MAPECOAT EPN 24

Coloured two-component, epoxy-novolac resin-based coating product with high resistance to chemicals and high solids content

CE EN 1504-2

IN COMPLIANCE WITH EUROPEAN STANDARD EN 1504-2 (C) PRINCIPLES PI-MC-PR-RC-IR MAPEI SURFACE PROTECTION SYSTEMS FOR CONCRETE

WHERE TO USE

Mapecoat EPN 24 is a product specifically formulated for coating cementitious surfaces in production and storage areas in chemical and pharmaceutical plants, petrochemical industry, laboratories, etc. that require a high level of protection against wear and, above all, a high level of resistance to attack from chemicals, including severe attacks, such as acids, basic solutions hydrocarbons, etc.

Application examples

· Protective coating for depuration plants, storage basins, storage tanks, sewage plants, etc.
· Protective coating for concrete containment bunds for oil, hydrocarbons, etc.
· Protection of floor surfaces in chemical and petrochemical plants, pharmaceutical industry, laboratories, etc.

TECHNICAL CHARACTERISTICS

Mapecoat EPN 24 is a coloured two-component, epoxy-novolac resin-based formulate with high solids content according to a formula developed in MAPEI R&D laboratories.
Once set **Mapecoat EPN 24** forms a coating characterised by its high resistance to chemicals such as acids, basic solutions, saline solutions, oils, hydrocarbons, etc.
Thanks to its good mechanical properties and resistance to abrasion, **Mapecoat EPN 24** is also used as a final coat in multi-layered resin coating systems to protect the surface of floors subjected to medium levels of traffic, such as **Mapefloor System 31** and **Mapefloor System 32**.
Mapecoat EPN 24 has a high solids content and is characterised by the low level of odours given off during application. Surfaces treated with this product are waterproof, resistant to chemicals and easy to clean.
Mapecoat EPN 24 may be applied with a roller to form thick films of coating or with a straight steel trowel as a finishing coat for multi-layered resin coatings on industrial floors.

RECOMMENDATIONS

· Do not apply **Mapecoat EPN 24** on substrates with capillary rising damp.
· Do not dilute **Mapecoat EPN 24** with solvent or water.
· Do not apply **Mapecoat EPN 24** on dusty, crumbly or irregular substrates
· Do not apply **Mapecoat EPN 24** on substrates with oil or grease stains or dirt 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.
· 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 on the finish and ruin its appearance. Use electric heaters only.
· Do not apply if it is about to rain.
· Do not apply if the surrounding temperature is below +10°C.

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- **Mapecoat EPN 24** must only be applied on substrates prepared as specified and treated with **Primer SN** or **Triblock P** or with multi-layered resin coating systems such as **Mapefloor System 31** and **Mapefloor System 32**.
- **Mapecoat EPN 24** coatings change colour if exposed to sunlight, in particular with light colours. However, this phenomen does not affect the performance of the coating.
- 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 chemical. Chemical resistance tests have been carried out according to EN 13529 standards on the RAL 7001 grey version of the product.
- 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 that 4% (measured with a carbide hygrometer) and/or with capillary rising damp (check by testing it with a sheet of polythene).
- The temperature of the substrate must be at least 3°C higher than the dew-point temperature.

COLOURS

Mapecoat EPN 24 is available in RAL 7001 grey. Please contact the Head Office for other colours.

APPLICATION PROCEDURE

Preparation of the substrate

Cementitious surfaces must be dry, clean and sound and have no crumbling or detached areas. The compressive strength of 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 the types of load to which it will have to withstand.
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). If the level of residual moisture in the substrate is higher than 4%, skim the surface with a product for damp substrates, such as **Triblock P**; apply at least two layers of product with a trowel. The substrate must have completed all movements due to shrinkage and/or settling.
Prepare surfaces with a suitable mechanical preparation method, depending on the condition of the substrate and the surrounding conditions on site (such as peening, grinding with a diamond disk, sandblasting, hydro-sandblasting, etc.) to remove all traces of dirt, cement laitance, crumbling or detached material, etc., and to leave the surface absorbent with a slightly rough finish.
Any cracks, holes and uneven areas in the surface, such as gravel clusters, spacer holes, pitting, etc., must be repaired and levelled off with **Eporip** castable epoxy resin, **Mapefloor EP19** epoxy mortar or **Mapefloor JA** or **Mapefloor JA Fast** thixotropic epoxy resin.
In corners where two surfaces to be coated meet, such as between two adjacent walls or between a wall and the floor, it is recommended to form a cove with a radius of several centimetres made from screed-consistency **Mapefloor EP19** epoxy mortar.

Skimming and levelling off substrates

Skim rough, porous or uneven surfaces to fill the pores and level off the surface by applying 1-2 layers of **Triblock P** epoxy-cementitious mortar. The same product is also suitable for substrates that have not been fully cured or which have more than 4% of residual moisture, such as after surfaces have been cleaned with a high pressure hose. Alternatively, if the substrate is dry and well-cured, apply 1 to 2 coats of **Primer SN Rasante** and smooth it down to a feather edge with a straight steel trowel.
For information on how to use and apply the products mentioned above please refer to the relative Technical Data Sheet.
In the case of even, compact surfaces, apply **Primer SN** by roller, making sure the pores in the substrate are completely saturated. Avoid creating spots on the surface by applying too much product.
Once the skimming product and/or primer have set, make sure the surface of the substrate has no open pores, otherwise pinholes may form in the surface of the finished coating. If there are still holes or open pores in the substrate, fill them with **Eporip** or **Primer SN** thickened with **Additix PE**.
If the waiting time between applying the primer or the skimming product and applying **Mapecoat EPN 24** exceeds the maximum waiting time in the table, roughen the surface slightly before applying **Mapecoat EPN 24**.
If the primer applied on the substrate has been broadcast with quartz sand, for example when applying a multi-layered coating system on industrial floors such as **Mapefloor System 31** or **Mapefloor System 32**, there is no maximum waiting time before applying the final resin coating, as long as the layer of sand is perfectly clean and dry.

Preparation of the product

The two components which make up **Mapecoat EPN 24** must be mixed 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.) to prevent entraining air into the product for at least 2 minutes until the mix 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 table. Higher surrounding temperatures will reduce the pot life of the mix, while lower temperatures will increase it.

Application of Mapecoat 24 EPN

Before applying **Mapecoat 24 EPN**, remove all traces of dust from the surface with a vacuum cleaner.
Apply at least two criss-cross coats of **Mapecoat EPN 24** with a medium-pile roller over **Primer SN** or **Triblock P** once set.
Do not broadcast the product with quartz sand between one coat and another.

Mapecoat EPN 24 may also be used to create a final finishing coat with very high resistance to chemicals on multi-layered resin systems for industrial floors, such as **Mapefloor System 31** or **Mapefloor System 32**; please refer to the relative Technical Data Sheet for more information on how to apply each system. In such cases apply **Mapecoat EPN 24** with a medium-pile roller or a straight steel trowel scratching to zero. After applying the product with a steel trowel, back-roll with a short-pile roller. Make sure the hardened coating has no pores, pinholes or discontinuity or interruption in the protective layer, otherwise harmful chemicals could penetrate into the coating.

HARDENING TIME OF THE PRODUCT (at +23°C)

Surfaces coated with **Mapecoat EPN 24** set to foot traffic around 12 hours after applying the last coat and may be used by light vehicles and pedestrian traffic after around 24 hours at +23°C. Maximum resistance to chemicals and mechanical strength are reached when the product has fully hardened after around 7 days.

CLEANING TOOLS

Clean tools used to prepare and apply **Mapecoat EPN 24** immediately after use with thinners. Once hardened, the product may only be removed mechanically.

CONSUMPTION

When used to form a thick coating resistant to chemicals:
Mapecoat EPN 24: 0.2-0.3 kg/m² per coat
When used as a final coat on multi-layered coatings:
Mapecoat EPN 24: 0.3-0.4 kg/m²
The consumption rates mentioned above are particularly influenced by the condition of the substrate, such as surface roughness and absorbency, and by the surrounding conditions on site, such as temperature, level of humidity, temperature of the sub-layer, etc.

PACKAGING

7.5 kg units: comp. A = 5 kg; comp. B = 2.5 kg.

STORAGE

24 months in its original container, in a dry place, at temperature between +5°C and +35°C. PROTECT FROM FROST.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Mapecoat EPN 24 component A is irritant for the skin and the eyes, both component A and component B can cause sensitization if they come in contact with the skin of those sensitive. **Mapecoat EPN 24** component B is corrosive and may cause burns and is also hazardous if swallowed. The product contains low molecular weight epoxy resins that may cause sensitisation if cross-contamination occurs with other epoxy compounds.
During use wear protective gloves and goggles and take the usual precautions for handling chemicals. If the product comes in contact with the eyes or skin wash immediately with plenty of water and seek medical attention.
When the material reacts, it develops high amount of 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.
Furthermore, **Mapecoat EPN 24** component A and B are dangerous for aquatic life, do not dispose of them 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.
PRODUCT FOR PROFESSIONAL USE.

TECHNICAL DATA (typical values)

PRODUCT IDENTITY		
	component A	**component B**
Colour:	RAL colour	transparent amber
Consistency:	thick liquid	fluid
Density (g/cm³):	1.26	1.06
Viscosity at +23°C (mPa·s):	7000 (# 4 - 20 rpm)	400 (# 2 - 50 rpm)

Mixing ratio:	component A : component B = 2 : 1
Colour of mix:	RAL colour
Consistency of mix:	fluid
Density of mix (kg/m³):	1,150
Viscosity of mix at +23°C (mPa·s):	2000 (# 3 - 20 rpm)

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

Application temperature:	from +8°C to +35°C
Workability time:	approx. 30 mins.
Recoat time: Mapecoat EPN 24 on Mapecoat EPN 24 or Primer SN	min. 12 h - max. 48 h

The times above are for indication purposes only and are influenced by actual site conditions (e.g. temperature of the surroundings and substrate, relative humidity of the surrounding air, etc.).

PERFORMANCE DATA

Set to light foot traffic at +23°C and 50% R.H.:	24 h
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

PERFORMANCE CHARACTERISTICS FOR CE CERTIFICATION ACCORDING TO EN 1504-2 - TAB ZA.1d, ZA.1e, ZA.1f, ZA.1g (coating C, PI-MC-PR-RC-IR principles)

Performance characteristic	Test method according to EN 1504-2	Requirements	Product performance
Abrasion resistance (TABER test) Note: testing methods for flooring systems according to EN 13813 are also acceptable:	EN 5470-1	Weight loss less than 3000 mg abrading wheel H22/ rotation 1000 cycles/load 1000 g	150 mg
Permeability to CO_2:	EN 1062-6	S_D > 50 m	S_D = 115 m
Permeability to water vapour:	EN ISO 7783-1-2	Classe I: S_D < 5 m (permeable to water vapour) Class II: 5 m ≤ S_D ≤ 50 m Classe III: S_D > 50 m (not permeable to water vapour)	Class III
Capillary absorption and permeability to water:	EN 1062-3	W < 0.1 kg/m²·$h^{0.5}$	< 0.001 kg/m²·$h^{0.5}$
Freeze/thaw cycles with immersion in de-icing salts: Storm cycles: Thermal cycles without immersion in de-icing salts:	EN 13687-1 EN 13687-2 EN 13687-3	Rigid systems with traffic ≥ 2 MPa	3.0 MPa
Resistance to thermal shock (1x):	EN 13687-5	Rigid systems with traffic ≥ 2 MPa	3.0 MPa
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: We recommend using test liquids 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	EN 13529	Reduction of hardness less than 50% when measured according to the Buchholz method (EN ISO 2815) or the Shore method (EN ISO 868), 24 hours after removing the coating material from immersion in the test liquid	* see attached table
Impact resistance:	EN ISO 6272-1	No cracks or delamination after loading Class I: ≥ 4 Nm Class II: ≥ 10 Nm Class III: ≥ 20 Nm	Class II

Direct tensile adherence test:	EN 1542	Average (N/mm^2) Cracking or flexible systems without traffic: ≥ 0.8 (0.5)[b] with traffic: ≥ 1.5 (1.0)[b] Rigid systems [c] without traffic: ≥ 1.0 (0.7)[b] with traffic: ≥ 2.0 (1.0)[b]	3.0 MPa
Reaction to fire:	EN 13501-1	Euroclasses	D - s2 - d0 B_{FL}-s1

CHEMICAL RESISTANCE EN 13529

CLASS I: surfaces with no damage and reduction of Shore hardness less than 50% after contact with simulant for 3 days.

CLASS II: surfaces with no damage and reduction of hardness less than 50% after contact with simulant for 28 days.

GROUP	RESULT
Group 1 Petrol	Class II
Group 4 All hydrocarbons including aviation fuel, heating oil, diesel and unused engine and gearbox oil, except for benzene and mixtures containing benzene, crude oil and used engine and gearbox oil	Class II
Group 5 Mono and poly-alcohols (up to 48% in volume of methanol) and ethylene glycol	Class II
Group 6 Halogenated hydrocarbons including aromatic halogenated hydrocarbons	Class II
Group 7 All organic ethers and ketones, including aromatic ethers and ketones	Class II
Group 9 Watery solutions of up to 10% organic acids	Class I
Group 9a Organic acids (except formic acid) and their salts (in water solution)	Class I
Group 10 Inorganic acids up to 20% and acid hydrolysis of salts in water solution (pH < 6) except hydrofluoric acid and oxidising acids and their salts	Class II
Group 11 Inorganic basic solutions and their alkaline hydrolysis of salts in water solution (pH > 8) except ammonium solutions and salt oxidising solutions (such as hypochlorite)	Class II
Group 12 Solutions of non-oxidising organic salts with pH = 6-8	Class II
Group 13 Amines and their salts (in water solution)	Class II
Group 14 Watery solution of organic surfactants	Class II
Group 15a Acyclic ethers	Class II
Lactic acid (80%)	Class I
Sulphuric acid (70%)	Class II
Sulphuric acid (94%)	Class II
Hydrogen peroxide (40 Volume)	Class II
Oleic acid (100%)	Class II

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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