MAPEFLOOR SYSTEM 91

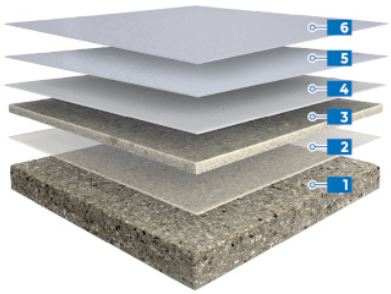
Trowelled epoxy mortar coating system for industrial floors, ideal for renovating old floors; thickness 6 to 15 mm

PRODUCTS USED FOR THE SYSTEM

MAPEFLOOR I 900 - **MAPEFLOOR I 300 SL** or **MAPEFLOOR I 302 SL** - **MAPEFLEX PU 45 FT** - **QUARTZ 1.9** - **QUARTZ 0.5** - **QUARTZ 0.2**

DESCRIPTION

MAPEFLOOR SYSTEM 91 is an epoxy mortar coating system used to make industrial floors with a non-slip or smooth finish that are highly resistant to chemical products, resistant to frequent cleaning operations and wear from moving trolleys and vehicles and impermeable to oil and aggressive substances. The system may also be used to level off surfaces with a slight slope and to fill hollows in concrete floors.
Coatings made using **MAPEFLOOR SYSTEM 91** also have an attractive finish.



1. Substrate: concrete
2. **Mapefloor I 900**
3. **Mapefloor I 900** + **Quartz 1.9**
4. **Mapefloor I 300 SL** or **Mapefloor I 302 SL** + **Quartz 0.25**
5. **Mapefloor I 300 SL** or **Mapefloor I 302 SL** + **Quartz 0.25**
6. **Mapefloor I 300 SL** or **Mapefloor I 302 SL** + **Quartz 0.5**

WHERE TO USE

Coating industrial floors subjected to medium to heavy traffic such as warehouses, supermarkets, storage areas and process areas where forklifts are used intensely. The system may also be used to quickly level off surfaces with a slight slope and to fill hollows in badly deteriorated floors.

MAPEFLOOR SYSTEM 91 is suitable for the following:

- processing and storage areas in the chemical and pharmaceutical industries;
- processing and storage areas in the foodstuffs industry for surfaces subjected to medium to heavy traffic;
- all areas of mechanised warehouses;
- shopping centres in areas with intense pedestrian traffic and in areas of heavy traffic for handling goods;
- aseptic areas, in areas used for storage;
- areas where badly deteriorated floors need to be renovated.

PERFORMANCE AND ADVANTAGES

- Non-slip or smooth finish.
- High solids content.
- Durable, characterised by its high resistance to wear and abrasion from continuous pedestrian traffic and frequent cleaning operations.
- Resistant to most chemical products, such as diluted acids, base products, oil and fuel.
- Thanks to its highly attractive finish, it is particularly suitable for exhibition areas.
- Easy to clean and sterilize which makes it particularly recommended for use in the foodstuffs industry, especially in areas used by light-medium traffic or for walkways.
- Forms an attractive, seamless, highly functional surface.
- Guarantees an excellent cost-performance ratio.

CHEMICAL RESISTANCE

At room temperature, floors coated with **MAPEFLOOR SYSTEM 91** are resistant to:

- diluted inorganic acids such as hydrochloric, nitric, phosphoric and sulphuric acids and limited resistance to organic acids (refer to the chemical resistance table in the technical data sheet of the single products);
- alkalis, including sodium hydroxide at a concentration of 50%, and detergents normally used for cleaning floors up to a concentration of 20-30%, as long as they do not contain abrasive granules;
- sugars, including when in frequent contact with the floor;
- mineral oils, diesel, kerosene and petrol;
- permanent contact for 30 seconds with liquid nitrogen.

Floors coated with **MAPEFLOOR SYSTEM 91** are not suitable for constant exposure to high temperatures.

COLOURS AVAILABLE

MAPEFLOOR SYSTEM 91 is available in several RAL colours. Please consult MAPEI Technical Service Department for the complete range of colours.

CONSUMPTION

The consumption levels indicated below are for a cycle applied at a temperature of +15°C to +25°C on a smooth, compact concrete surface finished with dry shake hardener and prepared with a diamond grinding wheel or by light shot-blasting. Rougher surfaces, or application at lower temperatures, will lead to an increase in consumption and longer hardening times.
The consumption of **MAPEFLOOR I 900**, in particular, may vary according to the type and depth of the preparation cycle carried out on the substrate.

MAPEFLOOR SYSTEM 91 average thickness 7 mm

Adhesion promoter:

MAPEFLOOR I 900 (A+B): 0.9 kg/m²

Layer of mortar:

MAPEFLOOR I 900 (A+B): 0.9 kg/m²
QUARTZ 1.9: 7.2-11.7 kg/m² according to the desired consistency

First smoothing coat:

MAPEFLOOR I 300 SL (A+B + **MAPECOLOR PASTE**) or **MAPEFLOOR I 302 SL** (A+B): 0.9 kg/m²
QUARTZ 0.25: 0.2 kg/m²

Second smoothing coat:

MAPEFLOOR I 300 SL (A+B + **MAPECOLOR PASTE**) or **MAPEFLOOR I 302 SL** (A+B): 0.5 kg/m²
QUARTZ 0.25: 0.3 kg/m²

Finishing coat:

MAPEFLOOR I 300 SL (A+B + **MAPECOLOR PASTE**) or **MAPEFLOOR I 302 SL** (A+B): 0.5 kg/m²
QUARTZ 0.5: 0.05 kg/m²

Note: *If **MAPEFLOOR I 300 SL** is available in the colour required, do not add **MAPECOLOR PASTE**.*

SURFACE PREPARATION

1. Characteristics of the substrate

Before applying the **MAPEFLOOR SYSTEM 91** cycle, the substrate on which the coating is to be applied must be carefully analysed.
The concrete screed for 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.
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 moisture content of the substrate must be maximum 4% (test with a suitable hygrometer) and there must be no capillary rising damp (check the substrate with a sheet of polythene). If all the above conditions are met, **MAPEFLOOR SYSTEM 91** may be applied on concrete industrial floors, conventional or polymer-modified cementitious screeds and shrinkage-compensated screeds such as those made from **MAPECEM PRONTO** or **TOPCEM PRONTO**.
Wait until new cementitious flooring is fully cured before applying the resin system. In case of damp substrate or in presence of rising damp, contact MAPEI Technical Service Department.

2. Preparation of the substrate

It is very important that the surface is prepared correctly to guarantee perfect adhesion and the best performance of the resin-based system. The most suitable methods to prepare the surface are those of mechanic nature, such as milling or shot-blasting. 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, have a slightly rough finish (maximum roughness of 2 mm) 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, cracks, etc., must be repaired with **PRIMER SN** mixed with quartz sand or made thixotropic with **ADDITIX PE**, or with **MAPEFLOOR JA** or **MAPEFLOOR JA FAST** depending on the width and depth of the defects or cracks. Patching any badly damaged areas or joints, fill hollows in the surface and repair or carry out localised variations to slopes with **MAPEFLOOR EP19**, ready-mixed epoxy mortar. If the substrate needs to be strengthened, apply **PRIMER MF** with a roller in one or more coats until the substrate is completely saturated.

3. Preliminary checks before application

Make sure that all the checks indicated in point *1"Characteristics of the substrate"* have been carried out, 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 +15°C to +25°C), and the temperature of the substrate must at least 3°C higher than the dew-point temperature. The relative humidity of the air must be max. 80%.

PREPARATION AND APPLICATION OF THE PRODUCTS

Carefully follow the preparation instructions contained in the Technical Data Sheet for each single product used to form the complete system: **MAPEFLOOR I 900**, **MAPEFLOOR I 300 SL** or **MAPEFLOOR I 302 SL**, **QUARTZ 1.9**.

4. Non-slip mortar coating - 6 to 15 mm

Adhesion promoter (MAPEFLOOR I 900)

The two components that make up **MAPEFLOOR I 900** must be blended together just before application. Mix component A thoroughly and add the contents of component B. Mix again with an electric mixer at low speed (300-400 revs/min) for at least 2 minutes until the mix is completely blended. Pour the mix into a clean container and briefly mix again. Apply the product with a medium-piled roller until the pores in the substrate are completely saturated. Apply the next layer of mortar on the product while it is still wet.

Preparing and spreading the mortar (MAPEFLOOR I 900)

Prepare **MAPEFLOOR I 900** by thoroughly mixing component A, then pour in all the content of component B and mix again with a suitable electric mixer at low speed (300-400 rpm) for at least 2 minutes, in any case until completely blended.
Separately, into a suitable horizontal concrete mixer, pour **QUARTZ 1.9** in the following dosage: 8-10 parts up to a maximum of 13 parts by weight of **MAPEFLOOR I 900** (resin / quartz ratio: from 1:8 to 1:13 by weight) in any case according to the desired consistency. Add the freshly prepared **MAPEFLOOR I 900** to the concrete mixer, keep stirring, until a homogeneous mix is obtained with a screed mortar consistency. Pour the mix onto the adhesion promoter (**MAPEFLOOR I 900**) while it is still wet using rakes, spacers and aluminum straight edge. The spacers size should take account of the next compacting and smoothing operations to obtain the final required thickness.

Compacting and smoothing the mortar (MAPEFLOOR I 900)

Smooth over the surface of the mortar with a power trowel (helicopter) while the mortar is still wet.

First smoothing coat of the mortar (MAPEFLOOR I 300 SL or MAPEFLOOR I 302 SL)

Pour component B into component A (add **MAPECOLOR PASTE** colouring paste exclusively for neutral **MAPEFLOOR I 300 SL*** in the dosage of 8-9% b.w.) and mix with a drill at low speed with a spiral mixing

attachment to form a smooth, even paste. While mixing add approximately 20% b.w. of **QUARTZ 0.25** to the mixture prepared as described above and mix again to form a smooth, even compound. The amount of **QUARTZ 0.25** may vary, if necessary, depending on the porosity of the mortar. Pour the product on the hardened mortar and spread it out evenly and uniformly by scratching to zero using a straight steel trowel or a smooth spreader.

Cutting and sealing expansion joints (MAPEFLOOR PU 45 FT)

Cut contraction and expansion joints with a clipper following the same layout as the existing ones. Then seal the joints with **MAPEFLEX PU 45 FT**.

Second smoothing coat of the mortar (MAPEFLOOR I 300 SL or MAPEFLOOR I 302 SL)

When the previous layer has hardened, anyway within 12 hours of application, pour component B into component A (add **MAPECOLOR PAST**E colouring paste exclusively for neutral **MAPEFLOOR I 300 SL*** in the dosage of 8-9% b.w.) and mix with a drill at low speed with a spiral mixing attachment to form a smooth, even paste. While mixing, add approximately 55-60% b.w. of **QUARTZ 0.25** to the mixture prepared as described above and mix again to form a smooth, even compound. Pour the product on the previous coat of the mortar and spread it out evenly and uniformly by scratching to zero using a straight steel trowel or a smooth spreader. If an anti-slip finish is required, broadcast the wet surface with **QUARTZ 0.5** or **QUARTZ 0.9**.

Finishing coat (MAPEFLOOR I 300 SL or MAPEFLOOR I 302 SL)

Pour component B into component A (add **MAPECOLOR PASTE** colouring paste exclusively for neutral **MAPEFLOOR I 300 SL*** in the dosage of 8-9% b.w.) and mix with a drill at low speed with a spiral mixing attachment to form a smooth, even paste. While mixing add 10% b.w. of **QUARTZ 0.5** to the mixture prepared, as described above, and mix again to form a smooth, even compound. Apply the product with a medium-piled roller or with a straight steel trowel scratching to zero. After applying the product with the straight steel trowel, back-roll with a short-pile roller.

* *If **MAPEFLOOR I 300 SL** is already coloured, **MAPECOLOR PASTE** must not be added.*

5. Hardening and step-on times

At +23°C **MAPEFLOOR SYSTEM 91** sets to foot traffic after 16 hours, may be used for light traffic after 1 to 2 days and is ready for final use once fully hardened after approximately 7 days. Lower temperatures lead to extended curing and lengthen the hardening and step-on times of the coating, higher temperatures may reduce them.

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 SYSTEM 91** 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.

TECHNICAL DATA

TECHNICAL DATA (after 7 days at +23°C)	
Adhesion (EN 13892-8)	> 1.5 N/mm² - failure of substrate
TABER abrasion resistance (CS 17 wheel - 1000 revs - 1000 g) (EN ISO 5470-1)	90 mg
Compressive strength (EN 196-1)	87 N/mm²
Flexural strength (EN 196-1)	30 N/mm²
Reaction fire (EN 13501-1)	B_{FL}-s1
Service temperature (air temperature)	-20/+60°C

Finish	shiny

NOTES

Recommendations regarding safe use and handling of the products are contained in the Safety Data Sheet for each single material 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.

Mapei S.p.A.

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