MAPECOAT UNIVERSAL ECO PLUS

Two-component, transparent, low-emission epoxy binder

WHERE TO USE

Mapecoat Universal Eco Plus is a transparent epoxy binder with low emission properties designed for making highly attractive protective coatings with an even or a skid resistant surface for various of use.
Mapecoat Universal Eco Plus may be used in industrial or commercial flooring systems like **Mapefloor EP Compact** or **Mapefloor EP Decor S**.
Mapecoat Universal Eco Plus is applied on concrete floors and cementitious or mineral based substrates in general that require good mechanical properties and resistance to chemicals combined with an attractive and decorative finish in various sectors, such as:

- Pharmaceutical and chemical industries
- Electronic industry
- Food and beverage industry
- Residential and commercial complexes, etc.
- Building projects in general with demand to products with low emission properties

Mapecoat Universal Eco Plus can also be mixed with graded quartz sand for epoxy mortar or mixed with **Additix 53** for epoxy putty.
Mapecoat Universal Eco Plus may also be used as a dust binder or together with colored flakes/chips like **Mapefloor Flakes** to make decorative flooring finishes.

TECHNICAL CHARACTERISTICS

Mapecoat Universal Eco Plus is a two-component, transparent epoxy resin based formulate with high solids content according to a formula developed in the Mapei R&D laboratories.
Mapecoat Universal Eco Plus is used to form seamless, low-yellowing coatings characterized by their high mechanical properties that are easy to clean and maintain.
Mapecoat Universal Eco Plus is an epoxy binder designed to form coatings with excellent impact resistance and good chemical resistance.
Mapecoat Universal Eco Plus has low viscosity properties and is easy to apply.
Mapecoat Universal Eco Plus is a product with very low emissions and is also classified according to M1.

Mapecoat Universal Eco Plus complies with the requirements according to EN 13813 (*"Screed material and floor screeds - Screed material - Properties and requirements"*), which defines the requirements to be applied to materials for screeds used in the construction of internal floors.
Mapecoat Universal Eco Plus complies with the principles defined in EN 1504-9 standards (*"Products and systems for the protection and repair of concrete structures: Definitions, requirements, quality control and*

evaluation of conformity. General principles for the use of products and systems"), and the requirements of EN 1504-2 (*"Surface protection systems for concrete"*) for class: products for protecting surfaces - coating (C) - 5.1 Physical resistance (PR).

RECOMMENDATIONS

- Do not dilute **Mapecoat Universal Eco Plus** with solvent or water.
- Do not apply **Mapecoat Universal Eco Plus** on dusty or crumbling substrates.
- Do not apply **Mapecoat Universal Eco Plus** on substrates with oil or grease stains or with stains in general.
- Do not apply **Mapecoat Universal Eco Plus** on substrates that have not been prepared and primed 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.
- Even though **Mapecoat Universal Eco Plus** yellows much less than conventional epoxy binders, exposure to UV rays may affect its colour over the years; this phenomenon has no effect on the mechanical properties 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 chemicals.
- If areas 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 on the finish and ruin its appearance. Use electric heaters only.
- Remove aggressive chemicals as soon as possible after contact with **Mapecoat Universal Eco Plus**.
- Use suitable specific cleaning equipment and detergent to clean the coating, depending on the type of dirt or stain to be removed.
- Protect the product from water for at least 24 hours after application.
- Do not apply the product directly on cementitious substrates with a relative moisture content higher than 4 % and/or with capillary rising damp. In such cases, please refer to MAPEI Technical Services.
- The temperature of the substrate must be at least 3°C above dew-point.

PLEASE NOTE!

Mapecoat Universal Eco Plus should always be applied in an even thickness. Different thicknesses may cause visual color differences - especially in applications of **Mapefloor EP Compact** systems. If the product is applied in areas with a high concentration of CO_2, high moisture and/or temperatures less than 3 degrees above dew point, this might lead to a sticky and discoloured surface. Before any further treatment, this must be removed, and the surface must be recoated.

APPLICATION PROCEDURE

Preparation of the substrate

The concrete surface of the floor must be dry, clean and sound and have no crumbling or detached areas. The compressive strength of the concrete 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 to the types of loads acting on the flooring.
The moisture content of the substrate must be maximum 4 % and there must be no capillary rising damp.
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 cracks may be filled and repaired with **Mapepoxy BI-IMP**. Holes or surface irregularities must be repaired and smoothed with epoxy repair mortar made of **Mapefloor I 900** or **Mapecoat Universal Eco Plus** mixed together with **Kvartsmix** or suitable thixotropic agents from **Additix**-range.
Thixotropic epoxy resin **Mapefloor JA** or **Mapefloor JA Fast** are both thixotropic epoxy products suitable for minor repair work. Bonded screeds may also be applied with **Mapepoxy L** epoxy glue and cementitious based mortars in **Confix** range.

Before applying **Mapecoat Universal Eco Plus**, all traces of dust must be removed from the surface with a vacuum cleaner.

Preparation of the product

The two components which make up **Mapecoat Universal Eco Plus** must be mixed together just before application. The ideal temperature for the components to be mixed is recommended to be at least +15°C. 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 data table (refers to a temperature of +23°C). Higher surrounding temperatures will reduce the open time of the mix, while lower temperatures will increase its open time.

Application of the product

Used as a dust binder:

Mapecoat Universal Eco Plus form a seamless, even, shiny film. The ideal temperature for the components to be mixed is recommended to be at least +15°C.
Mapecoat Universal Eco Plus may be applied using a roller or trowel in one or two coats depending on the substrate to recommended to be at least +15°C. Normal consumption is 0.2 - 0.4 kg/m^2 per coat.

Application as an adhesion promoter or primer before installing Mapefloor resin systems:

Mapecoat Universal Eco Plus may be used as a primer by applying 1 - 2 coats with a roller or straight steel trowel to form a seamless, even, shiny film. Immediately after applying **Mapecoat Universal Eco Plus**, lightly broadcast the surface **Sand 0.4 - 0.8 mm**, **Sand 0.8 - 1.2 mm** or **Mapequartz Color** to get the correct bonding of the subsequent resin coating. The ideal temperature for the components to be mixed is recommended to be at least +15°C. Normal consumption is 0.2 - 0.4 kg/m^2 per coat. After application, the primer should form a covering layer without any dry areas. If there are more than 24 hours at +20°C until application of the coating, the primer should always be lightly broadcasted with dry quartz sand or the surface has to prepared mechanically by sanding and vacuum cleaning.

Application as a decorative floor with even surface made by compact application method System Mapefloor EP Compact:

Mapecoat Universal Eco Plus should be mixed in app. 1:1 ratio by weight with **Mapefloor SL Comp. C**, and then be applied on the scattered primer with a smooth or toothed trowel in order to obtain an even thickness. While the mix is still fresh, the surface should be scattered to a slight excess with **Mapequartz Color**, and then comprimated and smoothened with an electric trowel suitable for epoxy floors. The following day the surface has to be prepared for a thin layer of **Mapecoat Universal Eco Plus** to be applied with a smooth trowel in order to seal the surface without changing the surface structure. If a matt surface is needed, the finish may be done by applying **Mapefloor Finish 59 W TRP**.

Application as a skid resistant decorative made by multicoat application method System Mapefloor EP Decor S:

Mapecoat Universal Eco Plus should be mix in app. 1:1 ratio by weight with **Mapefloor SL Comp. C**, and then be applied on the scattered primer with a smooth or toothed trowel in order to obtain an even thickness. While the mix is still fresh the surface must be scattered to complete excess with **Mapequarz Color**. The following day all parts of excess decorative quartz sand should be removed from the surface, and **Mapecoat Universal Eco Plus** should be applied with a roller or trowel in one or two coats in order to obtain the chosen level of skid resistance to the floor.

Application as transparent topcoat on epoxy floors decorated with Mapefloor Flakes:

Mapecoat Universal Eco Plus should be applied within 24 hours after installing the epoxy floor with **Mapefloor Flakes**. Apply **Mapecoat Universal Eco Plus** with a smooth rubber spreader or a v-toothed trowel in an uniform thickness of 0.1 - 1.0 mm. If necessary, use a roller or a suitable plastic roller to level the surface in order to eliminate any air bubbles.

CLEANING

Cleaning of tools and equipment used to prepare and apply **Mapecoat Universal Eco Plus** must be washed immediately after use with **Thinner**, **Kerapoxy Cleaner**, acetone, ethanol or other cleaning agent suited for epoxy. Once hardened, the product may only be removed mechanically.

CONSUMPTION

Used as a dust binder in 1 or 2 coats: Approx. 0.2 - 0.4 kg/m^2 per coat.
Used as an adhesion promoter: Approx. 0.2 - 0.4 kg/m^2.

PACKAGING

- 8.0 kg set: Component A = 5.5 kg and component B = 2.5 kg.
- 12.2 kg set: Component A = 8.4 kg and component B = 3.8 kg.
- 20.4 kg set: Component A = 14 kg and component B = 6.4 kg.
- 582 kg set (drums): Component A = 2 x 200 kg and component B = 182 kg.
- 2909 kg set (IBC): Component A = 2 x 1000 kg and component B = 909 kg.

STORAGE

Properties for use are not changed for a period of 24 months if stored in its original and unopened packaging between temperatures at +5°C and +30°C. Protect from frost.

SAFETY INSTRUCTIONS FOR PREPARATION AND INSTALLATION

Instructions for the safe use of our products can be found on the latest version of the SDS available from our website www.mapei.no
When the product reacts, it generates considerable 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.

PRODUCT FOR PROFESSIONAL USE.

TECHNICAL DATA (typical values)

Mapecoat Universal Eco Plus: Two-component, low emitting transparent epoxy binder.

PRODUCT IDENTITY	Component A	Component B
Colour:	transparent	straw yellow
Appearance:	liquid	liquid
Density:	1.12 g/cm^3	1.02 g/cm^3
Brookfield viscosity at +23°C:	approx. 395 mPa·s	approx. 800 mPa·s

APPLICATION DATA (at 23°C and 50 % R.H)	
Mixing ratio by weight:	100 : 45 component A : component B
Colour of mix:	transparent straw yellow
Consistency of the mix:	liquid
Density of the mix:	1.08 g/cm^3
Brookfield viscosity of the mix:	approx. 460 mPa·s
Application temperature range:	from +10°C to +30°C
Pot life of mix (EN 9514):	approx. 20 minutes
Hardening time: **- Set to foot traffic:** **- Complete hardening:**	 12 hours 7 days

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.)

FINAL PROPERTIES (7 days at +23°C and 50 % R.H)	
Shore D (ISO 868:2003):	approx. 78

Essential characteristics	Test methods	Requirements according to EN 13813 for synthetic resin screeds	Typical values
BCA wear resistance:	EN 13892-4	≤ AR1 (≤ 100 µm)	AR0.5 (315 mg)*
Bond strength:	EN 13892-8	≥ B1.5 (≥ 1.5 N/mm^2)	B2.0 (4.4 N/mm^2)
Impact resistance:	EN 6272-1	No cracks or delamination after loading IR 4: ≥ 4 Nm IR 10: ≥ 10 Nm IR 20: ≥ 20 Nm	IR10
Reaction to fire:	EN 13501-1	A1$_{FL}$ to E$_{FL}$	Declared value: E$_{FL}$

Essential characteristics	Test methods	Requirements according to EN 1504-2 for synthetic resin screeds (coating C - principle PR)	Typical values
Compressive strength:	EN 12190	Class I: ≥ 35 N/mm^2 (for traffic with polyamide wheels) Class II: ≥ 50 N/mm^2 (for traffic with steel wheels)	Class II Compressive strength > 52 N/mm^2
Abrasion resistance (Taber test):**	EN ISO 5470-1	Loss in weight less than 3000 mg with an H22 abrasive wheel/1,000 cycles/1,000 g load	315 mg
Capillary absorption and permeability to water:	EN 1062-3	w < 0.1 kg/m^2·h$^{0.5}$	w < 0.001 kg/m^2·h$^{0.5}$
Impact resistance:	EN 6272-1	Class I: ≥ 4 Nm, Class II: ≥ 10 Nm, Class III: ≥ 20 Nm	Class II
Direct traction adherence test. **Reference substrate: MC (0.40) as specified in EN 1766, 7 days curing time for reactive resin systems:**	EN 1542	Average (N/mm^2) Crack bridging or flexible systems - with no traffic: ≥ 0.8 (0.5)[b)] - with traffic: ≥ 1.5 (1.0)[b)] Rigid systems - with no traffic: ≥ 1.0 (0.7)[b)] - with traffic: ≥ 2.0 (1.0)[b)]	4.4 N/mm^2
Reaction to fire:	EN 13501-1	A1$_{FL}$ to E$_{FL}$	Declared value: E$_{FL}$

** Correlation to Taber test EN ISO 5470-1.*
*** Note: testing methods for flooring systems according to EN 13813 are also acceptable.*

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 web site www.mapei.no

LEGAL NOTICE

The contents of this Technical Data Sheet ("TDS") may be copied into another project-related document, but the resulting document shall not supplement or replace requirements per the TDS in effect at the time of the MAPEI product installation. For the most up-to-date TDS and warranty information, please visit our website at www.mapei.no

ANY ALTERATIONS TO THE WORDING OR REQUIREMENTS CONTAINED IN OR DERIVED FROM THIS TDS SHALL VOID ALL RELATED MAPEI WARRANTIES.

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