Mapefloor Parking System HE

MULTI-LAYERED, HIGHLY FLEXIBLE, UV-RESISTANT POLYURETHANE SYSTEM WITH 100% SOLIDS CONTENT COMPLIANT WITH THE REQUIREMENTS OF CLASS OS 11a (EN 1504-2) FOR COATING ROAD SURFACES IN INDOOR AND OUTDOOR CAR PARKS. TOTAL THICKNESS 3 TO 3.5 mm

Products used:
Primer SN - Mapefloor PU 400 - Mapefloor PU 410 - Mapecolor Paste - Mapefloor Finish 451 - Quartz 0.5 - Quartz 0.25

DESCRIPTION

MAPEFLOOR PARKING SYSTEM HE is a seamless, flexible, multi-layered polyurethane surface-coating system compliant with the requirements of Class OS 11a (EN 1504-2). It is suitable for moving vehicles and has a high crack-bridging capacity, a non-slip finish and is resistant to intense volumes of traffic in areas used for car parks, including external car parks. It also has a waterproofing effect for screeds on roof-top car parks.

MAPEFLOOR PARKING SYSTEM HE is characterised by its excellent resistance to wear, mechanical stress in general, UV rays and chemical products such as oil, fuel, de-icing salts, lubricants, diluted acids and base solutions and saline solutions in general.
Different colour finishes may be obtained which makes it extremely versatile for marking out areas according to their different use, such as parking areas, transit lanes, pedestrian areas, road signs and markings, etc.

AREAS OF USE

Flexible coating for internal and external concrete floors and cracked cementitious substrates, or those at risk of cracking, such as road surfaces in covered car parks, multi-storey car parks, on bridges and on ramps.

MAPEFLOOR PARKING SYSTEM HE is used for the following:

- multi-storey car parks with an intense flow of traffic;
- bridges, ramps and roof-top car parks;
- on concrete substrates where the surface coating needs to be highly flexible and waterproof;
- communal courtyards over garage spaces.

PERFORMANCE AND ADVANTAGES

- High crack-bridging capacity at temperatures down to -20°C (static crack-bridging: the capacity to support movements in structures due to thermo-hygrometric variations; dynamic crack-bridging: the capacity to withstand mechanical stress).
- Complies with the requirements of Class OS 11a (according to EN 1504-2).
- Surfaces treated with this system become waterproof (within the limits of the system's crack-bridging capacity during settling of the substrate).
- Good resistance to mechanical stress.
- Non-slip finish.
- Durable thanks to its characteristic high resistance to wear and abrasion from the constant passage of moving vehicles.
- Easy maintenance.
- Forms attractive, flat, seamless, highly functional surfaces.
- Suitable for both internal and external surfaces.

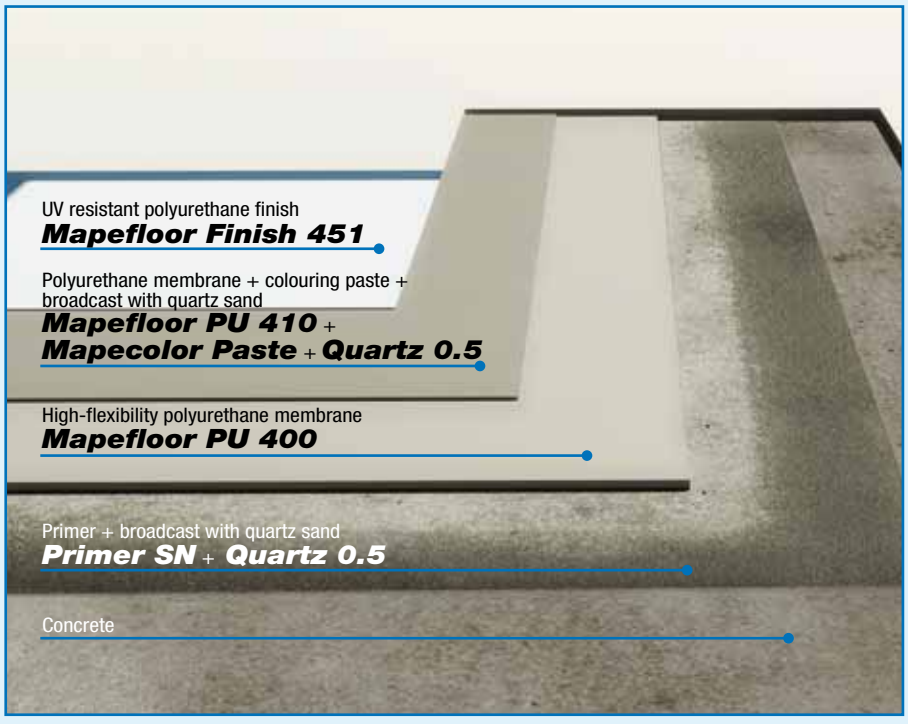
CHEMICAL RESISTANCE

Surfaces coated with **MAPEFLOOR PARKING SYSTEM HE** are resistant to:

- diluted inorganic acids such as hydrochloric acid, nitric acid, phosphoric acid and sulphuric acid, as well as limited resistance to organic acids;
- diluted alkalis, including 50% sodium hydroxide solution and detergents normally used for cleaning floors, as long as they do not contain abrasive particles;
- mineral oils, diesel, kerosene and petrol;
- saline solutions in general, including those containing de-icing salts.

COLOURS AVAILABLE

MAPEFLOOR PARKING SYSTEM HE is available in the standard RAL colours 1003, 3002, 5007, 5015, 7000, 7001, 7005, 7011, 7030, 7035, 7037, 7038 and 9003. Requests for other colours not included in this list must be made to MAPEI Technical Services Department.



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YIELD

The consumption levels indicated below are for a cycle applied at a temperature of between +15°C and +25°C and 80% maximum R.H. on the surface of a smooth, dry, compact, cured concrete screed with no rising damp strong enough to withstand the loads to which it will be subjected when in service, with a quartz sand finish polished with a diamond disk or lightly shot-blasted. Rougher surfaces and lower temperatures lead to higher consumption of the products, longer hardening times and longer delays before being put into service.
The consumption of **PRIMER SN** in particular may vary, depending on the type and depth of the treatment method employed to prepare the substrate.

MAPEFLOOR PARKING SYSTEM HE - average thickness 3-3.5 mm

1° layer:

PRIMER SN
(A+B) +20%*
QUARTZ 0.5: 0.3-0.7 kg/m²
Broadcast with
QUARTZ 0.5
while still wet: 1.0-3.0 kg/m²

* The amount of **QUARTZ 0.5** filler required may vary, depending on the roughness and porosity of the substrate and the preparation method used.

2° layer:

MAPEFLOOR PU 400
(A+B): from 1.5 to 2 kg/m²
Fillerized with 20-30% in weight of
QUARTZ 0.25: from 0.3 to 0.6 kg/m²

3° layer:

MAPEFLOOR PU 410
(A+B + **MAPECOLOR PASTE**): 1 kg/m²
Fillerized with 30%
QUARTZ 0.25: 0.3 kg/m²
Broadcast with
QUARTZ 0.5*: 4.0 kg/m²

* To get a more pronounced non-slip finish, on external surfaces and access ramps for example, coarser quartz sand may be used, such as 0.3-0.9 mm or 0.7-1.2 mm.

N.B. *When applying on access ramps or other sloping surfaces,* **MAPEFLOOR PU 400** *and* **MAPEFLOOR PU 410** *should be thickened by adding 2-4% in weight of* ***ADDITIX PE*** *(the amount added will depend on the thickness required).*

Finishing coat:

MAPEFLOOR FINISH 451
(A +B): 0.6-0.8 kg/m²*

* The actual consumption level depends on the tools used to apply the product and the particle size of the sand used to dust the surface. A larger particle size will lead to a higher consumption rate.

TECHNICAL DATA (after 28 days at +23°C)

Tear strength* (DIN 53515)	30 N/mm
Tear strength (DIN 53515)**	27 N/mm
Elongation at failure* (DIN 53504) at +23°C	470%
Elongation at failure (DIN 53504) at +23°C**	80%
Shore A hardness* (DIN 53505)	72
Shore A hardness (DIN 53505)**	90
Dynamic crack-bridging at -20°C (DIN EN 1062-7)	Class B 3.2
BCA wear resistance (EN 13892-4)	AR 0.5
Capillary absorption and permeability to water (EN 1062-3)	$w < 0.1$ kg/m²·h$^{0.5}$
Impact strength (EN ISO 6272-1)	20 Nm
Adhesion (EN 13892-8)	>15 N/mm²
Reaction to fire (EN 13501-1)	$B_{(fl)}$- s1

* *Values refer to a* ***MAPEFLOOR PU 400*** *flexible membrane fillerized with 30% in weight of* ***QUARTZ 0.25***
** *Values refer to* ***MAPEFLOOR PU 410*** *membranes fillerized with 30% in weight of* ***QUARTZ 0.25***

This system must be strictly adhered to. Consumption of the products and materials is heavily influenced by the absorption, roughness and porosity of the substrate and the surrounding conditions on site during application.

SURFACE PREPARATION

1. Characteristics of the substrate

Before applying the **MAPEFLOOR PARKING SYSTEM HE** cycle, the substrate on which the coating is to be applied must be carefully checked.
The concrete screed of the substrate must be sound, compact, strong and clean and must be dimensioned according to the static and dynamic loads to which it will be subjected when in service. The flatness must be defined according to the final use.
To get the best results the following must be checked:

- The substrate must be sufficiently saturated, smoothed over and levelled off with **PRIMER SN**.
- There must be no materials or debris on the substrate which could potentially impede adhesion of the coating, such as:
  – cement laitance;
  – dust or detached or loose portions;
  – protective wax, curing products, paraffin or efflorescence;
  – oil stains or layers of dirty resin;
  – traces of paint or chemical products.
  Any other kind of pollutant which may compromise adhesion of the coating must be removed before starting work.
  If the substrate is polluted by such elements, it MUST be prepared by carrying out a specific preparation cycle.
  If required, contact Mapei Technical Services Department for advice on the most suitable preparation cycle.
- The pull-off strength of the substrate must be higher than 1.5 N/mm².
- The maximum residual moisture content in the substrate must be 4% and a vapour barrier must be included. For floors that have just been installed, wait until the concrete is fully cured before applying the resin system. If the residual moisture content is higher than 4%, apply **TRIBLOCK TMB** before the **MAPEFLOOR PARKING SYSTEM HE** coating cycle to prevent detachment and/or the formation of blisters.
  If all the above conditions are met, the system may be applied on concrete industrial floors, conventional or polymer-modified cementitious screeds, controlled-shrinkage screeds such as those made using **MAPECEM** or **TOPCEM** and old cement blocks and ceramic tiles, if prepared according to specification.

2. Preparation of the substrate

It is very important that the surface is prepared according to specification to guarantee correct application of the system and achieve the best performance levels.
The most suitable method to prepare the surface is shot-blasting, or alternatively grinding with a diamond disk. All dust must then be removed with a vacuum cleaner.
Do not use chemical preparation methods, such as acid rinsing, or aggressive percussion tools, to prevent damaging the substrate. Any defects present on the surface, such as holes, pitting, cracking, etc., must be repaired beforehand using either **EPORIP** or **PRIMER SN**, depending on the width and depth of the defects and cracks.
If the substrate needs to be consolidated, use **PRIMER MF** or **PRIMER EP** (choose the most suitable product according to the porosity of the substrate, which will also have an effect on the consumption rate). If

deep hollows or highly deteriorated areas are present on the surface of the floor, repair these areas using **MAPEFLOOR EP19** three-component epoxy mortar or with products from the **MAPEGROUT** line.
Highly deteriorated joints must be reconstructed using the same products.
If any of the above conditions are not strictly adhered to, the final quality of the coating may be poor.

3. Preliminary checks before application
Make sure that all the checks from point 1 "*Characteristics of the substrate*" have been made and that all the operations indicated in point 2 "*Preparation of the substrate*" have been carried out correctly.
The surrounding temperature must be higher than +8°C (the ideal application temperature is between +15°C and +25°C) and the temperature of the substrate must be at least +3°C higher than the dew-point temperature. Relative humidity of the surrounding air must be no higher than 80%.

4. Preparation and application of the products
Carefully follow the preparation instructions according to the Technical Data Sheet for each single product used to form the complete system: **PRIMER SN**, **MAPEFLOOR PU 400, MAPEFLOOR PU 410** and **MAPEFLOOR FINISH 451**.

Non-slip multi-layered coating - 3-3.5 mm
- **Primer (PRIMER SN)**
  Pour component B (4 kg) into component A (16 kg) and mix with a drill at low-speed (300-400 rpm) with a spiral mixing attachment for at least 2 minutes to form a smooth, even compound. Whilst mixing, add 4 kg of **QUARTZ 0.5** to the compound as soon as it has been prepared and continue mixing for several minutes to form a smooth, even compound. Pour the product onto the floor to be coated and spread it out evenly and uniformly by means of a straight trowel or rake. After that full broadcast with **QUARTZ 0.5**.

- **Removal of excess sand**
  Once **PRIMER SN** has hardened remove all excess sand with an industrial vacuum cleaner.

- **Flexible intermediate layer (MAPEFLOOR PU 400)**
  Pour component A (4.75 kg) into component B (15 kg) and mix with a drill at low-speed (300-400 rpm) with a spiral mixing attachment for at least 2 minutes to form a smooth, even compound. While mixing, add 20-30% in weight of **QUARTZ 0.25** to the compound as soon as it has been prepared and continue mixing to form a smooth, even compound. Pour the product on the previous layer and spread it out evenly and uniformly using a notched trowel.

- **Protective intermediate layer (MAPEFLOOR PU 410)**
  Pour component B (3.9 kg) into component A (16 kg), add 1.4 kg of **MAPECOLOR PASTE** and mix with a drill at low speed (300-400 rpm) with a spiral mixing attachment for at least 2 minutes to form a smooth, even compound. While mixing, add 30% in weight of **QUARTZ 0.25** to the compound as soon as it has been prepared and continue mixing to form a smooth, even compound.
  Pour the product on the previous layer and spread it out evenly and uniformly by means of a straight trowel or rake. After that full broadcast with **QUARTZ 0.5** or 0.3-0.9 mm or 0.7-1.2 mm quartz sand, depending on degree of non-slip finish required (approximately 4-6 kg/m^2).

- **Removal of excess sand**
  Once hardened remove all excess sand with an industrial vacuum cleaner.

- **Finishing layer (MAPEFLOOR FINISH 451)**
  Pour component B (6 kg) into component A (14 kg) and mix with a drill at low speed (300-400 rpm) with a spiral mixing attachment for at least 2 minutes to form a smooth, even compound. Apply the product uniformly and continuously using a medium-haired roller, or smooth it over the surface with a smooth rubber or steel trowel, then pass over the surface with a medium-haired roller, making sure that the roll strokes criss-cross over each other.

Any expansion and contraction joints in the floor (contraction joints may be sealed at the start of work and then covered with the resin system) must be sealed with **MAPEFLEX PU 45**.

5. Hardening and step-on times
At +20°C **MAPEFLOOR PARKING SYSTEM HE** sets to foot traffic after around 24 hours, while it takes around 3 days before light traffic may use the surface. Complete hardening and maximum strength are reached after around one week. Lower temperatures lead to longer hardening times and set to foot traffic times for the coating, while higher temperatures reduce these times.

6. Please note
Protect **MAPEFLOOR PARKING SYSTEM HE** from water and condensation for at least 24 hours after application.
If the coating is exposed to aggressive chemicals it may yellow or the colour may change slightly. This phenomenon is purely aesthetic and has no effect on the performance of the system.
Do not apply the system if there is a high level of humidity in the surrounding air or, in the case of external applications, if it is about to rain.
Wear suitable clothing and sweat bands to prevent beads of sweat dripping onto the surface of the wet resin while it is being applied; it may react with the product and form foam.
Never use tools which have just been cleaned with alcohol to apply the products, particularly rollers. We recommend using new rollers.
Never dilute any of the products.

CLEANING AND MAINTENANCE
Regular cleaning and maintenance increase the life of the treated floor, improves its aesthetic properties and reduces its tendency to collect dirt. Floors created using **MAPEFLOOR PARKING SYSTEM HE** are generally easy to clean with neutral detergents, or with alkali detergents diluted at a concentration of from 5 to 10% in water. **MAPEFLOOR MAINTENANCE KIT** is available for maintenance operations and includes **MAPELUX LUCIDA** metallic wax, **MAPEFLOOR WAX REMOVER** and **MAPEFLOOR CLEANER ED** detergent for daily cleaning operations.
Our Technical Services Department is available for any information required.

NOTES
Recommendations regarding safe handling of the products are contained in the Material Safety Data Sheet for each single product in the cycle. However, the use of protective gloves and goggles is recommended when mixing and applying the products.

If the cycle is applied on surfaces, in climatic conditions and/or for final uses not mentioned above, please contact the Technical Services Department at MAPEI S.p.A.

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