form of micro-bubbles must be entrained.

It is also important to disperse the granules of **Mapeplast SF** as well as possible. For this reason, mixing for at least 5 minutes is recommended.

### RECOMMENDATIONS

- Do not use **Mapeplast SF** for mortar and concrete that is not thoroughly mixed: at least 2 minutes in vertical mixers and at least 5 minutes in job-site mixers and mixer trucks.
- In order to disperse the micro-silica granules, **Mapeplast SF** can be poured in the water for the mix, especially for class S<sub>1</sub> and S<sub>2</sub> consistency concrete.

Reminder: for waterproof concrete, the water/cement ratio should be no higher than 0.55.

### Compatibility with other products

**Mapeplast SF** has no plasticising action and must therefore be used in combination with plasticisers and super-plasticisers of the **Mapefluid**, **Mapemix** and **Mapeplast** product lines.

**Mapeplast SF** is also compatible with:

- **Mapeplast PT1** air-entrainer for concrete resistant to freeze/thaw cycles;
- **Expancrete** expanding agent for shrinkage-compensated concrete;
- **Form Release Agent DMA 1000**, **DMA 2000** and **DMA 3000** for formwork concrete;

- **Mapecure E** curing compound for protection against rapid evaporation of the mix water in concrete without formwork (floors).

### DOSAGE

**Mapeplast SF** should be used in a dosage of from 20 to 60 kg per m<sup>3</sup> of concrete depending on the characteristics required.

### PACKAGING

**Mapeplast SF** is available in 20 kg bags.

Also available in 10 kg water soluble bags.

Available in large bags or in bulk on request.

### STORAGE

Protect from extremes of temperature and especially from moisture.

### 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.*

**All relevant references  
of the product are available  
upon request.**

