

MAPEFLOOR FINISH 451

Two-component aliphatic elastic coloured
polyaspartic finish resistant to wear and UV rays



DESCRIPTION

Mapefloor Finish 451 is a two-component, elastic, coloured, aliphatic polyaspartic finish with excellent resistance to wear and UV rays, for indoor and outdoor uses as topcoat for elastic broadcast resin systems.

TECHNICAL CHARACTERISTICS

- high resistance to wear;
- excellent resistance to UV rays;
- excellent resistance to weathering;
- good chemical resistance to de-icing salts, oils and fuel in general;
- elastic;
- good hiding power;
- easy to apply.

Mapecoat Finish 451 applied on concrete supports, it complies with the principles defined in EN 1504-9 (*"Products and systems for protecting and repairing concrete structures. definitions, requirements, quality control and conformity evaluation - General principles for the use and application of systems"*) and with the requirements of EN 1504-2 (*"Products and systems for the protection and repair of concrete"*) for class: products for protecting surfaces – coating (C) – protection against ingress (PI) + moisture control (MC) + physical resistance/surface improvement (PR) + resistance to chemicals (RC) + increasing resistivity by limiting moisture content (IR).

ADVANTAGES

- suitable for outdoor surfaces;
- thanks to the availability in different colours it is possible to distinguish areas having different intended uses;
- it improves the ease of cleaning and maintenance of the treated surfaces;
- sustainability: it can contribute to LEED credits. EPD (Environmental Product Declaration) compliant.

WHERE TO USE

Mapefloor PU 451 is used as topcoat for indoor and outdoor broadcast resin systems, even elastic, especially for the car-park solutions **Mapefloor Parking System ME** and **Mapefloor Parking System HE**, for example in:

- carpark top decks areas;
- multi-deck carpark;
- garages;
- sidewalks;
- ramps;
- bridge walkaways;
- topcoat for elastic polyurethane waterproofing membranes;
- areas stressed by vehicular traffic in general.

COLOURS

Mapefloor Finish 451 is available in various RAL colours. Please contact Head Office for a full list of the colours available.

RECOMMENDATIONS

- Do not apply **Mapefloor Finish 451** on cementitious substrates with a moisture content higher than 4% or with capillary rising damp (contact MAPEI Technical Services Department).
- Do not dilute **Mapefloor Finish 451** with solvent or water.
- Do not apply **Mapefloor Finish 451** on dusty or crumbling substrates.
- Do not apply **Mapefloor Finish 451** on substrates with oil, grease or stains 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.
- The surface of the resin systems made with **Mapefloor Finish 451** may change colour if it comes into contact with aggressive chemicals. A change in colour, however, does not mean that it has been damaged by the chemical.
- Remove aggressive chemicals as soon as possible after they come into contact with **Mapefloor Finish 451**.
- If rooms where the product is being used need to be warmed up, do not use heaters that burn fossil fuels, otherwise the carbon dioxide and water vapour given off into the air will affect the shine on the finish and ruin its appearance. Use electric heaters only.
- 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 temperature of the substrate during the application and the hardening must be at least 3°C above the dew point and the relative humidity of the air must be max. 80%.

APPLICATION PROCEDURE

Substrate preparation

Mapefloor Finish 451 is applied on resin systems broadcast in excess with quartz sand, for instance **Mapefloor PU 410** or **Mapefloor PU 400 LV** broadcast in excess with **Quartz 0.5** or **Quartz 0.9** or **Quartz 1.2**; remove the excess of sand before applying the product.

The product used as base layer must be fully hardened. The surface of the substrate must have not crumbled or detached parts and must be clean, dry, without any dust, grease, oil, dirt or any further contaminant which could affect the adhesion of the product.

Preparation of the product

Stir the two components A and B separately, then add the content of component B into the container of component A and mix with a 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. Pour the mixture into a clean container and briefly mix again. Apply the mixture within the pot life indicated in the data table. Higher surrounding temperatures will reduce the pot life, while lower temperatures will increase it.

Application of the product

Mapefloor Finish 451 can be evenly applied in a single layer by roller, taking care of crossing the rolls, or pouring it on the surface and spreading it by steel or rubber trowel scratching to zero. The application by rubber trowel, compared to the steel one, is characterized by a lower consumption, a lower hiding power and a rougher surface. Once the product is applied, it is possible to back-roll with a short pile roller to remove the trowel marks.

CLEANING

Clean tools used to mix and apply the product with polyurethane thinners before it hardens. Once hardened, the product can only be removed mechanically.

CONSUMPTION

Finishing layer for broadcast resin systems:

Mapefloor Finish 451	0,6 – 0,8 kg/m ²
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Consumption depends on the roughness of the substrate, the temperature and the type of tool used to apply the product. The figures indicated are for application at a temperature of +15°C to +25°C, referred to the material, the substrate and the surrounding. Lower temperatures increase the consumption rate and hardening time of the product.

It is recommended to carry out tests beforehand to get an idea of the actual consumption according to the particle size of the aggregate used to broadcast and the type of tool chosen for the application.

PACKAGING

Units 20 kg:

Component A: 14 kg.

Component B: 6 kg.

STORAGE

12 months in its original sealed packaging, in a dry area at a temperature between +15°C to +25°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.com.

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.

PRODUCT FOR PROFESSIONAL USE

TECHNICAL DATA (typical values)

PRODUCT IDENTITY

	comp. A	comp. B
Colour:	RAL colours	transparent colourless
Consistency:	liquid	liquid
Brookfield viscosity at +23°C:	6,000 - 9,000 mPa·s (# 6 - 50 revs)	175 - 300 mPa·s (# 2 - 50 revs)
Density:	1.63 ± 0.05 g/cm ³	1.1 ± 0.05 g/cm ³

APPLICATION DATA (at +23°C - 50% R.H.)

Mixing ratio:	comp. A : comp. B = 70 : 30
Colour of mix:	RAL colours
Consistency of mix:	fluid
Density of mix:	1,480 kg/m ³
Viscosity of mix :	1,500 ± 200 mPa·s (# 4 - 50 revs)
Pot life:	40 mins.
Dust dry, 150 microns on glass:	90 mins.
Application temperature:	+10°C to +30°C (refers to the surroundings, material and substrate)
Set to foot traffic:	24 hours
Final hardening time:	3 days

FINAL PERFORMANCE

Maximum deformation after 7 days at +23°C + 14 days at +50°C (DIN 53504):	43%
Tear strength after 7 days at +23°C + 14 days at +50°C (DIN 53515):	97 N/mm
Tensile strength after 7 days at +23°C + 14 days at +50°C (DIN 53504) :	12.2 N/mm ²
Taber abrasion resistance (CS17 wheel - 1,000 g - 1,000 revs) after 7 days at +23°C (EN ISO 5470-1):	95 mg
Shore A hardness (DIN 53505):	85
Shore D hardness (DIN 53505):	40

ESSENTIAL CHARACTERISTICS FOR CE MARKING ACCORDING TO EN 1504-2 – TAB. ZA. 1d ; ZA.1e; ZA 1f; ZA 1g (coating C, PI-MC-PR-RC-IR)

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	Loss in weight less than 3,000 mg with an H22 abrasive wheel/1,000 cycles/1,000 g load	< 3,000 mg
Permeability to CO₂:	EN 1062-6	$S_D > 50 \text{ m}$	$S_D \geq 130 \text{ m}$
Permeability to water vapour:	EN ISO 7783-1-2	Class I: $S_D < 5 \text{ m}$ (permeable to water vapour) Class II: $5 \text{ m} < S_D < 50 \text{ m}$ Class III: $S_D > 50 \text{ m}$ (impermeable to water vapour)	Class III
Resistance to thermal shock (1 x):	EN 13687-5	After thermal cycles a) no swelling, cracking or delamination b) average direct traction adherence test (N/mm ²) Crack-bridging or flexible systems with no traffic: $\geq 0.8 (0.5)^b$ with traffic: $\geq 1.5 (1.0)^b$ Rigid systems ^{c)} with no traffic: $\geq 1.0 (0.7)^b$ with traffic: $\geq 2.0 (1.0)^b$	3.48 MPa (Flexible system with traffic)
Capillary absorption and permeability to water:	EN 1062-3	$w < 0.1 \text{ kg/m}^2 \cdot \text{h}^{0.5}$	$w \leq 0.004 \text{ kg/m}^2 \cdot \text{h}^{0.5}$
Impact strength measured on MC (0.40) coated concrete samples according to EN 1766. Note: the thickness and design impact load influence which class is chosen:	EN ISO 6272 - 1	No cracks or delamination after loading Class I: $\geq 4 \text{ Nm}$ Class II: $\geq 10 \text{ Nm}$ Class III: $\geq 20 \text{ Nm}$	Class II
Direct traction adherence test. Reference substrate: MC (0.40) as specified in EN 1766, curing time: – 28 days for one-component systems containing concrete and PCC systems: – 7 days for reactive resin systems:	EN 1542	Average (N/mm ²) Crack-bridging or flexible systems: with no traffic: $\geq 0.8 (0.5)^b$ with traffic: $\geq 1.5 (1.0)^b$ Rigid systems ^{c)} with no traffic: $\geq 1.0 (0.7)^b$ with traffic: $\geq 2.0 (1.0)^b$	3.38 MPa (Flexible system with traffic)
Resistance to severe chemical attack. Class I: 3 days with no pressure Class II: 28 days with no pressure Class III: 28 days with pressure It is advisable to use test liquid for the 20 classes indicated in EN 13529 to cover all common types of chemical agents. Other test liquids may be agreed upon between those interested in the tests:	EN 13529	Reduction of hardness less than 50% when measured according to the Buchholz method, EN ISO 2815, or the Shore method from EN ISO 868), 24 hours after removing the coating from immersion in the test liquid	GROUP 1: Class II GROUP 3: Class II GROUP 12: Class II

Exposure to artificial atmospheric agents according to EN 1062-11:2002, 4.2 (UV radiation and humidity) for external applications only. Only white and RAL 7030 require testing:	EN 1062-11	After 2,000 hours of artificial bad weather: – no swelling according to EN ISO 4628-2 – no cracking according to EN ISO 4628-4 – no flaking according to EN ISO 4628-5 slight colour variation, loss of brightness and crumbling may be acceptable	No swelling, cracking or flaking
Reaction to fire class:	EN 13501-1	A ₁ FL 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

LEGAL NOTICE

The contents of this Technical Data Sheet ("TDS") may be copied into another project-related document, but 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.com.

ANY ALTERATION TO THE WORDING OR REQUIREMENTS CONTAINED OR DERIVED FROM THIS TDS EXCLUDES THE RESPONSIBILITY OF MAPEI.

TECHNICAL SPECIFICATIONS

Supply and installation of a coloured UV-resistant two-component aliphatic polyaspartic resin (such as **Mapefloor Finish 451** by Mapei S.p.A.) to be applied as topcoat resistant to abrasion of elastic broadcast resin systems, waterproof, slip-resistant, for indoors and outdoors.

The product must have the following characteristics:

Maximum deformation after 7 days at +23°C + 14 days at +50°C (DIN 53504):	43%
Tear strength after 7 days at +23°C + 14 days at +50°C (DIN 53515):	97 N/mm
Tensile strength after 7 days at +23°C + 14 days at +50°C (DIN 53504):	12.2 N/mm ²
TABER abrasion resistance: (7 days at +23°C, 1,000 revs, 1,000 g, CS17 wheel) (EN ISO 5470-1): (7 days at +23°C, 1,000 revs, 1,000 g, H22 wheel) (EN ISO 5470-1):	95 mg 800 mg

Shore A hardness (DIN 53505):	85
Shore D hardness (DIN 53505):	40
Permeability to CO ₂ (EN 1062-6):	S _D 130 m
Permeability to water vapour (EN ISO 7783-1-2):	Class III (S _D > 50 m)
Capillary absorption and permeability to water (EN 1062-3):	w 0.004 kg/m ² ·h ^{0.5}
Resistance to severe chemical attack (EN 13529):	Group 1: class II Group 3: class II Group 12: class II
Resistance to thermal shock (1 x) (EN 13687-5):	3.48 N/mm ²
Impact resistance (EN ISO 6272-1):	≥ 10 Nm Class II
Reaction to fire class (EN 13501-1):	B _{FL} - s1

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