

MAPESTONE PFS 2 FLEX

Ready-mixed mortar with low elastic modulus (25 GPa) for grouting architectural stone paving subject to heavy traffic, in compliance with UNI 11714-1:2018. The product meets the requirements of exposure classes XF4 and XS3 according to EN 206-1 of high mechanical strength, resistance to de-icing salts, freeze-thaw cycles and sea spray. Available in NEUTRAL, DARK GREY and WHITE colours



DESCRIPTION OF THE PRODUCT

Mapestone PFS 2 Flex is a ready-to-use ready-mixed powder for stone pavings suitable for vehicular traffic. **Mapestone PFS 2 Flex** 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 206-1 standard as XF4 and XS3).

Mapestone PFS 2 Flex is made from special polymers that give the product a low modulus of elasticity and a pull-out resistance that is 3 times higher than that of traditional grouts. These properties ensure the absorption of stresses caused by the passage of vehicles on the paving, thus increasing its durability. In combination with cementitious products from the **Mapestone TFB** range, it complies with the UNI 11714-1 standard for architectural stone paving in class P9 (heavy vehicular traffic). The product is available in NEUTRAL, DARK GREY and WHITE colours to match architectural paving of various shapes and colours.

White
Dark Grey
Neutral

The colours illustrated are merely indicative and may vary for printing reasons

WHERE TO USE

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

- setts;
- smaller bricks;
- cobblestones;
- slabs;
- blocks.

TECHNICAL CHARACTERISTICS

Mapestone PFS 2 Flex is a cement-based, ready-mixed powder mortar made from special binders, selected aggregates with a maximum grain size of 2 mm and special additives.

Grouts made with **Mapestone PFS 2 Flex** are resistant to freeze/thaw cycles (exposure class XF3), de-icing salts (exposure class XF4), seawater (exposure class XS3), and have high mechanical strength ($C > 45$ MPa) and high abrasion resistance.

Mapestone PFS 2 Flex 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 2 Flex** only if the surrounding temperature and the temperature of the substrate and the stones is between $+5^{\circ}\text{C}$ and $+30^{\circ}\text{C}$.
- **Mapestone PFS 2 Flex** is a ready-mixed powdered mortar; do not add other binders or aggregates.
- Mix **Mapestone PFS 2 Flex** 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, depending on the external temperature) for at least 3 minutes.
- Respect with the indicated dosages in order to avoid unwanted colour changes.
- Do not mix the product manually.
- **Mapestone PFS 2 Flex** 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 PFS2 Flex** and apply it before the substrate is completely dry.
- In order to ensure 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 and perimeter 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 11714-1 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., concrete slab with 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 2 Flex**, 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 PFS2 Flex** 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 2 Flex**: 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 2 Flex** only with water using a mixing drill or concrete mixer



Application of **Mapestone PFS2 Flex** on slab paving previously wetted with water



Historic centre with architectural paving slabs and setts

CONSUMPTION

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

CLEANING

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

PACKAGING

Mapestone PFS 2 Flex is available in 25 kg bags in NEUTRAL, DARK GREY and WHITE (**Mapestone PFS 2**).

STORAGE

Mapestone PFS 2 Flex 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:	neutral, dark grey and white
Maximum grain size:	2 mm
pH value:	approx. 12 to +20°C in saturated solution
Bulk density:	approx. 1,750 kg/m ³
Modulus of elasticity:	approx. 25 GPa

APPLICATION DATA (at +20°C - 50% R.H.)

Mixing ratio:	3.0-3.5 litres per bag, depending on temperature
Density of fresh mix:	2,000 kg/m ³
Mixing time:	3 minutes
Application temperature:	from +5°C to +30°C

Mapestone PFS2 Flex

Strength	Compressive strength according to EN 1015	Flexural strength according to EN 1015	Pull off according to EN 1015
after 1 day	15 MPa	3 MPa	
after 7 days	25 MPa	4 MPa	3.5 MPa
after 28 days	45 MPa	10 MPa	3.5 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.

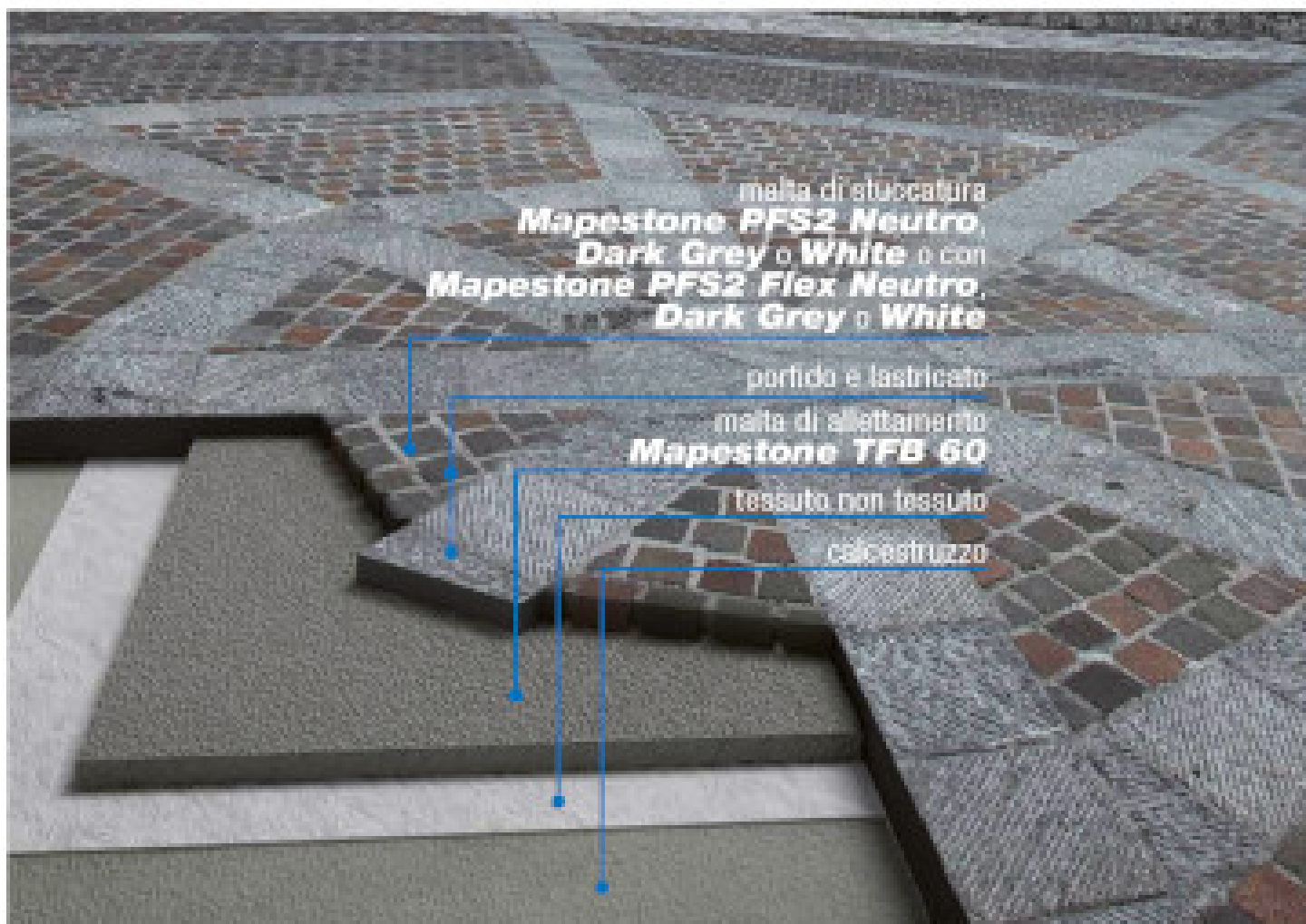
Please refer to the current version of the Technical Data Sheet, available from our website www.mapei.com

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Esempio di posa di cubetti di porfido e lastre di pietra naturale realizzata con il sistema **Mapestone**

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