MAPEI

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^3, 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.

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Spray application of mortar admixed with Mapeplast SF

TECHNICAL DATA (typical values)

PRODUCT IDENTIFICATION				
Consistency:	powder			
Colour:	dark grey			
Mass in pile:	0.6 kg/l			
Principal action:	pozzolanic			
Secondary action:	filler			
Dry solid content:	100%			
Storage:	12 months in a dry place in original sealed packaging			
Hazard classification according to EEC 88/379:	none			
Customs class:	3824 40 00			

PERFORMANCE DATA OF MAPEPLAST SF IN CONCRETE *				
Dosage of Mapeplast SF (kg/m³):	0	20	40	60
W/C ratio:	0.60	0.60	0.60	0.60
W/C ratio + Mapeplast SF:	0.60	0.55	0.53	0.50
Workability: **– initial slump (cm)** **– slump after 30 min. (cm)**	 20 14	 19 14	 18 13	 16 11
Mechanical resistance to average compression (MPa) after: **– 1 day** **– 3 days** **– 7 days** **– 28 days**	 6 16 22 29	 6 17 25 36	 7 19 28 42	 7 19 29 51
Water penetration (mm) according to DIN 1048 after 28 days of curing:	30	15	10	5
"Impermeability" to water according to UNI 9858 and ENV 206:	no	yes	yes	yes
Durability: resistance of the concrete to UNI 9858 and ENV 206 environmental exposure classes:	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/m³ 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_1 and S_2 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^3 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.

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All relevant references of the product are available upon request.

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No. 250/1

The Mapei Environmental Management System
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Mediglia, Italy plant
CERTIBOC No. 1230

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Mediglia, Italy plant
This site operates under an environmental management system. Its environmental performance is disclosed to the public in compliance with EMAS, the European Community Eco Management and Audit Scheme, Registration N° I-S-000019.

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