Cemprotec E942

Cementitious Coating for Concrete and Steel

Product Overview

Two component, thixotropic, epoxy and polymer modified cementitious coating.

Description

CEMPROTEC E942 is a water-based, epoxy and polymer modified cementitious coating for the protection of concrete and ferrous metals. It exhibits a high degree of thixotropy for easy application by brush or spray to give a smooth surface finish without sagging. It is used to waterproof and protect concrete where enhanced chemical and abrasion resistance are required. It increases the effective concrete cover to steel reinforcement in new construction and refurbishment. It is also used as a stand-alone anti-corrosion coating for ferrous metals.

Uses

Suitable for surface protection systems principles 1.3, 2.2, 5.1, 6.1,8.2 as defined in BS EN 1504-2.

Advantages

- Unique blend of surfactants for easy brush or spray application.
- Produces a smooth finish, which rapidly recovers to prevent sagging.
- Pre-packaged material only requiring mixing on-site.
- Excellent bond to concrete, other mineral substrates and steel.
- Resistant to a range of chemicals and gases, including hydrogen sulphide.
- Excellent abrasion and impact resistance.
- Dense matrix offers low permeability to water at 10 bar positive or negative pressure and very high diffusion resistance to carbon dioxide gas and chloride ions.
- Provides the equivalent of 100mm of good quality concrete cover.
- Highly alkaline for rapid passivation of steel, does not require Sa2½ preparation.
- Water-based, cures without the release of hazardous solvents.
- Equipment easily cleaned with water.

Compliance

- UKCA & CE marked in accordance with EN 1504-2.

Application Instructions

Preparation - Concrete

The areas to be repaired must be free from all unsound material including laitance dust, oil, grease, corrosion by-products and organic growth. Smooth surfaces should be roughened.

Any defective concrete should be reinstated with the appropriate Flexcrete repair mortar. Any active water infiltration must first be stopped using **FASTFILL WP**.

The compressive strength of the parent concrete should be minimum 20 MPa.

The prepared substrate should be thoroughly soaked with clean water until uniformly saturated without any standing water.

Preparation - Steel

For maximum durability, steel should be cleaned back to bright metal, ideally to Sa2½ as defined in BS 7079: Part A1/ISO 8501 (SSPC.SP10) using an angular grit to achieve a surface profile of 75-110 microns. For marine structures, ultra-high pressure jetting at circa 20,000psi is effective.

Where environmental constraints preclude blast cleaning, lower forms of preparation are acceptable providing all loose oxides are removed. Handheld power tools capable of achieving the necessary preparation can be used. Metal prepared in this way should be to minimum standard of St 3 as defined in BS 7079: Part A1/ISO 8501 (SSPC.SP3).

Arrises and welds should be ground to remove sharp edges.

Priming of Concrete

CEMPROTEC E942 does not generally require a primer. In addition to substrate saturation, floors or decks must be sealed with **CEMPROTEC EF PRIMER.** Other highly porous substrates may benefit from additional sealing with **CEMPROTEC EF PRIMER**.

Priming of Steel

CEMPROTEC E942 is self-priming and requires direct contact with steel to afford maximum corrosion protection.

Mixing

CEMPROTEC E942 is supplied as a two pack, Part A liquid and Part B powder. The two components must not be split. Mix all of Part A with all of Part B.

Shake Part A (liquid) and pour into a suitable mixing vessel. Slowly add the Part B (powder) and mix for a minimum of 5 minutes until homogenous, without any lumps. Mix with a

slow-speed drill and paddle designed to entrap as little air as possible.

- Note - These instructions must be adhered to as Flexcrete will not be responsible for failure due to incorrect mixing.

Placing

CEMPROTEC E942 is ideally suited to brush application, although spray techniques should be used in large areas. Care should be taken to ensure that air is not entrapped onto the surface.

Apply the first coat, approximately 1mm thick, onto the prepared substrate. To ensure total protection, a second coat should be applied in the same way, after waiting circa 60 minutes (depending on temperature) when the first coat is stable but not fully cured (maximum 7 days).

On floors or decks, apply in a single 2mm layer, spreading with a notched trowel, squeegee or skid leveller, and immediately use a spiked roller to remove entrapped air.

When using in a tidal zone, **CEMPROTEC E942** is ideally applied by airless spray equipment building up a single 2mm layer. Typically allow to cure for a minimum of 2 hours before being immersed.

Carefully check on completion for pinholes and misses and spot treat where necessary. The total finished coating must be at least 2mm thick to provide complete protection.

Detail Work

Over joints or live cracks in concrete, apply a 1mm stripe coat of **CEMPROTEC E942** by brush and immediately embed **CEMPROTEC 2000-S**.

On steel, apply a 1mm stripe coat of **CEMPROTEC E942** by brush to all welds, cut edges or fixings and immediately embed **CEMPROTEC EDGE SCRIM**.

Allow to stabilise before proceeding with the overall 2mm application.

Curing

Normal concreting procedures should be strictly adhered to. It is important that the surface of the mortar is protected from strong sunlight and drying winds with **CURE-SEAL WB**.

On floors or decks **CEMPROTEC EF GRIT** can be broadcast onto the surface of the wet coating to provide effective curing and leave an abrasion and slip-resistant finish. In exposed conditions, curing must commence immediately as work continues over adjacent areas.

Cleaning and Storage

- Clean all tools with water immediately after use.
- Materials can be stored for 12 months in dry, frost free conditions with unopened bags at 20°C.

Packaging

- **CEMPROTEC E942** is supplied in 30kg composite packs.

Yield and Coverage

- 16.2 litres per 30kg.
- 30kg covers 8.1m² at 2mm thickness.

Health and Safety

- Safety Data Sheets are available on request.

Application Top Tips

1. Regularly check coating thickness during application using a wet film thickness gauge.

2. Apply **CURE-SEAL WB** as an even, fine mist spray. Do not over apply or allow to pond on the surface as cracking may occur.

3. **CEMPROTEC E942** is not a decorative coating. It can be overcoated with Flexcrete membranes to give a coloured finish.

4. In cold, humid conditions, condensation may form on surfaces treated with **CEMPROTEC E942**, resulting in darkening of the finish and retardation of set.

5. If the **E942** is allowed to cure for more than 7 days before application of the second coat, then the surface must be thoroughly cleaned by high pressure water jetting before proceeding.

6. In a tidal zone, **CEMPROTEC E942** is ideally applied in a single 2mm layer. As a guide, allow **E942** to cure for a minimum of 2 hours before immersion. Protect from abrasion or aggressive tidal flow until set.

7. Cold Weather Working (See separate Guide)

- ≥3°C on a rising thermometer.
- ≥5°C on a falling thermometer.
- Do not use any Part A which has been frozen.

8. Hot Weather Working (See separate Guide)

- Store material in cool conditions to maximise working life.
- Shade applied material from strong sunlight.
- Spray a second mist coat of **CURE-SEAL WB**.
- If possible, avoid extreme temperatures by working at night.

Technical Data

Property	Standard	EN 1504-2 Requirement	Typical Result
Compressive Strength Development	EN 12190	≥ 50 MPa (Class II)	1 day 5-10 MPa 7 days 25-35 MPa 28 days 50-60 MPa
Adhesive Bond	EN 1542	≥ 2 MPa	3.3 MPa
Permeability to CO_2	EN 1062-6	R≥ 50m	R 359m 2mm = 900mm of typical concrete
Water Vapour Permeability (Equivalent Air Layer Thickness)	EN ISO 7783-2	Class 1: S_D ≤ 5m	S_D = 0.82m
Thermal Compatibility	EN13687-1	≥ 2 MPa	4 MPa
Water Permeability Coefficient Equivalent Concrete Thickness	Vinci Technology	-	8.13×10^{-17} m/sec 2mm = 2340mm of typical concrete
Resistance to Water Pressure	DIN 1048-1	-	10 bar resistance (100m hydrostatic head) positive or negative
Chloride Ion Diffusion Resistance	Vinci Technology		No steady state flux of chloride after 36 months on test.
Chloride Ion Permeability	ASTM C1202-M		<100 Coulombs - Negligible
Coefficient of Thermal Expansion	EN 1770	≤ $30 \times 10^{-6}K^{-1}$	$23.4 \times 10^{-6}K^{-1}$
Tensile Strength	BS 6319-7	-	4.9 MPa
Wear Resistance	EN 13813	-	Exceeds BCA AR0,5: Highest classification of wear resistance
Liquid Water Transmission Rate (Capillary Absorption and Permeability to Liquid water)	EN 1062-3	Class III (low) w< 0.1 kg/($m^2.h^{0.5}$)	w=0.04 kg/($m^2.h^{0.5}$)
Mixed Density		-	1850 kg/m^3
Mixed Colour		-	Grey
Application Thickness		-	2mm in 1 or 2 coats
Minimum Application Temp Maximum Application Temp		-	5ºC 35ºC
Working Life (approx.)		-	30 minutes at 20°C
Overcoat Time			30-90 minutes depending on temperature
Reaction to Fire	EN 13501-1	-	A2 – s1, d0

The properties given above are obtained from laboratory tests: results obtained from on-site testing may vary according to site conditions.

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