MAPESTONE PFS PCC 2

Ready mixed, polymer modified, low modulus mortar for grouting architectural stone pavings installed under extreme temperature variations.XS3 and XF4 exposure classes with high mechanical strengths, resistant to de-icing salts, seawater and freeze-thaw cycles

DESCRIPTION OF THE PRODUCT

Mapestone PFS PCC 2 is a ready-to-use, ready-mixed powder for grouting stone pavings exposed to vehicular traffic, particularly when the pavings are installed under extreme temperature variations (night/day) which cause the stone elements to shrink at night and expand during the day.
Mapestone PFS PCC 2 is a complementary product of **Mapestone** system that enables the creation of highly durable architectural stone pavings even in environments subject to water saturation, freeze-thaw cycles in the presence of de-icing salts and seawater (environmental conditions classified by EN 206 as XF4 and XS3).

WHERE TO USE

Mapestone PFS PCC 2 is used for grouting joints of architectural natural stone pavings of squares, streets, pavements, car parks, pedestrian crossings, roundabouts, and speed humps made of:

- slabs;
- blocks;
- blocks;
- smolleri bricks;
- cobblestones.

TECHNICAL CHARACTERISTICS

Mapestone PFS PCC 2 is a ready-mixed powder mortar made from special binders and selected aggregates with a maximum grain size of 2 mm, special additives and polymers that give the product a lower modulus of elasticity after setting and improve adhesion to the substrate.
Grouts made with **Mapestone PFS PCC 2** are resistant to freeze/thaw cycles (exposure class XF3), de-icing salts (exposure class XF4), seawater (exposure class XS3), and have high mechanical strength (C >55 MPa) and high abrasion resistance.
Mapestone PFS PCC 2 is easy to use since it has to be mixed with water only. This prevents mistakes in the dosing of binder and in the selection of the aggregate, thus avoiding compromising the initial and final characteristics of the grout.

RECOMMENDATIONS

- Apply **Mapestone PFS PCC 2** only if the surrounding temperature and the temperature of the substrate and the stones is between +5°C and +30°C.
- **Mapestone PFS PCC 2** is a ready-mixed powdered mortar; do not add other binders or aggregates.
- Mix **Mapestone PFS PCC 2** with suitable mechanical equipment (e.g., vertical concrete mixer, drill mixer or buckets equipped with mixing auger) with the correct amount of water (about 3-3.5 litres per bag) for at least 3 minutes. Do not mix the product manually.
- **Mapestone PFS PCC 2** should be applied on the same day as the paving (using the "fresh on fresh" technique), i.e. before the screed has fully set.
- If the product is to be applied on a screed that has been set for one or more days, it is necessary to saturate the substrate with water in order to clean the joints from dust or dirt that could affect the correct adhesion of **Mapestone PFS PCC 2** and apply it before the substrate is completely dry.
- In order to ensure or the durability of the paving, use the ready-mixed mortar **Mapestone TFB 60** to create the installation bed for stones.
- It is recommended that suitable expansion joints be included along kerbs and pavements, around manholes and storm drains, at the slope change line, and along rainwater collection channels. A maximum pitch area of 30 m^2 is recommended in accordance with the UNI 11322 standard.

APPLICATION PROCEDURE

To ensure the durability of the paving, the substrate on which the pavement will be installed must be properly designed and prepared (e.g., reinforced concrete slab or electro-welded mesh) to withstand the stresses and loads to which it will be subjected.
Where existing joints need to be re-grouted, it is the responsibility of the designer to ensure that the causes of the deterioration (e.g. subsidence in the substrate, damages of bedding, poor quality of existing grout) have been completely eliminated before proceeding with the grouting.

Preparation of the joints

- Make sure that stones are wet and joints are clean, with no standing water or crumbling parts, before pouring the product.
- Completely fill the joint according to the size of the stone and for a depth of at least 25 mm.

Preparation of the mix

- Mix with a vertical concrete mixer, drill mixer or bucket equipped with an auger the pre-mixed mortar **Mapestone PFS PCC 2**, for at least 3 minutes, with 3.0 to 3.5 litres of water per bag (depending on outside temperature) until a smooth, homogeneous slurry is obtained.
- Never mix the product manually.
- Apply the mix within 40 minutes after mixing at +20°C. At higher temperatures, the workability time of the mix is significantly shortened.

Application of the mix

- Apply the mix only at temperatures between +5°C and +30°C.
- The joints should be grouted on the same day as the paving (using the "fresh on fresh" technique), i.e. before the screed has fully set.
- If the product is to be applied on a screed that has been set for one or more days, it is necessary to saturate the substrate with water in order to clean the joints from dust or dirt that could affect the correct adhesion of **Mapestone PFS PCC 2** and apply it before the substrate is completely dry.
- On wet stones, pour the slurry using spreading it with the special rubber rake or pour it directly into the joints using suitable containers. Joints deeper than 25 mm can also be filled in a single coat.
- Clean the stones as usual before the complete curing of **Mapestone PFS PCC 2**: mortar residues can be removed with sawdust, a gentle, continuous jet of water or by using an appropriate cleaning machines.
- The grout must be protected for at least 12 hours after application from:
    - high temperatures, e.g., with wet jute bags;
    - rain and frost, e.g., through the use of nonwoven fabric or sawdust under thick nylon sheeting.

The grout sets to foot traffic after 12–24 hours, and to vehicle traffic after just 7 days at +20°C. At temperatures below +15°C, these times can be significantly longer.

*Mix **Mapestone PFS PCC 2** only with water using a mixing drill or concrete mixer*

Application of the grout on wet stones

Application of porphyry cubes and flagstones

Example of a square

Example of cleaning of the pavement

Example of pavement protection

CONSUMPTION

The consumption of **Mapestone PFS PCC 2** for architectural stone paving depends on the format and thickness of stones, as well as on the width and depth of joints.

CONSUMPTION VALUES ACCORDING TO PAVING FORMAT AND SIZE OF JOINTS						
stone					Theorical consumption	
DESCRIPTION	size			Bulk density	Width of joint (D)	
	side A	side B	thickness C		1 cm	1.5 cm
	cm	cm	cm	Kg/m3	Kg/m²	Kg/m²
slab	80	40	12	1,750	7.22	
slab	80	40	10	1,750	5.91	
slab	80	40	8	1,750	4.59	
slab	70	30	12	1,750	9.17	
slab	70	30	10	1,750	7.50	
slab	70	30	8	1,750	5.83	
slab	70	30	6	1,750	4.17	
slab	50	30	12	1,750	10.27	
slab	50	30	10	1,750	8.40	
slab	50	30	8	1,750	6.53	
slab	30	20	10	1,750	13.13	
slab	30	20	8	1,750	10.21	
slab	30	20	6	1,750	7.29	
slab	30	20	4	1,750	4.38	
small block	12	12	12	1,750	32.08	48.13
small block	10	10	10	1,750	31.50	47.25
small block	8	8	8	1,750	30.63	
small block	6	6	6	1,750	29.17	
small block	4	4	4	1,750	26.25	

FORMULA APPLIED TO CALCULATE CONSUMPTION RATE:
side A + side B/(side A x side B) x thickness x width of joints x bulk density of the mix

(A+B)(A×B)×C×D×17,5=kgm2	**A** = width of paving element **B** = length of paving element **C** = thickness of paving element **D** = width of the joint

N.B.: the paving elements considered have an uneven shape so the values in the table are for guideline purposes only

CLEANING

Tools and stones can be cleaned with water before the products hardens.

PACKAGING

Mapestone PFS PCC 2 is supplied in 25 kg bags.

STORAGE

Mapestone PFS PCC 2 has a shelf life of 12 months when stored in a dry place away from moisture.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Instruction for the safe use of our products can be found on the latest version of the SDS available from our website www.mapei.com.
PRODUCT FOR PROFESSIONAL USE.

TECHNICAL DATA (typical values)

PRODUCT IDENTITY	
Consistency:	powder
Colour:	grey
Maximum grain size:	2 mm
pH value:	approx. 12 to +20°C in saturated solution
Bulk density:	approx. 1,750 kg/m³
Modulus of elasticity:	approx. 20 GPa

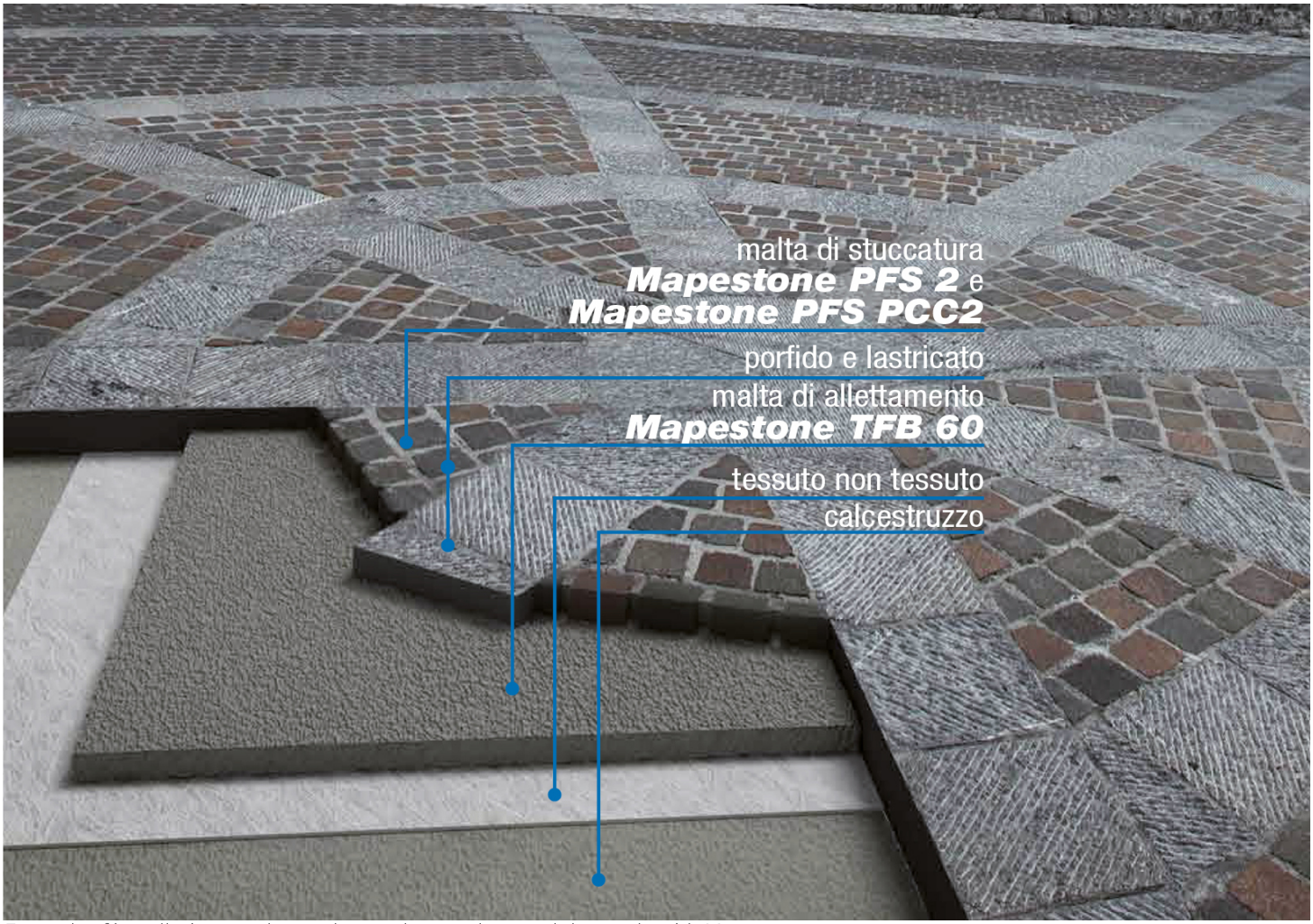
APPLICATION DATA (at +20°C - 50% R.H.)	
Mixing ratio:	3.0-3.5 litres of water per bag, depending on temperature
Density of fresh mix:	2,000 kg/m³
Mixing time:	3 minutes
Application temperature:	from +5°C to +30°C

Strength	Compressive strength	Flexural strength
after 1 day	> 10MPa	3 MPa
after 7 days	> 40 MPa	5 MPa
after 28 days	> 50 MPa	10 MPa

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

LEGAL NOTICE



*Example of installation porphyry cubes and natural stone slabs made with **Mapestone** system*

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