# MAPEFLOOR PU 410

**Two-component, self-levelling, polyurethane binder**






## DESCRIPTION

**Mapefloor PU 410** is a two-component, unpigmented, high-solid-content polyurethane resin-based formulation according to a formula developed in MAPEI Research & Development laboratories, suitable for making multi-layer resin systems for concrete floorings in car park areas.

## TECHNICAL CHARACTERISTICS

- good elasticity even at low temperatures;
- low viscosity;
- good resistance to mechanical stresses;
- **Mapefloor PU 410** has a good crack-bridging capability even at low temperatures up to -10°C.
- complies with the requirements according to EN 13813 "Screed material and floor screeds - Screed material - Properties and requirements", which defines the requirements to be applied to materials for screeds used in the construction of internal floors;
- 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*").

## ADVANTAGES

- versatility, usable for various resin systems for car park areas;
- easy to maintain;
- easy to apply;
- sustainability: it can contribute to LEED credits. EPD (Environmental Product Declaration) compliant.

## WHERE TO USE

**Mapefloor PU 410** is used in the **Mapefloor Parking System WD** to protect the road surface of internal car parks. For further information concerning the performance and the characteristics of each system, please refer to the relevant Data Sheets.

## COLOURS

**Mapefloor PU 410** is supplied unpigmented in neutral colours and must be tinted at the moment of use with **Mapecolor Paste**. Please contact Mapei Technical Service for the list of the colours available.

## RECOMMENDATIONS

- Do not apply **Mapefloor PU 410** on cementitious substrates with a moisture content higher than 4% or with capillary rising damp (contact MAPEI Technical Services).
- Do not dilute **Mapefloor PU 410** with solvents or water.
- Do not apply **Mapefloor PU 410** on dusty or crumbling substrates.
- Do not apply **Mapefloor PU 410** on substrates with oil or grease stains or stains in general.
- Do not apply **Mapefloor PU 410** on substrates that have not been treated with **Primer SN,** or with another specific primer, or that have not been prepared as specified.
- 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 heat sources.
- Use suitable specific cleaning equipment and detergent to clean the resin system, depending on the type of dirt or stain to be removed.
- Protect the product from water for at least 24 hours after application.
- The substrate temperature during application and hardening must be at least 3°C higher than the dew-point temperature. The air relative humidity must be max. 80%.

## 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 a maximum of 4%, and there must be no capillary rising damp.

The surface of the floor must be prepared by a suitable mechanical process (e.g., shot-blasting or grinding with a diamond disc) 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 defects present in the surface, such as holes, pitting, cracking, etc., must be repaired with **Primer SN**, fillerized with quartz sand or made thixotropic with **Additix PE**, **Mapefloor JA** or **Mapefloor JA Fast,** depending on the width and depth of the defects or cracks. To repair highly deteriorated areas and joints, fill large hollows and to create or slightly modify the slope in confined areas, use **Mapefloor EP19 ME**, pre-dosed three-component epoxy mortar.

### Preparation of the product

Stir the component A, then add the content of the component B and approx. 7% by weight of **Mapecolor Paste** and briefly mix all together. Then add 30% by weight of **Quartz 0.25 ME** and mix with a suitable low-speed electric mixer (300-400 rpm) for at least 2 minutes until a homogeneous mixture is achieved. Do not overmix the product to avoid entraining too much air into the mixture.

Pour the mixture into a clean container and briefly mix again.

Apply the mixture within the pot life indicated in the data table (referred to a temperature of +20°C). Higher surrounding temperatures will reduce the pot life, while lower temperatures will increase it.

### Application of the product

**Mapefloor PU 410** is used as an intermediate layer in **Mapefloor Parking System WD**.

### Waterproof and wear-resistant membrane layer for Mapefloor Parking System WD

Once the base layer of **Primer SN** broadcast in excess with **Quartz 0.5 ME** has hardened, remove excess sand by vacuum, then pour **Mapefloor PU 410** and spread it out evenly on the whole surface by straight or notched (with

"V" shaped notches) steel trowel in approx. 1 mm thickness. While the product is still wet, back-roll several times with a spiked roller and immediately after broadcast in excess with **Quartz 0.5 ME** or **Quartz 0.9 ME** or **Quartz 1.2 ME**, depending on the degree of surface slip-resistance required.

When the product has hardened, remove the excess sand, sand the surface and thoroughly remove the last grain of quartz sand by vacuum. Then apply by roller or steel or rubber trowel the aromatic polyurethane topcoat, coloured, **Mapefloor Finish 415 ME** and **Mapefloor Finish 450 ME,** or **Mapefloor Finish 460 ME**.

For further details concerning the application method of **Primer SN**, **Mapefloor Finish 415 ME**, **Mapefloor Finish 450 ME** and **Mapefloor Finish 460 ME,** please refer to the relevant Data Sheets.

## CONSUMPTION

*As a waterproof wear-resistant membrane layer for **Mapefloor Parking System WD**:*

| | |
|---|---|
| **Mapefloor PU 410** + (A + B + **Mapecolor Paste**): | 1.0 kg/m² |
| **Quartz 0.25 ME:** | 0.3 kg/m² |
| Broadcast in excess with **Quartz 0.5 ME** or **Quartz 0.9 ME** or **Quartz 1.2 ME:** | 4.0 kg/m² |

**Note:** *the above examples are merely indicative. The actual consumption of the products is 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, in a covered, dry place, at temperature between +10°C and +30°C. Protect from frost.

## 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.ae.
When the product reacts, it generates considerable heat. After mixing components A and B we recommend applying the product as soon as possible and to never leave the container unguarded until it is completely empty.

## TECHNICAL DATA (typical values)

| PRODUCT IDENTITY | component A | component B |
|---|---|---|
| **Colour:** | neutral | amber |
| **Consistency:** | thick liquid | liquid |
| **Density:** | 1.40 g/cm³ | 1.22 g/cm³ |
| **Viscosity at +23°C:** | 4,000 mPa·s (# 4 - rpm 20) | 190 mPa·s (# 2 - rpm 100) |

| APPLICATION DATA (at +23°C and 50% R.H.) | |
|---|---|
| **Mixing ratio by weight:** | component A : component B = 16 : 3.9 |
| **Colour of mix:** | neutral |

| | |
|---|---|
| **Consistency of mix:** | fluid |
| **Density of mix:** | 1,300 kg/m³ |
| **Pot-life at +20°C:** | 30 min. |
| **Viscosity of mix:** | 1,800 mPa·s (# 3 - rpm 20) |
| **Application temperature (refers to the ambient, material and substrate):** | from +10°C to +30°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 to break (neat) (7 days) (DIN 53504):** | approx. 112% |
| **Elongation to break fillerized with 30% b.w. of Quartz 0.25 (7 days) (DIN 53505):** | 80% |
| **Shore A hardness (neat) (7 days) (DIN 53505):** | 90 |
| **Shore A hardness fillerized with 30% b.w. of Quartz 0.25 (7 days) (DIN 53505):** | 90 |
| **Tear strength (neat) (7 days) (DIN 53515):** | 37 N/mm |
| **Tear strength fillerized with 30% b.w. of Quartz 0.25 (7 days) (DIN 53515):** | 27 N/mm |
| **Tensile strength (neat) (7 days) (DIN 53504):** | 10 N/mm² |
| **Tensile strength fillerized with 30% b.w. of Quartz 0.25 (7 days) (DIN 53504):** | 6.5 N/mm² |

| Essential characteristics | Test method | Requirements according to EN 13813 for synthetic resin-based screeds | Typical values |
|---|---|---|---|
| **Bond strength:** | EN 13892-8 | ≥ B1.5 | ≥ B1.5 |
| **BCA wear resistance:** | EN 13892-4 | ≤ AR6 | AR0.5 |
| **Impact resistance:** | EN ISO 6272 | ≥ IR4 | IR4 |
| **Reaction to fire:** | EN 13501-1 | from $A1_{FL}$ to $F_{FL}$ | $B_{FL}$-s1 |

| ESSENTIAL CHARACTERISTICS EN 1504-2 - TAB.ZA.1d, e, f (coating C, PI-MC-PR-IR principles) | | | |
|---|---|---|---|
| **Essential characteristics** | **Test method according to EN 1504-2** | **Requirements** | **Typical values** |
| **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 3,000 mg with abrading wheel H22/rotation 1,000 cycles/load 1,000 g | < 3,000 mg |
| **Permeability to $CO_2$:** | EN 1062-6 | $S_D$ > 50 m | $S_D$ = 540 m |
| **Permeability to water vapour:** | EN ISO 7783-1<br>EN ISO 7783-2 | Class I: $S_D$ < 5 m (permeable to water vapour)<br>Class II: 5m ≤ $S_D$ ≤ 50 m<br>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/m²·$h^{0.5}$ | w 0.002 kg/m²·$h^{0.5}$ |
| **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<br>Class I: ≥ 4 Nm<br>Class II: ≥ 10 Nm<br>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/mm²)<br>**Crack-bridging or flexible systems**<br>without traffic: ≥ 0.8 (0.5)[b]<br>with traffic: ≥ 1.5 (1.0)[b]<br>**Rigid systems[c]**<br>without traffic: ≥ 1.0 (0.7)[b]<br>with traffic: ≥ 2.0 (1.0)[b] | 3.10 N/mm² flexible system (Shore D = 40) with traffic |

| | | | |
|---|---|---|---|
| **Resistance to thermal shock (1 x):** | EN 13687-5 | After thermal cycling<br>a) no bubbles, cracks and delamination<br>b) direct tensile adherence test Average ($N/mm^2$)<br>**Crack-bridging or flexible systems**<br>without traffic: ≥ 0.8 (0.5)[b)]<br>with traffic: ≥ 1.5 (1.0)[b)]<br>**Rigid systems**[c)]<br>without traffic: ≥ 1.0 (0.7)[b)]<br>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,<br>4.1 - 7 days at +70°C for systems with reactive resin<br>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<br>Static at -10°C: class A3<br>Dynamic at +23°C: class B2<br>Dynamic at -10°C: class B2 |
| **Reaction to fire:** | EN 13501-1 | from $A1_{FL}$ to $F_{FL}$ | $B_{FL}$-s1 |

## IMPORTANT NOTES

*While we try to ensure that any advice, recommendations, or information in our literature is accurate and correct, we have no control over the circumstances in which our product is used. It is, therefore, important that installers satisfy themselves that the product and conditions are suitable for the envisaged application. No warranty can be given, nor can responsibility be accepted, other than the product we supply will meet our written specifications. The installer should ensure that our latest product data and safety information sheets have been consulted before use.*

***Please refer to the current version of the Technical Data Sheet, available on our website www.mapei.ae.***

## LEGAL NOTICE

***The contents of this Technical Data Sheet ("TDS") may be copied into other project-related documents. The resulting document shall not supplement or replace requirements per the TDS in force at the time of the MAPEI product installation. The most up-to-date TDS can be downloaded from our website, www.mapei.ae.***

*ANY ALTERATIONS TO THE WORDING OR REQUIREMENTS CONTAINED OR DERIVED FROM THIS TDS EXCLUDE THE RESPONSIBILITY OF MAPEI.*

**All relevant product references are available upon request and at www.mapei.com.**

## TECHNICAL SPECIFICATION

Supply and installation of high solid content polyurethane resin (such as **Mapefloor PU 410** by Mapei), mixed with 30% by weight of kiln-dried quartz sand with grain size of up to 0.25 mm (such as **Quartz 0.25 ME** by Mapei), suitable for elastic and waterproof protective layers for resin systems for parking areas. The product must be applied by straight or notched trowel in approx. 1 mm thickness. Immediately after the application, on the still wet surface of the product, broadcast in excess with kiln-dried quartz sand with grain size of up to 0.5 mm or 0.9 mm or 1.2 mm (such as **Quartz 0.5 ME** or **Quartz 0.9 ME** or **Quartz 1.2 ME** by Mapei) depending on the degree of surface slip-resistance required.

The hardened product must have the following characteristics:

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|---|---|
| Bond strength (EN 13892-8): | ≥ 1.5 N/mm² |
| BCA wear resistance (EN 13892-4): | < 50 µm |
| Impact resistance (EN ISO 6272): | 4 Nm |
| Shore A hardness fillerized with 30% by weight with quartz sand with grain size up to 0.25 mm (7 days) (DIN 53505): | 90 |
| Direct tensile adherence test (EN 1542): | 3.10 N/mm² |
| Thermal shock resistance (1 x) (EN 13687-5): | 3.5 N/mm² |
| Tear strength fillerized with 30% by weight with quartz sand with grain size up to 0.25 mm (7 days at +23°C) (DIN 53515): | 27 N/mm |
| Elongation to break fillerized with 30% by weight with quartz sand with grain size up to 0.25 mm (7 days at +23°C) (DIN 53505): | 80% |
| Tensile strength fillerized with 30% by weight with quartz sand with grain size up to 0.25 mm (7 days at +23°C) (DIN 53504): | 6.5 N/mm² |
| Crack-bridging capability (EN 1062-7)<br><br>static at -10°C:<br>static at +23°C:<br>dynamic at -10°C:<br>dynamic at +23°C: | <br><br>Class A3<br>Class A3<br>Class B2<br>Class B2 |
| Capillary absorption and permeability to water (EN 1062-3): | w 0.002 kg/m²·$h^{0.5}$ |
| Permeability to water vapour (EN ISO 7783-1; EN ISO 7783-2): | $S_D$ = 26 m |
| Permeability to $CO_2$ (EN 1062-6): | $S_D$ = 540 m |
| Reaction to fire (EN 13501-1): | $B_{FL}$-s1 |

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