

MasterShield AR SYSTEM

Acrylic-based, elastomeric protective system for concrete structures:
MasterShield PRI 310 primer and **MasterShield AR 325** single-component coating.

Material description

MasterShield AR SYSTEM is a protection system for concrete structures comprising the following components:

- **MasterShield PRI 310:** single-component acrylic primer, water-based;
- **MasterShield AR 325:** a single-component, elastomeric, water-based acrylic protective coating.

The system thus formulated offers a high level of protection against the ingress of water, chlorides and atmospheric CO₂. Thanks to its excellent crack-bridging properties, the coating maintains the necessary film integrity even in the event of micro-cracks in the surface layer, whilst retaining sufficient vapour permeability to allow the surfaces to which it is applied to breathe.

Main uses

The **MasterShield AR SYSTEM** acrylic-based system is suitable for the protection of concrete structures and cementitious substrates, whether in good condition or previously repaired using mortars from the **MasterCrete** range, such as:

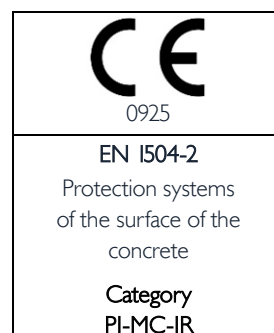
- parts of hydraulic structures such as dams, canals, pipelines and reservoirs that are exposed to the air and not in constant contact with water;
- structures made of reinforced concrete requiring protection against chlorides (due to contact with seepage water, without permanent contact);
- structures made of reinforced concrete that have insufficient concrete cover, shrinkage cracks or cracks due to minor deformations;
- masonry structures.

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, for example, the ingress of chloride ions or repeated freeze-thaw cycles.
- **Provides excellent crack-bridging properties** to ensure the durability of the application even if cracks form in the substrate to which the coating has been applied.
- **Check the moisture content:** high water vapour permeability is essential to prevent the build-up of vapour pressure at the interface with the substrate as temperatures fluctuate, which could lead to delamination.
- **Resistance to UV radiation:** an important characteristic for ensuring long-term durability, including from an aesthetic point of view.
- **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.
- **Resist the growth of microorganisms** such as algae, fungi and mould.

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



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Consumption

MasterShield PRI 310: approximately 0.1–0.2 kg/m², depending on absorption of the substrate.

We recommend diluting with water by no more than 30%.

MasterShield AR 325: 220 g/m² per 100 µm of dry film to be applied.

Dry film [µm]	Wet film [µm]	Consumption [kg/m ²]
200	330	0.44
300	500	0.66
400	670	0.88

Maximum dilution ratio with water: 10%.

We recommend a dry film thickness of between 200 µm and 400 µm.

Packaging and storage

MasterShield PRI 310 is available in 25 kg buckets.

MasterShield AR 325 is available in 20 kg buckets.

Keep the products in their original packaging in a dry, protected location at a temperature between +5°C and +35°C. Do not expose to direct sunlight.

Under the above conditions, the products have a shelf life of 12 months.

Preparation and method of application

Preparing the substrates

- The concrete surface to be smoothed with **MasterCrete AR SYSTEM** 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.
- Before applying the **MasterShield AR SYSTEM**, ensure that the substrate is dry and free from dust and any substances that could impair adhesion.

Product preparation

The **MasterShield PRI 310** primer is a ready-to-use product that can be diluted by up to 30% with clean water.

The entire contents of the **MasterShield AR 325** coating must be thoroughly mixed using a low-speed mixer until the mixture is uniform in colour and consistency.

Depending on site conditions, the product may be diluted with clean water up to a maximum of 10% by weight.

System installation

The first stage involves applying the **MasterShield PRI 310** primer by brush, roller or spray using a suitable machine, ensuring a minimum dry film thickness of approximately 50 µm and, in any case, a thickness sufficient to ensure adequate absorption by the substrate.

Wait at least 8 hours, depending on the environmental conditions at the site. In any case, it is recommended that no more than 24 hours elapse between applying the primer and the first coat of the protective coating **MasterShield AR 325**.

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When applying the waterproofing skim coat **MasterShield WP 545**, there is no need to apply the primer **MasterShield PRI 310**, but **MasterShield AR 325** can be applied directly once the coating has been left to cure for at least 7 days (standard conditions).

On the substrate described above, apply the **MasterShield AR 325** 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 of the coating until the thickness specified in the project is achieved; this is usually between 200 and 400 μm of dry film, depending on the level of protection required.

Apply the products under environmental conditions with temperatures between +10 °C and +40 °C and relative humidity between 35 % and 75 %.

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

Application environment temperature needs to be between +10°C and +40°C.

Warnings

- Do not apply **MasterShield AR SYSTEM** 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 PRI 310

Product identification data	
Consumption	0.1 – 0.2 kg/m ² depending on the type of substrate
Appearance	Milky
Recoating time (+20 °C, 65% RH)	8-24 hours depending on site conditions
Density (EN ISO 2811-1)	1.03 kg/L $\pm$ 0.05
Dry residue (UNI EN ISO 3251)	25% $\pm$ 1%
Application temperature	+7°C to +40°C
Recommended minimum thickness	50 μm depending on the type of substrate

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Technical data for MasterShield AR 325

Product identification data	
Consumption	220 g/m ² per 100 µm of dry film
Maximum dilution with water	10 %
Density (EN ISO 2811-1)	1.32 kg/L ± 0.05
Dry residue (UNI EN ISO 3251)	60% ± 2%
Brookfield viscosity (+25°C, UNI EN ISO 2555)	9000 - 12000 cps
Colours	RAL colour chart
Recoating time (+20 °C, 65% RH)	8-24 hours depending on site conditions
Touch dry (+20°C, 65% RH)	2 hours
Application temperature	+7°C to +40°C
Category (EN 1504-2)	PI-MC-IR
Recommended thickness	200 µm – 400 µm

Performance of coating – 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 µm)

Feature	Test method		Regulatory requirement	Product performance
Adhesion to concrete	UNI EN 1542 (MC 0.40 substrate – UNI EN 1766)		≥ 0.8 MPa	> 3.0 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	≥ 3.0 MPa
Water permeability as capillary absorption coefficient	EN 1062-3		$W < 0.1 \text{ kg/m}^2\text{h}^{0.5}$	$W < 0.005 \text{ W kg/m}^2\text{h}^{0.5}$ Prevents the ingress of chlorides
Crack bridging	static at +23°C	EN 1062-7	Classes A ₁ , ..., A ₅	Class A4 (1.25–2.5 mm)
	static at -10°C	EN 1062-7	Classes A ₁ , ..., A ₅	Class A3 (0.5–1.25 mm)
	dynamic at +23°C	EN 1062-7	Classes B ₁ , ..., B _{4,2}	Class B4, I

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Permeability	Water vapour	EN 7783	Class I, Sd < 5 m Class II, 5 m ≤ Sd ≤ 50 m Class III, Sd > 50 m	Class I, Sd < 0.2 m μ < 1000
	CO ₂	EN 1062-6	Sd > 50 m	Sd > 240 m
UV resistance	UNI EN 1062-11 (2,000 hours of UV exposure)		No bulges or flaking	Specification superseded

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).

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



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.

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.

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