

MAPEFLOOR PU 410

Two-component, neutral-coloured, self-levelling,
flexible polyurethane fillerized binder



WHERE TO USE

Two-component, medium-flexibility polyurethane resin-based flooring system with good crack-bridging capability, low viscosity, good wear resistance and high solids content.

Suitable for internal and external applications on flooring in multi-storey car-parks and garages.

Thanks to its special formulation, **Mapefloor PU 410** is used in **Mapefloor Parking System HE** as wear-resistant layer for the intermediate **Mapefloor PU 400 LV** membrane, within 24 hours of application.

Mapefloor PU 410 is also used for **Mapefloor Parking System ID** as watertight wear resistant layer for road surface of internal car parks.

TECHNICAL CHARACTERISTICS

Mapefloor PU 410 is a two-component, polyurethane resin-based formulate according to a formula developed in MAPEI Research & Development laboratories.

Mapefloor PU 410 has a good crack-bridging capability, i.e. it is resistant to the formation of cracks in concrete, even at low temperatures (up to -10°C).

Mapefloor PU 410 also has good resistance to mechanical stress.

Broadcasting quartz sand on **Mapefloor PU 410** increases its wear resistance properties and leaves a no-slip finish on the surface.

Mapefloor PU 410 complies with the principles defined in EN 13813 "Screed material and floor screeds - Screed material - Properties and requirements", which sets out the requirements for screed material to be used for indoor flooring.

Mapefloor PU 410 complies with the principles defined in EN 1504-9 ("Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - General principles for the use of products and systems") and the minimum requirements of EN 1504-2, coating (C) according to the PI, MC, PR and IR principles ("Surface protection systems for concrete").

RECOMMENDATIONS

- Do not apply **Mapefloor PU 410** on substrates without primer or with a moisture content higher than 4%, or on those which are subject to capillary rising damp (contact our Technical Services Department).
- Do not dilute **Mapecoat PU 410** with solvent or water.
- Do not apply **Mapefloor PU 410** on dusty or crumbling substrates.
- Do not apply **Mapecoat PU 410** on substrates with oil or grease stains or dirt in general.
- Do not mix partial quantities of the components to avoid mixing errors; the product may not harden correctly.
- Do not expose the mixed product to sources of heat.
- Protect from water for at least 24 hours after application at $+20^{\circ}\text{C}$.
- The temperature of the substrate must be at least 3°C higher than the dew-point temperature.

APPLICATION PROCEDURE

Preparation of the substrate

The surface of concrete must be dry, clean and sound and have no crumbling or detached areas. The compressive strength of the concrete used for the substrate must be at least 25 N/mm² and its tensile strength must be at least 1.5 N/mm². The strength of the substrate must also be suitable for its final use and to the types of loads acting on the flooring. The moisture content in the substrate must be maximum 4% and there must be no capillary rising damp (check by testing it with a sheet of polythene).

The surface of the floor must be prepared with suitable power tools (e.g. shot-blasting or grinding with a diamond disk) to remove all traces of dirt, cement laitance and crumbling or detached portions and to make the surface slightly rough and absorbent. Before applying the product remove all dust from the surface with a vacuum cleaner.

Any cracks, holes and uneven areas in the surface must be repaired and levelled off with **Eporip** castable epoxy resin, **Mapecolor EP19** epoxy mortar or **Mapecolor JA** or **Mapecolor JA Fast** thixotropic resins.

Before applying **Mapecolor PU 410**, remove all traces of dust from the surface with a vacuum cleaner.

Mapecolor PU 410 may be used:

- as protective and wear layer in **Mapecolor Parking System HE**;
- as wear layer in **Mapecolor Parking System ID**.

1. Protective and wear resistant layer for Mapecolor Parking System HE

- Within 24 hours of applying **Mapecolor PU 400 LV** elastic membrane, spread **Mapecolor PU 410** made by mixing components A and B with an electric mixer at low speed and then adding approximately 7% by weight of **Mapecolor Paste** colouring paste. Continue mixing for a few minutes until a lump-free, homogeneous mix is obtained. Add 30% by weight of **Quartz 0.25** while still mixing to form a smooth, even paste.
- Pour the product onto the floor and spread it out evenly on the surface to be treated with a straight or notched steel trowel. While the product is still fresh, back-roll with a spiked roller to release any air entrained into the product during mixing. As soon as the product has been applied, and while still wet, broadcast with **Quartz 0.9** or **Quartz 1.2**, according to the degree of surface non-slip finish required, approximately 4 kg/m².
- When the product has hardened, remove the excess sand, sanding the surface and thoroughly remove the dust and any loose particles with a heavy-duty vacuum cleaner.
- Evenly apply a coloured layer of the aliphatic polyurethane finish **Mapecolor Finish 451** in a single coat, by roller, rubber trowel or straight steel trowel. Then pass over the surface with a short-pile roller (such as mohair), making sure that the roll strokes criss-cross over each other. Application by rubber trowel makes the surface rougher, increasing its no-slip properties, but it reduces the hiding power of the finishing coat.

2. Watertight wear resistant layer for Mapecolor Parking System ID

- After carefully preparing the substrate, apply **Primer SN** mixed with 20% by weight of **Quartz 0.5**, making sure that it is applied evenly with a straight trowel or rake. Immediately after application, broadcast the wet surface of **Primer SN** with **Quartz 0.5** to guarantee perfect adhesion of the successive resin coating.
- Once the product has hardened, remove excess sand with a vacuum cleaner. Prepare **Mapecolor PU 410** by mixing components A and B with an electric mixer at low speed and then adding 7% by weight of **Mapecolor Paste** colouring paste. Continue mixing for a few minutes until a lump-free, homogeneous mix is obtained. Add approximately 30% by weight of **Quartz 0.25**, while still mixing, to form a smooth, even paste.
- Pour the product onto the floor and spread it out evenly on the surface to be treated with a straight or notched steel trowel. While the product is still wet, back-roll with a spiked roller to release any air entrained into the product during mixing. As soon as the product has been applied, and while still wet, broadcast with **Quartz 0.5**, **Quartz 0.9** or **Quartz 1.2**, according to the degree of surface non-slip finish required, approximately 4 kg/m².
- When the product has hardened, remove the excess sand, sanding the surface and thoroughly remove the dust and any loose particles with a heavy-duty vacuum cleaner.
- Evenly apply a coloured layer of the aromatic polyurethane finish **Mapecolor Finish 415** in a single coat, by roller, rubber trowel or straight steel trowel. Then pass over the surface with a short-pile roller (such as mohair), making sure that the roll strokes criss-cross over each other. Application by rubber trowel makes the surface rougher, increasing its no-slip properties, but it reduces the hiding power of the finishing coat.

CONSUMPTION

1. As intermediate protective and wear resistant layer for **Mapecolor Parking System HE** - 5-5.5 mm thickness Primer

Primer SN	0.7 kg/m ²
Quartz 0.5 (20% by weight filler)	0.14 kg/m ²
Quartz 0.5 (broadcast)	3.0 kg/m ²

Elastic polyurethane membrane

Mapecolor PU 400 LV	2.0 kg/m ²
Quartz 0.25 (30% by weight filler)	0.4-0.6 kg/m ²

Protective and wear layer

Mapefloor PU 410 + (A + B + Mapecolor Paste)	1.0 kg/m ²
Quartz 0.25 (30% by weight filler)	0.3 kg/m ²
Quartz 0.9 or Quartz 1.2 (broadcast)	4.0 kg/m ²

Finishing layer

Mapefloor Finish 451 0.6-0.8 kg/m²

2. As watertight wear resistant layer for Mapefloor Parking System ID - 2-2.5 mm thickness
Primer

Primer SN	0.7 kg/m ²
Quartz 0.5 (20% by weight filler)	0.14 kg/m ²
Quartz 0.5 (broadcast)	3.0 kg/m ²

Protective and wear layer

Mapefloor PU 410 + (A + B + Mapecolor Paste)	1.0 kg/m ²
Quartz 0.25 (30% by weight filler)	0.3 kg/m ²
Quartz 0.5 or Quartz 0.9 or Quartz 1.2 (broadcast)	4.0 kg/m ²

Finishing layer

Mapefloor Finish 415 0.6-0.8 kg/m²

Note: the above examples are merely indicative. The actual consumption of the products and the ratio of **Quartz 0.5** as filler for **Primer SN** are influenced by the environmental conditions during application, the temperature of the material and the characteristics of the substrate (e.g. roughness, absorbency, temperature, etc.).

PACKAGING

19.9 kg units:
· component A = 16 kg;
· component B = 3.9 kg.

STORAGE

12 months in its original sealed packaging, at temperature between +10°C and +30°C.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Instructions for the safe use of our products can be found on the latest version of the Safety Data Sheet, available from our website www.mapei.com.

PRODUCT FOR PROFESSIONAL USE.

TECHNICAL DATA (typical values)		
PRODUCT IDENTITY		
	component A	component B
Colour:	neutral	amber

Consistency:	thick liquid	liquid	
Density (g/cm ³):	1.40	1.22	
Viscosity at +23°C (mPa·s):	4,000 (# 4 - rpm 20)	190(# 2 - rpm 100)	
APPLICATION DATA (at +23°C and 50% R.H.)			
Mixing ratio:	component A : component B = 16 : 3.9		
Colour of mix:	neutral		
Consistency of mix:	fluid		
Density of mix (kg/m ³):	1,300		
Pot-life at +20°C:	30 min.		
Viscosity of mix (mPa·s):	1,800 (# 3 - rpm 20)		
Application temperature:	from +8°C to +35°C		
FINAL PERFORMANCE (at +23°C and 50% R.H.)			
Dust dry:	2-4 h		
Set to light foot traffic:	24 hours		
Complete hardening time:	7 days		
Elongation (neat) (7 days at +23°C) (DIN 53504) (%):	approx. 112		
Elongation fillerized with 30% Quartz 0.25 (7 days at +23°C) (DIN 53505) (%):	80		
Shore A hardness (7 days at +23°C) (DIN 53505):	90		
Shore A hardness fillerized with 30% Quartz 0.25 (7 days at +23°C) (DIN 53505) (%):	90		
Tear strength (neat) (7 days at +23°C) (DIN 53515) (N/mm):	37		
Tear strength fillerized with 30% Quartz 0.25 after (7 days at +23°C) (DIN 53515) (N/mm):	27		
Tensile strength (neat) after (7 days at +23°C) (DIN 53504) (N/mm ²):	10		
Tensile strength fillerized with 30% Quartz 0.25 after (7 days at +23°C) (DIN 53504) (N/mm ²):	6.5		
Main characteristics of product	Test method	Requirements according to UNI EN 13813 for synthetic resin-based screeds	Performance of product
Bond strength:	EN 13892-8	≥ 1.5 N/mm ²	> 1.5 N/mm ²
BCA wear resistance:	EN 13892-4	≤ 100 µm	< 50 µm
Impact resistance:	EN ISO 6272	≥ 4 Nm	4 Nm

Reaction to fire:	EN 13501-1	from A _{1FL} to F _{FL}	B _{FL} -s1
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MAIN CHARACTERISTICS EN 1504-2 - TAB.ZA.1d,e,f (coating C, PI-MC-PR-IR principles)

Main characteristics	Test method according to EN 1504-2	Requirements	Performance of product
Abrasion resistance (TABER test): Note: testing methods for flooring systems according to EN 13813 are also acceptable	EN ISO 5470-1	Weight loss less than 3000 mg with abrading wheel H22/rotation 1000 cycles/load 1000 g	< 3000 mg
Permeability to CO₂:	EN 1062-6	S _D > 50 m	S _D = 540 m
Permeability to water vapour:	EN ISO 7783-2	Class I: S _D < 5 m (permeable to water vapour) Class II: 5m ≤ S _D ≤ 50 m Class III: S _D > 50 m (not permeable to water vapour)	Class II
Capillary absorption and permeability to water:	EN 1062-3	w < 0.1 kg/m ² ·h ^{0.5}	0.002 kg/m ² ·h ^{0.5}
Impact strength measured on samples of coated concrete MC (0.4) in compliance with EN 1766: Note: the thickness and the impact of the foreseen load affect the choice of the class	EN ISO 6272	No cracks or delamination after loading Class I: ≥ 4 Nm Class II: ≥ 10 Nm Class III: ≥ 20 Nm	Class I
Direct tensile adherence test Reference substrate: MC (0.4) as specified in EN 1766. Curing: – 28 days for single component systems containing concrete and PCC systems – 7 days for systems with reactive resin	EN 1542	Average (N/mm ²) Cracking or flexible systems without traffic: ≥ 0.8 (0.5) ^b with traffic: ≥ 1.5 (1.0) ^b Rigid systems^c without traffic: ≥ 1.0 (0.7) ^b with traffic: ≥ 2.0 (1.0) ^b	3.10 N/mm ² flexible system (shore D = 40) with traffic
Resistance to thermal shock (1x):	EN 13687-5	After thermal cycling a) no bubbles, cracks and delamination b) direct tensile adherence test Average (N/mm ²) Cracking or flexible systems without traffic: ≥ 0.8 (0.5) ^b with traffic: ≥ 1.5 (1.0) ^b Rigid systems^c without traffic: ≥ 1.0 (0.7) ^b with traffic: ≥ 2.0 (1.0) ^b	3.5 N/mm ² flexible system (shore D = 40) with traffic
Crack-bridging capability After conditioning according to EN 1062-11 : 2002, 4.1 - 7 days at +70°C for systems with reactive resin 4.2 - UV radiation and humidity for dispersion systems:	EN 1062-7	The required classes and test conditions are indicated in tables 6 and 7. The required crack resistance must be selected by the design engineer according to local conditions (weather, crack width and crack movement). After testing the required class, no cracking is admitted.	Static at +23°C: class A3 Static at -10°C: class A3 Dynamic at +23°C: class B2 Dynamic at -10°C: class B2
Reaction to fire:	EN 13501-1	from A _{1FL} to F _{FL}	B _{FL} -s1

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

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2065-1-2022 en (IT)

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