MAPEFLOOR I 360 AS

Two-component self-leveling epoxy resin for electrically conductive systems





DESCRIPTION

Mapefloor I 360 AS is a two-component, high solid content, pigmented, epoxy resin-based formulation containing electrically-conductive fillers according to a formula developed in the MAPEI R&D laboratories. **Mapefloor I 360 AS** is used to create electrically conductive smooth waterproof resin systems with good chemical and mechanical resistance on concrete substrates and cementitious screeds, even those subject to medium-heavy traffic.

TECHNICAL CHARACTERISTICS

- Electrically conductive.
- Good chemical resistance.
- Good mechanical strength and resistance to wear.
- Impermeable to water and liquids in general.
- Dustproof.

With **Mapefloor I 360 AS** it is possible to create seamless, self-levelling resin systems for cleanrooms class ISO 4 concerning particle emissions and -7.8 concerning VOC emissions, according to ISO 14644-8.
Mapefloor I 360 AS fulfills the requirements ISO 8690 /DIN 25415 with contaminants ^{137}Cs and ^{60}Co.
Mapefloor I 360 AS complies with requirements of EN 13813 “Screed material and floor screeds - Screed material - Properties and requirements”, which specifies the requirements for screed materials used in the construction of internal floors.

ADVANTAGES

- Fast return to service.
- The treated surfaces are easy to clean and sanitize (Riboflavin test ISO 4628-1).
- Resistance to sparks according to UFGS-09 97 23 and UFGS-09 67 23.14, resinous flooring systems.
- Fulfils ATEX 137.
- Does not allow microbial proliferation according to ISO 22196.
- Fulfils WHG requirements.
- Low VOC emission (CDPH standard).

- Easy to maintain.
- Sustainability: it can contribute to LEED credits. EPD (Environmental Product Declaration) compliant.

WHERE TO USE

Mapefloor I 360 AS is mainly used to make anti-static conductive resin systems in areas such as:

- electronic industries;
- chemical and pharmaceutical industries;
- laboratories;
- hospitals and operating theatres;
- automotive and aerospace industries;
- warehouses of flammable substances;
- sterile rooms.

Once hardened, **Mapefloor I 360 AS** is characterised by a low release of micro-particles and volatile organic compounds (VOC) into the air. Thus, it's particularly suitable for coating floors in environments such as cleanrooms where a high standard of hygiene is required, the dimensions and amount of suspended dust and micro-particles need to be constantly monitored and the presence of potential biological and physical pollutants that could interfere with the various processes needs to be kept under control.

COLOURS

Mapefloor I 360 AS is supplied in various RAL colours. For the full range of colours available, please contact the Head Office.

RECOMMENDATIONS

- The moisture content in the substrate must be maximum 4% and there must be no capillary rising damp.
- **Mapefloor I 360 AS** is applied on substrates after treating their surface with **Primer W-AS N**, a special two-component water-based epoxy primer for electrically conductive systems.
- Make sure the film of **Primer W-AS N** has completely hardened before applying **Mapefloor I 360 AS**.
- Before applying **Mapefloor I 360 AS**, check the electrical conductivity of the surface on **Primer W-AS N**.
- Do not apply **Mapefloor I 360 AS** on dusty or crumbly substrates or that have not been prepared as specified and primed.
- Do not apply **Mapefloor I 360 AS** on substrates with oil or grease stains or dirt in general.
- **Mapefloor I 360 AS** contains special, electrically-conductive fillers which may produce colour or surface unevenness, but this will have no effect on the final performance of the product. The fillers may also affect the colour of the coating slightly by being visible on the surface.
- Do not dilute **Mapefloor I 360 AS** with solvent or water.
- 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 surfaces of systems made with **Mapefloor I 360 AS** may change colour if exposed to UV rays, but this has no effect on their performance.
- The surface may also change colour if it comes into contact with aggressive chemicals. A colour change, however, does not mean that the system has been damaged by the chemicals.
- Remove aggressive chemicals as soon as possible after they come into contact with **Mapefloor I 360 AS**.
- 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 of the finish and its appearance. Use electric heaters only.
- Protect the product from water for at least 24 hours after application.
- The temperature of the substrate during the application and hardening must be at least 3°C higher than the dew point. The relative humidity of the air must be max. 80%.
- Use suitable specific cleaning equipment and detergent to clean the resin system, depending on the type of dirt or stain to be removed.

- The consumption of **Mapefloor I 360 AS** should never exceed 2.4 kg/m² to avoid compromising the electric conductivity of the system.

APPLICATION PROCEDURE

Preparation of the substrate

The surface of concrete floors must be dry, clean and sound and have no crumbling or detached areas. The compressive strength of concrete substrates must be at least 25 N/mm² and their tensile strength must be at least 1.5 N/mm². The substrate must also be strong enough for its final intended use and to withstand the types of loads acting on the floor.
The moisture content in the substrate must be maximum 4% and there must be no capillary rising damp.
The surface of the floor must be prepared with a suitable mechanical process (e.g. shot-blasting or grinding with a diamond disk) 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, thoroughly remove all dust on the surface by vacuum.
Any cracks, holes or surface irregularities must be repaired and smoothed with **Primer SN** filled, if necessary, with quartz sand or made thixotropic with the addition of **Additix PE**, **Mapefloor JA** or **Mapefloor JA Fast**. Select the most suitable product depending on the width and depth of the crack. Use **Mapefloor EP P19**, pre-dosed epoxy mortar, to reintegrate any badly damaged areas or joints, fill hollows in the surface and repair or carry out localised modifications to slope.

Application of Primer SN

Apply an even coat of **Primer SN** mixed with **Quartz 0.5** on the substrate with a straight trowel or rake after it has been prepared accordingly. Do not broadcast the surface of the primer with quartz sand. Make sure there are no open pores in the surface of the substrate, otherwise air could escape and form small craters or pinholes in the self-levelling layer. If there are any open pores in the substrate, apply a second skim coat of **Primer SN.** When **Primer SN** has hardened, sand the surface and apply a further coat of **Primer SN** by roller.

Application of Copper Band and Primer W-AS N

The special, self-adhesive, electrically-conductive **Copper Band** strips must be placed on **Primer SN**, once hardened. The number and position of the strips depend on the shape of the surface to be coated, the presence of any joints, drainage channels, pillars, etc. and, in any case, they must be positioned minimum every 80 m² (approx. a circular area with 5 m radius). The strips can be positioned close to a wall, pillar, vertical surface, etc. by placing a 1-1.5 metre long piece on the floor surface and then folding it up over the vertical surface for at least 50 cm. Take great care when handling and folding the copper strips along the wall, otherwise they may be torn or permanently damaged. Once the resin system has been applied, the free ends of the strips must be earthed by a qualified electrician.
Once the copper strips have been positioned, apply by roller a coat of **Primer W-AS N**, electrically conductive resin in water emulsion, over the entire surface of the epoxy formulation.
After 24 hours, when the product has cured and an even matt black finish has been achieved, the electrical resistance should be measured. The resistance to earth R_E value must be $<3 \times 10^3$ Ω using 10 V.
Apply **Mapefloor I 360 AS** only after having applied and checked the conductivity of **Primer W-AS N**.
Before applying **Mapefloor I 360 AS**, remove all traces of dust from the surface by vacuum.
For further details regarding the preparation and application of **Primer SN** and **Primer W-AS N**, refer to the relevant Technical Data Sheets.

Preparation of the product

Preliminarily stir components A and B of **Mapefloor I 360 AS** using a low-speed electric mixer (300-400 rpm). Then, pour the entire contents of component B into the container of component A and mix for at least 2 minutes until a homogeneous mixture is obtained. 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 product within the pot life indicated in the data table (referred to a temperature of +23°C). Higher surrounding temperatures will reduce the pot life, while lower temperatures will increase it.

Application of the product

Apply a single layer of maximum 1.5 mm thickness of **Mapefloor I 360 AS** with a notched spreader or rake (with "V" shaped notches) over the entire surface.

Immediately after the application of the product, back-roll with a spiked roller to eliminate any air entrained during mixing. It is recommended to pass over the surface with the roller in two perpendicular directions. Back-roll intensively, especially in the perpendicular direction to that one assumed by the conductive fibres that are visible on the surface after the application.
When the **Mapefloor I 360 AS** has hardened, test a reference area of the system to check its conductive capacity. The number of checks and measurements of the conductivity of the coating must be proportional to the area to be tested as indicated below:

Size of the area	Number of tests
< 10 m^2	1 test every m^2
10 < m^2 < 100	from 10 to 20 tests
> 100 m^2	10 tests every 100 m^2

Tests must be carried out measuring the resistance of the system to the earth connection.

CLEANING

Clean tools used to prepare and apply **Mapefloor I 360 AS** with ethanol immediately after use. Once hardened, the product can only be removed mechanically.

CONSUMPTION

Max 2.4 kg/m^2 of **Mapefloor I 360 AS**.

PACKAGING

20 kg kit:

- component A: 16 kg;
- component B: 4 kg.

STORAGE

Mapefloor I 360 AS can be stored for 24 months in its original sealed packaging, in a dry place at a temperature between +5°C and +30°C. Protect from frost.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Instruction for the safe use of our products can be found on the latest version of the SDS available from our website www.mapei.com.
When the product reacts, it generates a high amount of heat. After mixing components A and B we recommend applying the product as soon as possible and never leaving the container unattended until it is completely empty.
PRODUCT FOR PROFESSIONAL USE.

TECHNICAL DATA (typical values)

PRODUCT IDENTITY	component A	component B
Colour:	coloured	transparent
Consistency:	thick liquid	liquid
Density:	1.77 g/cm³	1.05 g/cm³
Viscosity at +23°C:	from 6.5 to 8.5 Pa·s (# 5 - rpm 20)	from 0.15 to 0.20 Pa·s (# 2 - rpm 50)

APPLICATION DATA (at +23°C - 50% R.H.)		
Mixing ratio:	comp. A : comp. B = 80 : 20 by weight	
Colour of the mix:	coloured	
Consistency of the mix:	fluid	
Density of the mix:	1,540 kg/m³	
Viscosity of mix:	1.2 Pa·s (# 4 - rpm 50)	
Pot life:		
– at +10°C:	approx. 40 min.	
– at +20°C:	approx. 25 min.	
– at +30°C:	approx. 15 min.	
Waiting times between the application of Primer W-AS N and Mapefloor I 360 AS (times indicated may vary depending on environmental parameters such as temperature and relative humidity) Substrate temperature:		
	min.	**max.**
– at +10°C:	26 hours	7 days
– at +20°C:	17 hours	5 days
– at +30°C:	12 hours	4 days
Set to light foot traffic:		
– at +10°C:	approx. 30 h	
– at +20°C:	approx. 24 h	

– at +30°C:	approx. 16 h
Waiting time before setting to light traffic:	
– at +10°C:	approx. 5 days
– at +20°C:	approx. 3 days
– at +30°C:	approx. 16 h
Waiting time before ready for maximum loads:	
– at +10°C:	approx. 10 days
– at +20°C:	approx. 7 days
– at +30°C:	approx. 5 days
Application temperature:	from +8°C to +35°C (refers to the ambient, material and substrate)

FINAL PERFORMANCE (at +23°C - 50% R.H.)	
Electrical resistance (EN 1081):	$10^4 < R_E < 10^6$ Ohm *these values may vary according to surrounding conditions (temperature and humidity) and the equipment used to take the readings*
Compressive strength after 7 days at +23°C (EN 196-1):	56 N/mm²
Flexural strength after 7 days at +23°C (EN 196-1):	52 N/mm²
Abrasion resistance - Taber abrader (CS17 wheel - 1000 revs. - 1000 g) after 7 days at +23°C (EN ISO 5470-1):	67 mg
Abrasion resistance - Taber abrader (CS10 wheel - 1000 revs. - 1000 g) after 7 days at +23°C (EN ISO 5470-1):	33 mg
Shore D hardness after 3 days at +23°C (DIN 53505):	81

Essential characteristics	Test method	Requirements according to EN 13813 for synthetic resin-based screeds	Typical values
BCA wear resistance	EN 13892-4	≤ AR6	AR0.5
Bond strength	EN 13892-8	≥ B1.5	≥ B2.5
Impact resistance	EN ISO 6272	≥ IR4	IR20
Capillary absorption and permeability to water:	EN ISO 1062-3	$W < 0,1\ kg/m^2 \cdot h^{0.5}$	$W < 0,1\ kg/m^2 \cdot h^{0.5}$

Chemical resistance	EN 13529	Declared CR value	Shore D reduction < 50% CR1 (Class 2) CR4 (Class 2) CR5a (Class 1) CR10 (Class 2) CR11 (Class 2) CR12 (Class 2)
Reaction to fire	EN 13501-1	from $A1_{FL}$ to F_{FL}	B_{FL}-s1

Cleanroom testing (CSM standard)			
Performance characteristics	**Test method**	**Test parameters**	**Classification**
Concentration of airborne particles from the material when subjected to friction	ISO 14644-1	vs. PA6 Force: 300 N	ISO Class: 4
Evaluation of volatile organic compound (VOC) emissions at +23°C and +90°C	ISO 14644-8	Class from 0 (high VOC concentration of 1 g/m^3) to -12 (VOC emissions of 10 10^{-12} g/m^3, or 0.001 ng/m^3).	ISO-ACCm Class -7.8

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.
Please refer to the current version of the Technical Data Sheet, available from our website www.mapei.com

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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 smooth electrically conductive self-levelling resin system, with good mechanical and chemical resistances, by application of two-component epoxy resin with special electroconductive charges (such as **Mapefloor I 360 AS** by Mapei S.p.A.) to be applied in 1.5 mm thickness on suitably prepared substrate.
The product must have the following characteristics:

Viscosity of mix:	1.2 Pa·s (# 4 - rpm 50)
Electrical resistance (EN 1081):	$10^4 < R_E < 10^6$ Ohm
Compressive strength after 7 days at +23°C (EN 196-1):	56 N/mm^2
Flexural strength after 7 days at +23°C (EN 196-1):	52 N/mm

Abrasion resistance - Taber abrader (CS17-1 wheel - 1000 revs. - -1000 g) after 7 days at +23°C (EN ISO 5470-1):	67 mg
Abrasion resistance - Taber abrader (CS10-1 wheel - 1000 revs. - -1000 g) after 7 days at +23°C (EN ISO 5470-1):	33 mg
Shore D hardness after 3 days at +23°C (ISO 5470-1):	81
BCA wear resistance (EN 13892-4):	< 5 µm
Bond strength (EN 13892-8):	≥ 3.5 N/mm^2
Impact resistance (EN ISO 6272):	20 Nm
Reaction to fire (EN 13501-1):	B_{FL}-s1
Concentration of airborne particles from the material when subjected to friction (ISO 14644-1):	Class ISO 4
Evaluation of volatile organic compound (VOC) emissions at +23°C and +90°C (ISO 14644-8):	ISO-ACCm Class: -7.8

These values may vary according to surrounding conditions (temperature and humidity) and the equipment used to take the readings

Riboflavin test (ISO 4628-1):	good
Does not allow microbial proliferation (ISO 22196):	excellent
Chemical Resistance (ISO 2812-1/ISO 4628-1, VDI 2083-17):	very good
Chemical Resistance (EN 13529):	shore D reduction < 50% CR1 (Class 2) CR4 (Class 2) CR5a (Class 1) CR10 (Class 2) CR11 (Class 2) CR12 (Class 2)
Fulfils ATEX 137 requirements	
Fulfils WHG requirements.	
Resistance to sparks according to UFGS-09 97 23 and UFGS-09 67 23.14	
Fulfils the ISO 8690 /DIN 25415 requirements with contaminants ^{137}Cs and ^{60}Co	
Low VOC emission (CDPH standard).	
Contributes to obtaining LEED credits, EPD (Environmental Product Declaration) compliant.	

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