MasterShield WP 452

A water-based, two-component, bituminous epoxy-polyurethane waterproofing protective coating for the chemical-resistant treatment of concrete surfaces.

Material description

MasterShield WP 452 is a two-component, bituminous protective coating based on epoxy resins modified with cross-linkable blocked isocyanate groups; it is solvent-free.
The product offers good elasticity, excellent resistance to fresh and salt water, and good resistance to oils and various substances that are harmful to concrete. It offers excellent adhesion to concrete surfaces, bituminous coatings, old bituminous membranes, wood, stone, certain types of ceramic tiles and plastics.

Main uses

The **MasterShield WP 452** coating is suitable for the protection and waterproofing of concrete structures and cementitious substrates, whether in good condition or previously repaired using mortars from the **MasterCrete** range, such as:

- structural works in reinforced concrete requiring protection against chemical attack resulting from the containment or treatment of waste water: wastewater treatment plants and sewerage pipes;
- reinforced concrete structures in contact with road surfaces: bridge decks;
- roofing in general.

If the project involves specific service conditions, please always contact the Master Builders Solutions Technical Service for approval of the application.

Features

- **Preventing water ingress:** helps to prevent any corrosion of the reinforcement caused by the ingress of corrosive substances.
- **Increased physical durability**: the hardened coating provides a surface that is resistant to abrasion and impact, offering physical protection to the concrete surface.
- **Chemical resistance**: thanks to its composition and formulation, the product is able to effectively withstand chemical attack from a variety of substances.
- **Elastomeric formulation** that enables the product to bridge any micro-cracks that may form on the substrate after application.
- **Suitable for use in confined spaces**: thanks to its water-based formula, it can be applied even in enclosed or poorly ventilated areas.
- **Effectively preventing the ingress of carbon dioxide**, which over time alters the pH of the concrete matrix and its natural ability to protect the reinforcement, thereby preventing the onset of corrosion.
- **Simplified application** as no primer is required on concrete surfaces: the product itself, diluted with water if necessary, can serve as a primer coat before being applied as a protective coating.

In compliance with the European Regulations (EU No. 305/2011 and EU No. 574/2014), the product is CE marked in accordance with UNI EN 1504-2 and the relevant DoP (Declaration of Performance).

CE
1305
EN 1504-2
Protection systems of the concrete surface
Category
PI-MC-IR

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Consumption

MasterShield WP 452: 200 g/m² per 100 µm of dry film to be applied.

The following are consumption guidelines based on the system installed:

Systems	System components	Consumption [kg/m²]
1 Concrete sealer Thickness: 350 µm	Primer: **MasterShield WP 452** diluted with water	0.20
	First coat: **MasterShield WP 452**	0.25
	Second coat: **MasterShield WP 452**	0.25
2 Under tarmac Thickness: 1.5 mm	Primer: **MasterShield WP 452** diluted with water	0.20
	First coat: **MasterShield WP 452** loaded with 1 kg/m² of quartz	0.6
	Second coat: **MasterShield WP 452** loaded with 1 kg/m² of quartz	0.6

The film thicknesses and consumption figures given above will depend on the type of substrate, the dilution ratio when used as a primer, and the amount of quartz used in the protective layers beneath the asphalt.

Packaging and storage

MasterShield WP 452 is available in a 21 kg kit:
Component A: 20 kg bucket.
Component B: 1 kg bucket.

Keep the products in their original packaging in a dry, protected location at a temperature between +10°C and +30°C. Do not expose to direct sunlight.
Under the above conditions, the products have a shelf life of 24 months.

Preparation and method of application

Preparing the substrates

- The concrete surface to be coated with **MasterShield WP 452** must be perfectly clean, solid, without degraded, loose or detached parts, without irregularities that could compromise the application of the product, and free of cement laitance, traces of release agents, or any substance that could affect the adhesion of the product to the substrate.
- Once the above has been verified, you can proceed according to the possible scenarios described below:
  - if it is not necessary to restore degraded areas or repair significant surface irregularities, the substrate must still be made slightly rough by sandblasting, hydro-sandblasting or high-pressure washing.
  - If, on the other hand, the substrate has slight irregularities or is slightly uneven, these must be repaired, after adequate treatment and saturation of the dry substrate surface with water, using fine-grained cortical repair mortars from the **MasterCrete** range.
  - If the substrate shows deterioration with thicknesses to be restored exceeding 1 cm and any exposed reinforcement rods, the latter must be treated with the **MasterCrete** range passivating mortar, while the appropriate **MasterCrete** line product must be used for the volume to be restored, depending on the nature of the work.
- Very smooth surfaces, such as those of glazed or ceramic-coated bricks, must be roughened using a rotary disc sander or a shot-blasting machine.
- Before applying the **MasterShield WP 452** coating, ensure that the substrate is dust-free, dry and free from any substances that could impair adhesion.

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Preparation of the product

The **MasterShield WP 452** coating must be prepared by mixing components A and B together with a low-speed resin mixer, in accordance with the mixing ratios specified in this technical data sheet; the entire contents of the container must be mixed. If necessary, it may be diluted with drinking water. When using this product as a primer, do not exceed a dilution ratio of 25% with drinking water.

System installation

On the substrate described above, apply the **MasterShield WP 452** coating by spraying using a suitable airless system, or by brush or roller, allowing a drying time of between 8 and 24 hours between coats, depending on site conditions.

We recommend applying two coats to achieve the thickness specified in the design data, ensuring a minimum dry film thickness of 200 μm, depending on the level of protection required by the design.

For waterproofing beneath asphalt on car parks and viaducts, we recommend mixing **MasterShield WP 452** with 0.5–1.2 mm spherical quartz at a rate of approximately 2 kg/m^2.

Apply the products in environmental conditions where the temperature is not below +7°C and the relative humidity does not exceed 85%.

Cleaning of equipment

To clean tools whilst the product is still fresh, use fresh water.

Ageing and maturation

Protect the applied system throughout the curing process from wash-off, dust, excessive draughts and direct sunlight.

Application temperatures

The minimum temperature of the application area and the substrate must not be below +7°C, and the maximum relative humidity of the environment must not exceed 85%.

Warnings

- Do not apply **MasterShield WP 452** to surfaces that are overheated, frozen or thawing.
- Protect from rain or any water or other substances seeping in for at least 24 hours after application; however, avoid applying the system if rain or a risk of frost is forecast for the next 24 hours.

Technical data for MasterShield WP 452

Product identification data (A+B)	
Consumption	200 g/m^2 per 100 μm of dry film
Appearance	Semi-gloss
Mixing ratio A: B	100: 5
Specific weight	1.2 kg/L ± 0.1
Dry matter	61% ± 0.2%
Brookfield viscosity (+25°C)	5000 - 6000 cps
Colours	Black
Pot life at +20°C	60 minutes

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Recoating time (+20 °C, 65% RH)	3-6 hours depending on site conditions
Dry to the touch at +20°C	5 – 12 hours depending on site conditions
Minimum application temperature	+7°C
Category (EN 1504-2)	PI-MC-IR

Performance – UNI EN 1504-2

(The performance values shown below are obtained in accordance with UNI EN 1504-2 for a dry thickness of the coating of 200 mm)

Feature	Test method		Regulatory requirement	Product performance
Adhesion to concrete	UNI EN 1542 (MC 0.40 substrate – UNI EN 1766)		≥ 0.8 MPa	> 1.0 MPa
Resistance to freeze-thaw cycles with de-icing salts	UNI EN 1542 after the UNI EN 13687/1 cycles on an MC 0.40-type substrate.		≥ 0.8 MPa	≥ 0.8 MPa
Water permeability as capillary absorption coefficient	EN 1062-3		W < 0.1 kg/m^{2}h$^{0.5}$	W < 0.001 W kg/m^2·h$^{0.5}$ Prevents the ingress of chlorides
Permeability	Water vapour	EN 7783	Class I, Sd < 5 m Class II, 5 m ≤ Sd ≤ 50 m Class III, Sd > 50 m	Class II, Sd < 11 m μ < 55000
	CO_2	EN 1062-6	Sd > 50 m	Sd > 800 m

Safety instructions

For guidance on the correct and safe use, transport, storage and disposal of the product, please see the latest Safety Data Sheet (SDS).

Other services

For additional technical information, brochures, references, technical reports and technical assistance please visit www.master-builders-solutions.com/it-it or alternatively contact infomac@masterbuilders.com.

Scan QR code to visit the product page and download the latest version of this technical sheet and any additional documentation.

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Disclaimer

Since 16/12/1992, Master Builders Solutions Italia Spa has been operating under a Certified Quality System compliant with the UNI EN ISO 9001 Standard. Furthermore, the Environmental Management System is certified according to the UNI EN ISO 14001 Standard and the Safety Management System is certified according to the UNI ISO 45001 Standard.
For further information, please consult the local Technician of Master Builders Solutions. The technical advice on how to use our products, either written or verbally given, are based on the current state of our scientific and practical expertise, and does not imply the assumption of any guarantee and/or responsibility for the final results of works executed using our products.
Therefore, the customer is not exempted from the exclusive task and responsibility of verifying the suitability of our products for the intended use and purposes.
This version supersedes all the previous ones.

Master Builders Solutions Italia Spa
Via Vicinale delle Corti, 21 – 31100 Treviso – Italia
T +39 0422 429200 F +39 0422 421802
www.master-builders-solutions.com/it-it
e-mail: infomac@masterbuilders.com