



CON	REAZIONE AL FUOCO
MITÀ	EN 13501-1
	<sup>CLASSE</sup> Bfl - S1



Bi-component solvent-free, drive-over, anti-mould self-levelling epoxy coating for industrial floors.

CE marking:

• EN 13813 - Designation: SR-B2.0-AR0.5-IR4

Certifications:

- EN 13501-1 Class: Bfl-s1
- UNI 11021 HACCP





### Description

NORPHEN 200 is a bi-component epoxy product that can be used to formulate coatings for concrete floors. The product is made up of:

· component A: a mixture of liquid epoxy pre-polymers and special fillers;

• component B: co-polymerisation amine.

Coatings made with NORPHEN 200 feature considerable hardness, resistance to abrasion and good general chemical resistance, while retaining good flexibility.

Besides this, NORPHEN 200 creates a coating with a pleasant surface appearance (smooth or non-slip depending on the application method) that is impermeable, glossy, easy to clean, suited above all to environments requiring special hygienic measures (refer to the "Certifications" paragraph) and ease of maintenance.

## CE marking

### ► EN 13813

NORPHEN 200 complies with the principles envisaged in the EN 13813 standard ("Screed material and floor screeds - Screed materials: Properties and requirements") with the following designation:

- $\rightarrow$  SR B2.0 AR0.5 IR4
- Synthetic resin screed (SR).
- Bond strength: 3.8 ± 0.3 MPa (B2.0).
- BCA wear resistance:
- Impact resistance: 4 Nm (IR4).

### Certifications

► NORPHEN 200, applied and cured according to the indications shown in the "Technical data" table, t can be used as a coating for environments containing foodstuffs.

In particular, NORPHEN 200 is:

• is suitable for all surfaces that must be resistant to washing and to mould build-up;

• suitable for surfaces that must be disinfectable (type "D" detergent as defined in the UNI 11021 standard);

• can be washed and sanitised with active-chlorine, alkaline or acid descaling degreaser (type A, B, C detergents as

defined in the UNI 11021 standard);

suitable for cold rooms.

▶ NORPHEN 200 withstands mould growth as per the UNI EN 15457 standard:

 $\rightarrow$  Class 1.



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- ▶ NORPHEN 200 possesses fire reaction class as per the EN 13501-1 standard:
- $\rightarrow$  Bfl-s1.

## Field of application

NORPHEN 200 is used as:

• Dust-proof, coloured, waterproof and drive-over coating with 150 to 300 micron thickness, for industrial concrete floors.

Anti-dust coating with high mechanical resistance loaded with quartz or corundum fillers with thickness between 500 and 1,000 micron, for enhanced resistance to abrasion and/or to create grip (slip resistance, see Table 1).
Coloured base coat for flooring styled with AQUALAMINE, glitter etc., and finished with transparent NORDPUR ESTERNI.

• Top coat of multi-layer systems structured with MALTA RAPIDA and STRATOFLEX.

## Advantages

- NORPHEN 200 allows for achieving various types of coatings with highly variable thicknesses, for any need.
- NORPHEN 200 possesses high mechanical resistance.
- NORPHEN 200 preserves for a long time the initial aesthetic properties of the surface even after heavy-duty use.

• Excellent final protection of non-drip coatings with medium-high thickness (1.5–5.0 mm) for environments frequently washed with power washes, for example food processing industries (dairy farms and slaughter farms).

• When used together with specific types of QUARTZ SANDS, it allows for creating non-drip floors with varying degrees of roughness (see "Technical Data" table under the paragraph "► Slip resistance in accordance with the DIN 51130 standard").

### General preparation of the laying support

• The application surfaces must be structurally sound, clean, dry and free from flaking materials.

• New floors must be cured for at least 28 days and have a humidity not exceeding 3.5% measured with the carbide method, according to the ASTM D4944 or UNI 10329 standard.

• In case of humidity exceeding 3.5%, prepare the surface with SOLID or W3 IMPERMEABILIZZANTE or Q-PRIMER – Q-RASANTE.

• Since NORPHEN 200 creates a coating impermeable to water vapour, a vapour barrier should be placed beneath the concrete, so as to prevent rising damp from the substrate.

### Specific preparation of the laying support

- On new concrete on the floor
- Grind the surface using suitably-sized diamond wheels to open the pores.
- After the treatment, make sure that the porosity is truly sufficient for the product to anchor.
- On old concrete on the floor

• Grind the surface using suitably-sized diamond grinding wheels to open the pores or, if the thickness of the coating to be applied is sufficient, shot-peen the surface.

- Old porous floors with poor cortical resistance problems
- Perform deep shot peening then apply one coat of FONDO SL diluted with 40% of SOLVENT FOR NORPHEN.
- Apply the relevant coating the following day.

▶ Old porous floors with deep cortical contamination from wear and chemical products with poor cohesion

- Mill the surface deeply until reaching the sound part of the floor.
- Apply one coat of FONDO SL with a roller.
- Apply the relevant coating the following day.

### Preparing the product

- Pour NORPHEN 200 comp. B into comp. A and mix thoroughly using a low-speed professional mixer.
- The mix thus prepared can be applied with a 40 cm steel trowel or with a 25 cm short-bristle roller for solvents,







depending on the type of use and the expected consumption.

### Application of the product

As a thin-film coating on new or old concrete smoothed with a diamond grinding wheel (without deep scratches)
 Apply one coat of FONDO SL with a roller (consumption of roughly 0.15–0.20 kg/m2) on the surface prepared as described above.

• After hardening (and nonetheless within 48 hours), apply NORPHEN 200 using a short-bristle roller (consumption roughly 0.15–0.17 kg/m<sup>2</sup>).

• Apply the top coat of NORPHEN 200 the following day (consumption: 0.15–0.17 kg/m<sup>2</sup>).

NOTE: summary of total consumption: 0.15-0.20 kg/m<sup>2</sup> of FONDO SL, 0.30-0.35 kg/m<sup>2</sup> of NORPHEN 200.

► As a coating on new or old concrete after deep smoothing

• Prepare FONDO SL (A+B) and add 50% by weight of 0.1–0.3 NATURAL QUARTZ SAND.

• Apply using a smooth steel trowel (consumption of FONDO SL pure: 0.45 kg/m<sup>2</sup>).

• After hardening (and nonetheless within 48 hours), apply NORPHEN 200 using a short-bristle roller (consumption: 0.15–0.17 kg/m<sup>2</sup>).

• Apply the second coat the following day (consumption: 0.12-0.15 kg/m<sup>2</sup>).

NOTE: summary of total consumption: 0.45 kg/m<sup>2</sup> of FONDO SL, 0.28–0.30 kg/m<sup>2</sup> of NORPHEN 200.

► As a coating on new or old concrete after deep shot-peening

• Prepare FONDO SL (A+B) and add 30% by weight of 0.1–0.3 NATURAL QUARTZ SAND 70% of 0.3–0.9 NATURAL QUARTZ SAND.

• Apply using a smooth steel trowel (consumption of FONDO SL pure: 0.90 kg/m<sup>2</sup>).

• After hardening (and nonetheless within 48 hours), prepare NORPHEN 200 and add to the A+B mix 50% by weight of 0.1–0.6 NATURAL QUARTZ SAND.

• Apply using a smooth steel trowel (consumption: 0.55 kg/m<sup>2</sup>).

 $\rightarrow$  the surface thus prepared will have R9 slip resistance rating (as per the DIN 51130:2009 standard).

NOTE: summary of total consumption: 0.90 kg/m<sup>2</sup> of FONDO SL, 0.55 kg/m<sup>2</sup> of NORPHEN 200 (with non-slip surface).

 $\rightarrow$  For an almost smooth surface

• Apply the last coat with a roller the following day (consumption: 0.12–0.15 kg/m<sup>2</sup>).

NOTE: summary of total consumption: 0.90 kg/m<sup>2</sup> of FONDO SL, 0.70 kg/m<sup>2</sup> of NORPHEN 200 (with smooth/slightly textured surface).

► As a top coat for MALTA RAPIDA or STRATOFLEX

 $\rightarrow$  on a surface prepared by sprinkling 0.3–0.9 sand until saturation: apply NORPHEN 200 using a nylon trowel model L400 on top of the aggregates, after vacuuming the dust.

NOTE: summary of total consumption: 0.50 kg/m<sup>2</sup> of NORPHEN 200.

 $\rightarrow$  on a surface prepared with a self-levelling product: brush with a single-disc floor scrubber fitted with a SCOTCH BRITE disc (of the preferred light colour); vacuum the dust; apply NORPHEN 200 using a short-bristle roller suitable for solvents.

NOTE: summary of total consumption: 0.15 kg/m<sup>2</sup> of NORPHEN 200.

► As a coloured base coat for the application of AQUALAMINE in interiors

• Prepare FONDO SL (A+B) and add 50% by weight of 0.1–0.3 NATURAL QUARTZ SAND.

• Apply using a smooth steel trowel (consumption of FONDO SL pure: 0.45 kg/m<sup>2</sup>).

• After hardening (and nonetheless within 48 hours), apply NORPHEN 200 using a short-bristle roller (consumption roughly 0.30 kg/m<sup>2</sup>).







• Proceed – wet-on-wet – by sprinkling until saturation LAMINE of the relevant type and colour (consumption of LAMINE roughly 0.7 kg/m<sup>2</sup>).

• Wait until the following day the sand the surface (lightly) using a roto-orbital sander fitted with a 120-grit abrasive sheet.

• Vacuum the surface.

• Apply one coat of NORDPUR COAT LUX with a soft rubber float for a consumption of around 0.25 kg/m<sup>2</sup>.

• As soon as possible, apply a second coat of NATURAL COAT LUX or (for a matt surface) NATURAL COAT MAT for a consumption of roughly 0.15 kg/m<sup>2</sup>.

NOTE: summary of total consumption: 0.45 kg/m<sup>2</sup> of FONDO SL, 0.30 kg/m<sup>2</sup> of NORPHEN 200, 0.7 kg/m<sup>2</sup>, (first top coat) 0.25 kg of NATURAL COAT LUX, (second top coat), 0.15 kg/m<sup>2</sup> of NATURAL COAT LUX (or NATURAL COAT MAT).

### Consumption

The consumption of NORPHEN 200 is listed by type of laying support; the preparation of the latter is explained in the technical sheet.

To create a coating around 1 mm thick, it is necessary to apply roughly 1.40 kg/m2 of product (A+B).

type of application	minimum consumption	maximum consumption	UoM	dilution
As a thin-film coating on new or old concrete smoothed with a diamond grinding wheel (without deep scratches)	0,30	0,35	kg/m²	-
As a coating on new or old concrete after deep smoothing	0,28	0,30	kg/m²	-
As a non-slip coating on new or old concrete after deep shot-peening	0,55	0,55	kg/m²	-
As a smooth coating (slightly textured) on new or old concrete after deep shot- peening	0,70	0,70	kg/m²	-
As a top coat for MALTA RAPIDA or STRATOFLEX on surfaces prepared with 0.3–0.9 mm QUARTZ sprinkled until saturation	0,50	0,50	kg/m²	-
As a top coat for MALTA RAPIDA or STRATOFLEX on surfaces prepared with the self-levelling technique	0,15	0,15	kg/m²	-
As a coloured base coat for the application of AQUALAMINE in interiors	0,30	0,30	kg/m²	-

### Cleaning of tools

• Wet product: clean with ACETONE or nitro thinner.

• Hardened product: remove mechanically, soak for at least 24 hours in ACETONE or nitro thinner, or use paint strippers (FLUID STRIPPER or GEL STRIPPER) or a thermal gun.

### Useful application tips

Method suited to roller-based application:

 $\rightarrow$  one operator, after dipping the roller in the container, spreads the product on the surface;

 $\rightarrow$  a second operator, without ever dipping the roller into the product, spreads the liquid evenly over the surface. NOTE: for improved results, the second operator must roll the product with criss-cross strokes several times to uniform the grammage per m2.

If uneven colour patches appear (in the second coat), it means that the product was not distributed evenly.

• The addition of specific solvents to NORPHEN 200 can facilitate the application, but makes the final sheen of the



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surface uneven (especially for the second coat).

• When multiple coats are applied, coat the surface over the following day or maximum after 48 hours.

• During the cold season, low temperatures increase the viscosity of the product making it difficult to apply with a roller.

• The curing of NORPHEN 200 in cold conditions slows down the development of its mechanical properties and creates a coating with a matt appearance.

• During the cold season, transfer the product to a heated environment before applying it and guarantee curing temperatures always above +13°C.

• During the warm season, store the product's containers in a cool environment and use a scale to divide the packages, given that a small quantity of product must be prepared for each mix.

• Mix components A and B of NORPHEN 200 is the precise ratios indicated by the manufacturer.

• Read the Safety Sheet carefully.

### Technical data

► PRODUCT IDENTIFICATION DATA	UoM	value
Density (comp. A) at 23°C, 50% R.H., EN ISO 1675	kg/L	1,47 ± 0,05
Density (comp. B) at 23°C, 50% R.H., EN ISO 1675	kg/L	1,02 ± 0,04
Density (A+B) at 23°C, 50% R.H., EN ISO 1675	kg/L	1,43 ± 0,09
Appearance (Component A)	-	Coloured liquid
Appearance (Component B)	-	Straw-yellow liquid
► APPLICATION DATA AND FINAL PERFORMANCES	UoM	Value
Mix ratio by weight (A:B)	-	10 : 3
Kinematic viscosity (ISO cup 6, 23°C), A+B, EN ISO 2431	S	105 ± 10
Pot-life, UNI EN ISO 9514	min	20 ± 5
Application temperature	°C	From +13 to +35
Surface drying time (23°C, 50% R.H.), EN ISO 9117-3	hours	5 ± 1
Full curing time (at +23°C, 50% R.H.)	days	7
Wear resistance – Taber Method, CS17 grinding wheel, 1,000 revolutions, 1 kg load, EN ISO 5470-1	mg	160 ± 20
Shore D hardness (A+B, curing for 7 days at +23°C, 50% R.H.), EN ISO 868	-	(70 ± 2)°
Tensile rupture load (+23°C, trial form 1 A, 20 mm/min), ISO 527-2	MPa	88 ± 15
Elongation at break by traction (+23°C, trial form 1 A, 20 mm/min), ISO 527-2	-	(1,5 ± 0,5)%
Maximum bending load (+23°C, 80x10x4 mm trials, 10 mm/min), ISO 178	MPa	55 ± 10
Compressive strength, EN ISO 604/B/1	MPa	70 ± 15
Resistance to UV and condensate cycles, cycle A (8 hours UVA-340 at $60^{\circ}C$ + 4 hours condensate 50°C), for a total of 168 hours, measurement of yellowing on RAL 9002, $\Delta E$ , ASTM D4329	-	30 ± 1
Resistance to UV and condensate cycles, cycle A (8 hours UVA-340 at 60°C + 4 hours condensate 50°C), for a total of 168 hours, measurement of opacification on RAL 9002, Agloss (EN ISO 2813 method), ASTM D4329	-	-10 ± 2
Resistance to moulds (class), EN 15457	-	Class 1
Fire reaction (Euroclass), EN 13501-1	-	Bfl – s1
► TECHNICAL DATA IN CONFORMITY TO UNI 11021	UoM	value
Dirt adhesion ( $\Delta$ L), UNI 10792	-	< 0,5
Odour transfer (Appendix A), UNI 11021	-	< 0,5
Washing resistance, UNI 10560	-	> 5000
Cleanability (ΔE, Appendix B), UNI 10021	-	< 0,5
Resistance to special washing agents: type-A detergent (active chlorine), EN ISO 2812-1	-	No alteration
Resistance to special washing agents: type-B detergent (alkaline degreaser), EN ISO 2812-1	-	No alteration
Resistance to special washing agents: type-C detergent (acidic anti-fouling agent), EN ISO 2812-1	-	No alteration
Resistance to disinfection agents	-	No alteration

type D disinfectants, EN ISO 2812-1



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► TECHNICAL DATA IN CONFORMITY TO UNI 11021	UoM	value
Resistance to thermal shock (Appendix D), UNI 11021	-	No alteration
► TECHNICAL DATA IN CONFORMITY TO EN 13813	UoM	value
Bond strength, EN 13892-8	MPa	$3.8 \pm 0.3$ (cohesive fracture of the support)
BCA wear resistance, depth of wear, EN 13892-4	μm	2.0 ± 0.2 (class AR0.5)
Impact resistance (class), measured on specimens of concrete coated with MC (0.40) as per EN 1766, EN ISO 6272-1	N•m	4.0 ± 0.2 (IR4)
► CHEMICAL RESISTANCE EN ISO 2812-3 (Assessment of the results of chemical resistance tests: 1 = disintegration of the product, 5 = no alteration. For the complete scale, refer to Table 1, Appendix A)	UoM	value
Hydrochloric acid 30% in water	-	4
Sulphuric acid 10% in water	-	1
Phosphoric acid 20% in water	-	4
Acetic acid 30% in water	-	1
Ammonia 15% in water	-	5
Soda (sodium hydroxide) 30% in water	-	5
Hydrogen peroxide 3.5% (12 volumes)	-	5
Mixture of acetic acid (1%) and hydrogen peroxide (0.5%) in water	-	5
Denatured ethyl alcohol	-	3
Technical acetone	-	2
► SLIP RESISTANCE AS PER DIN 51130 *** (% of QUARTZ added to the A+B mix; → application method)	Name of the cycle	Class (DIN 51130)
+50% in peso su NORPHEN 200 (A+B) di QUARZO NATURALE 0,1-0,6 +50% in peso su NORPHEN 200 (A+B) di QUARZO NATURALE 0,1-0,6 $\rightarrow$ Impasto A+B, aggiunta quarzo, applicazione a spatola liscia.	NORPHEN 200 (R9)	R9
+50% by weight on NORPHEN 200 (A+B) of 0.1–0.6 NATURAL QUARTZ $\rightarrow$ A+B mix, with the addition of quartz, applied with a smooth trowel or a medium-bristle roller to drain the resin.	NORPHEN 200 (R10)	R10
+80% in peso su NORPHEN 200 (A+B) di QUARZO NATURALE 0,3-0,9 $\rightarrow$ Impasto A+B, aggiunta quarzo, applicazione a spatola liscia, rullatura con rullo a pelo medio per scarico resina.	NORPHEN 200 (R11)	R11
+100% in peso su NORPHEN 200 (A+B) di QUARZO MIX 0,1-1,2 $\rightarrow$ Impasto A+B, aggiunta quarzo, applicazione a spatola liscia, rullatura con rullo a pelo medio per scarico resina.	NORPHEN 200 (R12)	R12
standard (with soles conforming to the standard).	n salety lootw	ear type

### Storage of the product

• 24 months in the closed original packaging, in a dry and covered place away from direct sunlight, at a temperature between +10°C and +34°C.







Packages				
VARIANT	PACKAGE	ADR	PACKAGES PER PALLET	COMPONENTS
RAL 7040 (1)	kit (A+B) da 4,33 kg	P*	-	A = 3,33 kg (fustino met.) B = 1,00 kg (flacone)
RAL 7040 (1)	(A+B) da 13 kg	YES	-	A = 10 kg (fustino met.) B = 3 kg (tanica)
	kit (A+B) da 4,33 kg	P*	-	A = 3,33 kg (fustino met.) B = 1,00 kg (flacone)
	(A+B) da 13 kg	YES	-	A = 10 kg (fustino met.) B = 3 kg (tanica)
	kit (A+B) da 4,33 kg	P*	-	A = 3,33 kg (fustino met.) B = 1,00 kg (flacone)
	(A+B) da 13 kg	YES	-	A = 10 kg (fustino met.) B = 3 kg (tanica)
COLOURABLE	kit (A+B) da 3,9 kg	P*	-	A = 2,90 kg (fustino met.) B = 1,00 kg (flacone)
COLOURABLE	(A+B) da 11,7 kg	YES	-	A = 8,7 kg (fustino met.) B = 3,0 kg (tanica)
TIER 1 COLOUR (1)	kit (A+B) da 4,33 kg	P*	-	A = 3,33 kg (fustino met.) B = 1,00 kg (flacone)
TIER 1 COLOUR (1)	(A+B) da 13 kg	YES	-	A = 10 kg (fustino met.) B = 3 kg (tanica)
TIER 2 COLOUR (1)	kit (A+B) da 4,33 kg	P*	-	A = 3,33 kg (fustino met.) B = 1,00 kg (flacone)
TIER 2 COLOUR (1)	(A+B) da 13 kg	YES	-	A = 10 kg (fustino met.) B = 3 kg (tanica)
TIER 3 COLOUR (1)	kit (A+B) da 4,33 kg	P*	-	A = 3,33 kg (fustino met.) B = 1,00 kg (flacone)
TIER 3 COLOUR (1)	(A+B) da 13 kg	YES	-	A = 10 kg (fustino met.) B = 3 kg (tanica)
TIER 4 COLOUR (1)	kit (A+B) da 4,33 kg	P*	-	A = 3,33 kg (fustino met.) B = 1,00 kg (flacone)
TIER 4 COLOUR (1)	(A+B) da 13 kg	YES	-	A = 10 kg (fustino met.) B = 3 kg (tanica)

Legenda ADR:

P\* = merce PERICOLOSA imballata in quantità limitata (confezionata come da Cap. 3.4 ADR) SI' = merce PERICOLOSA

Note:

(1): Fustino con chiusura a cravatta.

#### LEGAL NOTES

Advice on how to use our products corresponds to the current state of our knowledge and does not involve the assumption of any guarantee and / or responsibility for the final result of the work. They do not refore exempt the customer from the responsibility of verifying the suitability of the products for the use and the prefixed purposes through preventive tests. The website www.nordresine.com contains the latest revision of this datasheet.

### EDITION

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