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MAPEFLOOR I 302 SL

Two-component multi-purpose epoxy formulation for industrial floors, in compliance with standards applied to foodstuffs industry, cleanrooms and radon gas tightness.



DESCRIPTION

Mapecolor I 302 SL is a two-component, high solids content, coloured epoxy formulate used to create self-levelling or multi-layer resin coatings on floors to form an attractive smooth or non-slip finish.

Some application examples

- Coating floors in the chemical and pharmaceutical industries.
- Coating floors in cleanrooms used in various industrial sectors, such as the optics sector, electronics, etc.
- Coating floors in the food industry.
- Coating floors in laboratories.
- Coating floors in aseptic rooms.
- Coating floors in mechanised warehouses.
- Coating floors in shopping centres, residential and tertiary buildings, infrastructure, and services.

TECHNICAL CHARACTERISTICS

Mapecolor I 302 SL is a two-component, high solids content, epoxy resin-based formulation according to a formula developed in MAPEI research laboratories.

It complies with standards applied in the foodstuffs sector - EN 1186, EN 13130, and prCEN/TS 14234 - as well as the Decree of Consumer Goods, which represents the conversion of the European directives 89/109/EEC, 90/128/EEC, and 2002/72/EC for contact with foodstuffs and with HACCP regulations.

Mapecolor I 302 SL is used to form seamless coatings specific for cleanrooms in class ISO 3 particle emissions and class -5.7 VOC emissions according to ISO 14644-8 standards and has excellent resistance to attack from microorganisms according to ISO 22196 and ISO 4628-1 standards.

Coatings made with **Mapecolor I 302 SL** prevent Radon (radioactive natural gas present in the soil) from penetrating inside buildings. It complies with DIN ISO/TS 11665-13 standards, it is verified and certified by the IAF-accredited laboratory for radionuclide analysis.

Mapecolor I 302 SL is a highly versatile product and may be used to form both self-levelling and multi-layered coatings on floors.

Mapecolor I 302 SL is particularly suitable for the food industries and cleanrooms. After application, the treated surfaces are seamless and with an attractive finish. **Mapecolor I 302 SL** can also be used as a binder for "Terrazzo alla veneziana" resin based systems, such as **Mapecolor System 35 F/M**.

Mapefloor I 302 SL is highly resistant to chemicals, mechanical stress, and abrasion (see Technical Data section).

Mapefloor I 302 SL complies with the principles defined in EN 13813 “Screed and material for screeds – Screed material – Properties and requirements”, which specifies the requirements for screed materials used in the construction of interior floors.

COLOURS

Please contact the Mapei Technical Service for a full list of the colours available.

RECOMMENDATIONS

- Do not apply **Mapefloor I 302 SL** on damp substrates or on substrates with capillary rising damp (contact MAPEI Technical Services).
- Do not dilute **Mapefloor I 302 SL** with solvents or water.
- Do not apply **Mapefloor I 302 SL** on dusty or crumbling substrates.
- Do not apply **Mapefloor I 302 SL** on substrates with oil or grease stains or stains in general.
- Do not apply **Mapefloor I 302 SL** on substrates that have not been treated with **Primer SN** or with another specific primer or that have not been prepared as specified.
- 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.
- **Mapefloor I 302 SL** coatings change colour if exposed to UV rays, but this has absolutely no effect on their performance characteristics.
- The coating could also change colour if it comes into contact with aggressive chemicals. A change of colour alone, however, does not imply any damage caused by chemical aggression.
- If rooms where the product is being used need to be warmed up, do not use heaters that burn hydrocarbons, otherwise the carbon dioxide and water vapour given off into the air will affect the shine of the finish and ruin its appearance. Use electric heaters only.
- Remove aggressive chemicals as soon as possible after they come into contact with **Mapefloor I 302 SL** coating.
- Use suitable specific cleaning equipment and detergent to clean the surfaces, depending on the type of dirt or stain to be removed.
- Protect the coating from water for at least 24 hours after application.
- The product cannot be applied directly on cementitious substrates with a moisture content higher than 4% and/or with capillary rising damp (carry out polythene sheet test).
- The temperature of the substrate must be at least 3°C higher than the dew-point temperature.

APPLICATION PROCEDURE

Preparation of the substrate

The surface of concrete must be dry, clean, and sound and have no crumbling or detached areas. The compressive strength of the concrete used for the substrate must be at least 25 N/mm² and its tensile strength must be at least 1.5 N/mm². The strength of the substrate must also be suitable for its final use and for the types of loads acting on the flooring. The level of moisture in the substrate must be a maximum of 4% and there must be no capillary rising damp (check by testing it with a sheet of polythene). The surface of the floor must be prepared with suitable power tools (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, remove all dust from the surface with a vacuum cleaner.

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 with **Mapefloor JA** or **Mapefloor JA Fast** depending on the width and depth of the defects or cracks. Patch 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.

Before applying **Mapefloor I 302 SL**, remove all traces of dust from the surface with a vacuum cleaner. The substrates must be primed and prepared as specified.

Application of Primer SN

Apply the **Primer SN** undiluted or mixed with **Quartz 0.5** on the substrate with a straight trowel or rake after it has been prepared as specified. Immediately after applying **Primer SN** broadcast the surface while still wet with **Quartz 0.5**, depending on the type of resin system to be applied.

Preparation of the product

The two components which make up **Mapefloor I 302 SL** must be mixed together just before application. Stir component A thoroughly, pour all the contents of component B, and add the quartz sand when needed. Mix for at least 2 minutes with a suitable low-speed electric mixer (300-400 revs/min), to prevent entraining air into the mix, until it is completely blended.

Pour the mix into a clean container and briefly mix again.

Do not mix the product for too long to avoid entraining too much air into the mix.

Apply the mix within the pot life indicated in the data table (it refers to a temperature of +23°C). Higher surrounding temperatures will reduce the pot life of the mix, while lower temperatures will increase its pot life.

Application of the product

Mapefloor I 302 SL can be used for non-slip multi-layer (0.8 to 3.5 mm thick) or self-levelling (2 to 4 mm thick) resin systems.

1. Multi-layered non-slip system - thickness 0.8 to 1.2 mm (Mapefloor System 31)

Prepare the substrate by shot-blasting or diamond grinding, then carefully remove all dust by vacuum.

Apply by straight trowel a scratch coat of **Primer SN** (A+B) mixed with **Mapecolor Paste** and approximately 20% by weight of **Quartz 0.5**; immediately after the application of the primer, while it is still wet, broadcast in excess with **Quartz 0.5**.

When the primer has hardened, remove any excess sand, sand the surface, and remove the last grains of quartz with an industrial-grade vacuum cleaner. Apply the finishing coat of **Mapefloor I 302 SL** previously prepared, adding to the mix 5-6% by weight of **Quarzo 0,25** by medium-pile roller or scratching to zero with a straight steel trowel. Then backroll with a short-pile roller in a criss-cross pattern.

2. Multi-layered non-slip coating - thickness 3.0 to 3.5 mm (Mapefloor System 32)

Prepare the substrate by shot-blasting or diamond grinding, then carefully remove all dust by vacuum.

Apply by straight trowel a scratch coat of **Primer SN** (A+B) mixed approximately 20% by weight of **Quartz 0.5**; immediately after the application of the primer, while it is still wet, broadcast in excess with **Quartz 0.5**.

When the primer has hardened, remove any excess sand, sand the surface, and remove the last grains of quartz with an industrial-grade vacuum cleaner. Add to the previously prepared mix of **Mapefloor I 302 SL** approximately 40% by weight of **Quartz 0.5** and mix until completely blended. Pour the product onto the floor and spread it out evenly, scratching to zero with a straight steel trowel. Immediately after applying the resin and while it is still wet, broadcast in excess the surface with **Quartz 0.5**. For particular requirements, such as if a higher degree of non-slip finish is required, broadcast with a larger particle size can be used. In such cases, the consumption rate of the following finishing coat will be higher. When the first layer of **Mapefloor I 302 SL** has hardened, remove any excess sand, sand the surface, and remove the last grains of quartz with an industrial-grade vacuum cleaner. Apply the finishing coat of **Mapefloor I 302 SL** previously prepared, adding to the mix 5-6% by weight of **Quartz 0,25** by medium-pile roller or scratching to zero with a straight steel trowel. Then backroll with a short-pile roller in a criss-cross pattern.

3. Smooth self-levelling coating - thickness 2-4 mm (Mapefloor System 33)

Prepare the substrate by shot-blasting or diamond grinding, then carefully remove all dust by vacuum.

Apply by straight trowel a scratch coat of **Primer SN** (A+B) mixed approximately 20% by weight of **Quartz 0.5**; immediately after the application of the primer, while it is still wet, lightly broadcast with **Quartz 0.5** at a rate of up to 0.5 kg/m². Make sure there are no open pores on the surface of the substrate, otherwise air bubbles could escape and form small craters or pinholes in the self-levelling finishing coat. If there are any open pores in the substrate, apply a second skim coat of **Primer SN** as previously described and lightly broadcast the surface with **Quartz 0.5**.

When the primer has hardened, remove any excess sand and carefully vacuum the surface. Mix the previously prepared **Mapefloor I 302 SL** with up to 50% by weight of **Quartz 0.25** depending on the temperature and the thickness to be applied. The quantity of quartz sand to be added can be increased when the temperature and thickness increase. Mix to form a homogeneous mixture, then pour the product onto the floor and spread it out evenly with a notched spreader with "V" shaped notches. Back-roll the surface with a spiked roller several times while the product is still wet to remove any air entrapped in the product during the mixing phase.

Note: the above examples are merely indicative. The amount of sand added to the **Primer SN** or **Mapefloor I 302 SL** may vary depending on the surrounding temperature. The amount required may be less at lower temperatures and more at higher temperatures.

CONSUMPTION

1. Multi-layered non-slip system - thickness 0.8 to 1.2 mm (**Mapefloor System 31**)

First coat:

Primer SN (A+B + Mapecolor Paste)	0.5-0.7 kg/m ² (depending on the absorption and roughness of the substrate)
Quartz 0.5	0.10-0.14 kg/m ²
Broadcast in excess with Quartz 0.5	3.0 kg/m ²

Finishing layer:

Mapefloor I 302 SL (A+B)	0.6 kg/m ²
Quartz 0.25	0.04 kg/m ²

2. Multi-layered non-slip system - thickness 3.0 to 3.5 mm (**Mapefloor System 32**)

First coat:

Primer SN (A+B)	0.5-0.7 kg/m ² (depending on the absorption and roughness of the substrate)
Quartz 0.5	0.10-0.14 kg/m ²
Broadcast in excess with Quartz 0.5	3.0 kg/m ²

Intermediate coat:

Mapefloor I 302 SL (A+B)	0.9 kg/m ²
Quartz 0.5	0.34 kg/m ²
Broadcast in excess with Quartz 0.5	3.0 kg/m ²

Finishing layer:

Mapefloor I 302 SL (A+B)	0.6 kg/m ²
Quartz 0.25	0.04 kg/m ²

3. Smooth self-levelling coating - thickness 2 mm (**Mapefloor System 33**)

First coat:

Primer SN (A+B)	0.5-0.7 kg/m ² (depending on the absorption and roughness of the substrate)
Quartz 0.5	0.10-0.14 kg/m ²
Lightly broadcast Quartz 0.5	0.5 kg/m ²

Self-levelling layer:

Mapefloor I 302 SL (A+B)	2.0-2.2 kg/m ²
Quartz 0.25	1.0-1.1 kg/m ²

The consumption rates above are theoretical and are influenced by the condition of the surface to be treated, absorbency, roughness, the actual conditions on site, etc.

CLEANING

Clean tools used to prepare and apply **Mapefloor I 302 SL** with ethanol immediately after use. Once set, the product can be removed mechanically.

PACKAGING

Mapefloor I 302 SL - 20 kg unit (component A = 16 kg + component B = 4 kg).

STORAGE

24 months in its original container, in a dry place, at temperatures between +5°C and +35°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 SDS available from our website www.mapei.com.

When the material reacts, it develops considerable 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	straw yellow
Consistency:	thick liquid	liquid
Bulk density:	1.53 g/cm ³	1 g/cm ³
Viscosity at +23°C:	5500 ÷ 7000 mPa·s (#5; rpm 20)	380 ÷ 480 mPa·s (#2; rpm 50)

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

Mixing ratio:	component A : component B = 4 : 1
Consistency of mix:	viscous

Density of mix:	1430 kg/m ³		
Viscosity of mix at +23°C:	1200 ± 200 mPa·s (#3; rpm 20)		
Gelation Timer (BS 2782-8):	+10 °C 60 minuti	+23 °C 30 minuti	+35 °C 13 minuti
Drying time (ASTM D 5895):	+10 °C 15 hours (Phase III)	+23 °C 7 hours (Phase III)	+35 °C 3.5 hours (Phase III)
Pot life at +23°C:	approx. 25 minutes		
Application temperature:	from +8°C to +35°C		

FINAL PERFORMANCE PROPERTIES

Waiting time between each coat (min/max):	+10 °C 35 ÷ 75 hours	+23 °C 18 ÷ 48 hours	+35 °C 10 ÷ 24 hours
Set to foot traffic 50% R.H. : Light traffic 50% R.H.: Normal traffic/exposure to chemicals 50% R.H.:	+10 °C 48 hours from 3 to 4 days 10 days	+23 °C 24 hours 48 hours 7 days	+35 °C 16 hours 24 hours 5 days
Complete hardening time at +23°C and 50% R.H.:	7 days		
Shore D hardness (DIN 53505) after 7 days at +23°C, 50% H.R.:	75		
Taber test after 7 days (at +23°C, 50% R.H., 1000 cycles/1000 g, disk CS 17) (EN ISO 5470-1):	70 mg		
Compressive strength after 7 days (EN 196-1):	50 N/mm ²		
Flexural strength after 7 days (EN 196-1):	20 N/mm ²		
Abrasion resistance - Taber test (1000 cycles/1000 g, disk H22) (EN ISO 5470-1):	828 mg		
Permeability to CO ₂ (EN 1062-6 - sample treated according to EN 1062-11):	S _D 255 m		
Permeability to water vapour (EN ISO 7783 - 1-2):	Class III		
Capillary absorption and permeability to water (EN 1062-3):	0.002 kg/m ² ·h ^{0.5}		
Resistance to severe chemical attack (EN 13529): Class I: 3 days with no pressure Class II: 28 days Class III: 28 days with pressure <i>It is recommended to use test liquid for the 20 classes indicated in EN 13529 which cover all types of the most commonly-used chemical agents. Other test liquids may be agreed upon between those interested in the tests</i>	Group 4: class II Group 10: class II Group 11: class II Group 12: class II		
Impact resistance misured on samples of coated concrete MC (0.4) according to EN 1766 (EN ISO 6272-1):	Class III		

Bond strength by pull-off on reference substrate: MC (0.4) as specified in EN 1766, curing (EN 1542):
 – 28 days for one-component systems containing concrete and PCC systems:
 – 7 days for systems with reactive resin:

3.40 N/mm²

Main characteristics	Test method	Requirements according to EN 13813 for synthetic resin-based screeds	Typical values
Wear resistance-BCA:	EN 13892-4	≤100 µm	< 5 µm
Bond strength:	EN 13892-8; 2004	≥1.5 N/mm ²	3.10 N/mm ²
Impact resistance:	EN ISO 6272	≥ 4Nm	20 Nm
Reaction to fire:	EN 13501-1	from A _{1FL} to F _{FL}	B _{FL} -s1

CLEANROOM TESTING (CSM standard)

Performance characteristic	Test method	Test parameters	Classification
Concentration of airborne particles from the material when subjected to friction:	ISO 14644-1	vs. PA6 Normal force: 300 N	ISO Class: 3
Evaluation of volatile organic compound (VOC) emissions at +23°C and +90°C:	ISO 14644-8	From class 0 (concentration of elevated VOC, equal to 1 g/m ³) to -12 (VOC emissions equal to 10 ⁻¹² g/m ³ , or 0.001 ng/m ³)	ISO-ACCm Class -5.7
Chemical resistance (10 test liquids at T 22°C):	ISO 2812	0 = excellent 1 = very good 2 = good 3 = poor 4 = very poor 5 = none	1/very good
Antibacterial effectiveness:	ISO 22196	Factor R ≥ 3.5 = excellent < 3.5 = very good < 3 = good < 2 = poor < 1 = very poor < 0.2 = none	R > 3.7 /excellent
Cleanability (Riboflavin test):	ISO 4628-1	0 = excellent 1 = very good 2 = good 3 = poor 4 = very poor 5 = none	1/very good

Performance characteristic radon gas	Test method	Result
Determination of radon diffusion coefficient:	DIN ISO/TS 11665-13	R > 3

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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