MAPEFLOOR CPU/MF

Three-component, self-levelling, polyurethane/cement-based mortar for coating industrial floors in layers from 3 to 6 mm thick. Complies with standards applied in the foodstuffs sector

WHERE TO USE

Mapefloor CPU/MF is a three-component polyurethane/cement-based formulate used to create protective coatings on industrial floors subjected to medium to heavy traffic and high chemical aggression, for dry and wet processing areas.

Some application examples

· Coating floors in the chemical and pharmaceutical industries.
· Coating floors in the foodstuffs industry.
· Coating floors in wineries, breweries and beverage industry in general.

TECHNICAL CHARACTERISTICS

Mapefloor CPU/MF is a three-component formulate made from cement, selected aggregates and polyurethane resin according to a formula developed in the MAPEI research laboratories.
Mapefloor CPU/MF complies with standards applied in the foodstuffs sector EN 1186, EN 13130 and prCEN/TS 14234, as well as the Decree Of Consumer Goods that represent the conversion of European directive 89/109/EEC, 90/128/EEC and 2002/72/EC regarding contact with foodstuffs.
Mapefloor CPU/MF is used to create seamless coatings from 3 to 6 mm thick, smooth or with a non-slip finish (**Mapefloor System CPU/DP**), characterised by high resistance to chemicals such as acids, alkalis, oils, grease, saline solutions, hydrocarbons, etc.
A 6 mm thick coat of **Mapefloor CPU/MF** has excellent resistance to thermal shocks of up to +70°C, such as when cleaning with hot water is carried out. The in-service temperature for a coating of **Mapefloor CPU/MF** with a thickness of at least 3 mm varies from -20°C to +70°C. Thanks to its high mechanical strength and resistance to abrasion, **Mapefloor CPU/MF** is suitable for floors subjected to medium to heavy traffic, depending on the applied thickness.
Coatings made from **Mapefloor CPU/MF** are easy to clean.

COLOURS

Mapefloor CPU/MF is a neutral colour and must be pigmented on site at the moment it is applied by adding **Mapecolor CPU** which is available in grey, beige, oxide red, green and ochre yellow.

RECOMMENDATIONS

· Do not apply **Mapefloor CPU/MF** on substrates with a film of surface water or on concrete within 10 days of pouring.
· Do not dilute **Mapefloor CPU/MF** with solvent or water.
· Do not apply **Mapefloor CPU/MF** on dusty or crumbling substrates.

· Do not apply **Mapefloor CPU/MF** on substrates with oil or grease stains or dirt in general.
· Do not apply **Mapefloor CPU/MF** on substrates that have not been prepared according to specification.
· 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.
· Do not apply **Mapefloor CPU/MF** on ceramic substrates or stone materials in general without having previously prepared the surface according to specification.
· **Mapefloor CPU/MF** coatings change colour if exposed to sunlight, but this has absolutely no effect on their performance characteristics.
· The coating may also 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 chemicals.
· Remove aggressive chemicals as soon as possible if they come into contact with **Mapefloor CPU/MF**.
· Use suitable specific cleaning equipment and detergent to clean the coating, depending on the type of dirt or stain to be removed.
· Protect the coating from water for at least 24 hours after application.

APPLICATION PROCEDURE

Characteristics of the substrate

The cementitious screed must be solid, compact, stable, strong, sound and clean and dimensioned according to the static and dynamic design loads it will have to withstand while in service.
The flatness must be defined according to its intended use.
The compressive strength of the concrete or cementitious mortar must be at least 25 N/mm² and its tensile strength must be at least 1.5 N/mm².
If the substrate is dressed with ceramic, natural stone or an old resin coating, they must be perfectly stable, firmly bonded to the substrate and must be intact, sound and clean. These kinds of substrates require specific and adequate preparation.
In the case of old resin coatings, it is also recommended to test their compatibility with the new system to be applied.
The substrate must be dry or slightly damp. There must be no capillary rising damp (test with a sheet of polythene).
In case of new concrete slabs, wait at least 10 days after the concrete casting before the application of the product.

Preparation of the substrate

It is very important that the surface is prepared correctly to guarantee perfect adhesion and the best performance of the product. The most suitable methods to prepare the surface are those of mechanic nature, such as shot-blasting or grinding with a diamond disk. Bush-hammering or scarifying are only required if several millimetres of material need to be removed from the surface. After that, all scraps must be removed carefully, and the dust must be removed with a vacuum cleaner.
Once the surface of the substrate has been prepared, it must be sound, compact, clean, dry, or slightly damp, absorbent and have a slightly rough finish and have no traces of material that could affect adhesion of the coating, such as:
· cement laitance;
· dust, loose or detached parts;
· protective waxes, curing products, paraffins, efflorescence;
· pollutants of any nature;
· loose residues of existing coating etc.
If required, contact MAPEI Technical Services for advice on the most suitable preparation method.
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** or **Mapefloor JA** 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**, pre-dosed, three-component epoxy mortar or **Mapefloor CPU/MF**.
If the substrate needs to be strengthen, apply **Primer MF** with a roller in one or more coats until the substrate is completely saturated.
Make a series of anchoring grooves for the product around the edge of the area to be coated and in around all vertical features such as walls, pillars, cable trays, drains, etc. Grooves must also be created if there are interruptions in the coating, such as joints between when work finishes for the day and then when starting work again.
The width and depth of the grooves must be around twice the thickness of the **Mapefloor CPU/MF** coating to be applied.

Preliminary checks before application

The surrounding temperature and that of the floor and of the product must be higher than +8°C and max. +35°C (the ideal application temperature is +15°C to +25°C). The temperature of the substrate must at least 3°C higher than the dewpoint temperature. The relative humidity of the air must be max. 80%.

Description of the systems

Mapefloor CPU/MF may be applied both as smooth self-levelling coating or multi-layered coating with rough non-slip finishing (**Mapefloor System CPU/DP**).
For further information regarding **Mapefloor System CPU/DP**, multi-layered anti-slip coating with a thickness from 3 to 4 mm, see the relevant System Technical Data Sheet.

SELF-LEVELLING SMOOTH COATING WITH TICKNESS FROM 3 TO 6 mm

Application of primer

When creating self-levelling smooth coatings, before applying **Mapefloor CPU/MF**, always treat the surface with a coat of primer to saturate the porosity of the substrate. Perform the following steps:
for dry, cured substrates with a moisture level of < 4%, and when thermal shocks will not be expected on the coating when in service, use **Primer SN** mixed with 20-30% by weight of **Quartz 0.5**. The mix must be poured onto the surface of the clean, de-dusted floor, spread over the floor with a straight, steel trowel and skimmed down to a feather edge. Immediately after applying the coating, fully broadcast the surface with **Quartz 0.9**. Once the primer has set, remove any excess quartz, sand the surface and remove all traces of dust with a vacuum cleaner. Then apply the **Mapefloor CPU/MF**. Please refer to the **Primer SN** Technical Data Sheet for further information on its use and application.
As an alternative to **Primer SN**, for all suitable types of substrate, particularly moist substrates or substrates with thermal shocks expected on them when in service, apply a coat of **Mapefloor CPU/MF** skimmed down to a feather edge. The product must be completely hardened and no longer sticky before applying the final coat of **Mapefloor CPU/MF** as a self-levelling layer. Wait at least 12 hours at +20°C, depending on actual site conditions.

Preparation of the product

Mix component A and then pour it into a clean and properly dimensioned container. Add component B and mix it with a suitable low speed electric mixer to form a smooth, even paste.
Then add **Mapecolor CPU** powder colouring agent slowly and gradually (one 5 kg bag **of Mapecolor CPU** for every kit of **Mapefloor CPU/MF** A+B+C). Mix again for a few seconds until a homogeneous mix is obtained. Add, slowly and gradually, all component C while continuing mixing until a homogeneous mix is obtained.
We recommend a specific low speed mortar mixer for this operation, such as a vertical mixing axis or a mixer with static blades and a rotating mixing drum.
Apply the mix within the pot life indicated in the table (it refers to a temperature of +20°C). Higher surrounding temperatures will reduce the pot life of the mix, while lower temperatures will increase its pot life.

Application of the product

Pour **Mapefloor CPU/MF** onto the floor and spread it out evenly to the thickness required, from 3 to 6 mm, with a straight or notched trowel or a pin-rake. Immediately after applying **Mapefloor CPU/MF**, backroll intensively with a spiked-roller to remove entrapped air and reach an even surface.

CONSUMPTION

Self-levelling smooth coating with thickness from 3 to 6 mm
Primer:
Primer SN (A+B) + **Quartz 0,5**): 0.7-0.8 kg/m²
Broadcast with **Quartz 0.9**: 2.0-3.0 kg/m²
As an alternative, scratch coat:
Mapefloor CPU/MF + **Mapecolor CPU** 2.0-3.0 kg/m²
Actual consumption values are influenced by the roughness and absorbency of the substrate.
Self-levelling coat from 3 to 6 mm
Mapefloor CPU/MF + **Mapecolor CPU** 1.7 kg/m² per mm of thickness
The above mentioned consumption values are also influenced by environmental conditions on job site during the application phases.

CLEANING TOOLS

Clean tools used to prepare and apply **Mapefloor CPU/MF** with polyurethane thinners immediately after use. Once hardened, the product may only be removed using mechanical means.

HARDENING TIME

Floors coated with **Mapefloor CPU/MF** set to light foot traffic after approximately 24 hours at +23°C. They may be opened to light vehicle traffic after approximately 24-36 hours at +23°C. The product develops its full strength after 4 to 5 days at minimum +23°C, although it depends on the actual surrounding conditions on site.

PACKAGING

Mapefloor CPU/MF: 30.6 kg units (component A = 5.2 kg - component B = 5.4 kg - component C = 20 kg).
One 5 kg bag of **Mapecolor CPU** colouring powder must also be added to each 30.6 kg kit of **Mapefloor CPU/MF**, which brings the total weight of each batch to 35.6 kg.

STORAGE

Mapefloor CPU/MF may be stored for 12 months in a dry area in its original packaging at a temperature of between +5°C and +30°C.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Mapefloor CPU MF component B is irritant for the eyes, the skin and the respiratory tract. It may cause irreversible damage if used for lengthy periods and allergic reactions if it comes in contact frequently with the skin of those sensitive to isocyanates. At temperatures above +60°C the product can give off vapours that may be harmful and cause sensitization if inhaled. In the event of sickness, seek medical attention.
Mapefloor CPU MF component C contains cement that when in contact with sweat or other body fluids causes irritant alkaline reactions and allergic reactions to those predisposed. It can cause damage to eyes.
During use wear protective clothes, gloves safety goggles, and a safety mask to protect the respiratory tract, and work only in well-ventilated areas. In case of contact with the eyes or the skin wash immediately with plenty of water and seek medical attention.
Moreover, **Mapefloor CPU MF** component A is hazardous for aquatic life. Do not dispose of this product in the environment.
For further and complete information about the safe use of our product please refer to the latest version of our Safety Data Sheet.
RESTRICTED TO PROFESSIONAL USERS.

TECHNICAL DATA (typical values)				
PRODUCT IDENTITY				
	neutral			**colour**
	comp. A	**comp. B**	**comp. C**	**Mapecolor CPU**
Colour:	milky white	amber	whitish	grey - beige - red - green - ochre
Appearance:	liquid	liquid	powder	powder
Density (g/cm³):	1.05	1.2	–	–
Bulk density (g/cm³):	–	–	1.65 to 1.85	1.350 to 1.450
Viscosity at +23°C (mPa s):	from 200 to 500 (# 2 - 20 rpm)	from 100 to 160 (# 1 - 5 rpm)	–	–
APPLICATION DATA				
Mixing ratio:	A + B + C + **Mapecolor CPU** : 5.2 / 5.4 / 20 / **5**			
Colour of mix (including Mapecolor CPU):	grey - beige - red - green - ochre			
Consistency of mix:	fluid, self-levelling			
Density of mix (kg/m³):	1,700			
Pot life of mix at +20°C:	15 mins.			
Surface temperature:	from +8°C to +30°C			
FINAL PERFORMANCE				
Dust dry at +23°C and 50% R.H.:	2-4 hours			
Set to light foot traffic at +23°C and 50% R.H.:	24 hours			

Full hardening time:	4 days		
Shore D hardness after 28 days (DIN 53505):	83		
Modulus of elasticity in compression (EN 13412) (MPa):	4306		
Coefficient of thermal expansion (UNI EN 1770) (µm/(m·°C)	217		
Performance characteristic	**Test method**	**Requirements according to EN 13813 for cementitious screeds**	**Performance of product**
Flexural strength after 28 days:	EN 13892-2	declared value	15 N/mm^2
Compressive strength after 28 days:	EN 13892-2	declared value	50 N/mm^2
Bond strength after 28 days:	EN 13892-8; 2004	≥ 1.5 N/mm^2	4.6 N/mm^2 (failure of concrete)
Liquid water permeability:	EN 1062-3	declared value	w 0.021 $kg/(m^2 \cdot h^{0.5})$ Class III
Impact strength:	EN ISO 6272	≥ IR 4	IR10 (10 Nm)
Wear resistance (Böhme) after 28 days ($cm^3/50 cm^2$):	EN 13892-3	declared value	A 6
Taber test after 28 days (at +23°C, 50% R.H., 1000 cycles/1000 g, disk H22):	EN ISO 5470-1	< 3,000 mg	665 mg
Reaction to fire:	EN 13501-1	da $A1_{FL}$ a 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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