

Cemprotec E942

Cementitious Coating for Concrete and Steel

Product Overview

Two component, epoxy and polymer modified cementitious coating. CE-marked in accordance with BS EN 1504-2.

Uses

Waterproofing and protection of concrete where enhanced chemical and abrasion resistance are required. It increases the effective concrete cover to steel reinforcement in new construction and refurbishment. Also used as a stand-alone anti-corrosion coating for ferrous metals.

Advantages

- Unique blend of surfactants enables easy brush or spray application.
- Produces a smooth finish, which rapidly recovers to prevent sagging.
- Pre-packaged material only requiring mixing on-site.
- Excellent adhesion to concrete and other mineral substrates or 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.
- Hydrates to provide an alkaline environment which chemically reacts with the substrate to accelerate the passivation of steel and enhance the bond to concrete.
- Water-based, cures without the release of hazardous solvents.
- Equipment easily cleaned with water.

Description

CEMPROTEC E942 is a two component, 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 cures to form a dense, highly alkaline coating offering low permeability to water and very high diffusion resistance to chloride ions and oxygen, ensuring long-term protection.

Compliance

- CE-marked in accordance with BS EN 1504-2. Suitable for surface protection systems principles 1.3, 2.2, 5.1, 6.1,8.2 as defined in BS EN 1504-2.
- Compliant with LU Standard 1-085 'Fire Safety Performance of Materials'.

Specification Clause

The structural waterproofing coating shall be a two component, water based, epoxy and polymer modified cementitious coating, incorporating microsilica, fibre, epoxy and styrene acrylic copolymer technology. It shall be CE-marked in accordance with BS EN 1504-2, and shall be impermeable to water under 10 bar hydrostatic pressure such that a 2.0mm coating is equivalent to 6000mm of concrete.

CE
2797

Flexcrete Technologies Ltd
Tomlinson Road, Leyland PR25 2DY England
17
2797-CPD-530942

EN1504-2: Surface Protection Systems - Coating
Protection Against Ingress (PIC) Rigid Trafficked System

Compressive Strength	: Class II ≥ 50 MPa
Permeability to CO ₂	: Equiv. to 100mm of concrete
Permeability to Water Vapour	: Class I < 5m
Capillary Absorption	: Class III < 0.1 kg.m ⁻² .h ^{0.5}
Coefficient of Thermal Exp.	: $\leq 30 \times 10^{-6} K^{-1}$
Therm. Comp. EN 13687-1	: > 2.0 MPa
Adhesive Bond	: ≥ 2.0 MPa
Dangerous Substances	: Complies with 5.4
Reaction to Fire	: Euroclass A2-s1, d0



Technical Data

Property	Standard	BS EN 1504-2 Requirement	Typical Result
Compressive Strength	EN 12190	≥ 50 MPa (Class II)	28 days: 54.1 MPa
Compressive Strength Development @ 20°C	BS4551		1 day 5-10 MPa 7 days 30-40 MPa 28 days 50-60 MPa
Adhesive Bond	EN 1542	≥ 2.00 MPa	3.30 MPa
Permeability to CO ₂	EN 1062-6	R≥ 50m	2mm equivalent to 100mm of concrete
Water Vapour Permeability (Equivalent Air Layer Thickness)	BS EN ISO 7783-2	Class 1 S _D ≤ 5m	S _D = 1.29m
Thermal Compatibility	EN13687-1	≥ 2.00 MPa	3.24MPa
Water Permeability Coefficient Equivalent Concrete Thickness	Vinci Test		1.43 x 10 ⁻¹⁷ m/sec 2mm = 6000mm of concrete
Resistance to Water Pressure	DIN 1048		10 bar (100m hydrostatic head) positive and negative
Coefficient of Thermal Expansion	EN1770	≤ 30 x 10 ⁻⁶ K ⁻¹	23.4 x 10 ⁻⁶ K ⁻¹
Tensile Strength	BS 6319-7		4.93 MPa
Wear Resistance	EN13813		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 < 0.1kg.m ⁻² .h ^{-0.5}	w = 0.01 kg.m ⁻² .h ^{-0.5}
Application Thickness			2mm in 1 or 2 coats
Reaction to Fire	EN 13501-1	Euroclass	Euroclass A2 – s1, d0
Mixed Colour			Grey
Mixed Density			1850 kg/m ³
Minimum Application Temp Maximum Application Temp			5°C 35°C
Working Life (approx.)			30 minutes at 20°C
Overcoat Time			30-90 minutes depending on temperature

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

Application Instructions

Preparation

The areas to be treated must be free from all unsound material, i.e. dust, oil, grease, corrosion by-products and organic growth. Concrete should have a minimum strength of 20MPa and surfaces should be cleaned to remove release agents, curing compounds and surface laitance, preferably using wet grit or water blasting techniques or equivalent approved methods. Active water ingress should be arrested with **FASTFILL WP**.

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

The prepared substrate should be thoroughly soaked with clean water until uniformly saturated without any standing water. All floor and deck applications must additionally be primed with **CEMPROTEC EF PRIMER**.

Priming of Steel

CEMPROTEC E942 is self-priming and requires direct contact with the 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. All of Part A and all of Part B MUST be mixed.**

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. Mixing should be carried out using a slow-speed drill and paddle designed to entrap as little air as possible.

Please Note: These instructions must be strictly adhered to. Flexcrete cannot be held responsible for any product failures 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).

When treating structures in a tidal zone, **CEMPROTEC E942** is ideally applied by suitable spray equipment building up to a single 2mm layer and typically allowing to cure for 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

On steel, apply a 1mm stripe coat of **CEMPROTEC E942** by brush to all welds, cut edges and fixings, e.g. nuts and bolt heads. On welds and cut edges, embed **CEMPROTEC EDGE SCRIM**. Over joints or cracks in concrete, apply a 1mm stripe coat of **CEMPROTEC E942** by brush and immediately embed **CEMPROTEC 2000-S**. Allow to stabilise before proceeding. Please consult separate technical data sheet.

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 **FLEXCRETE CURING MEMBRANE WB** (see data sheet), polythene sheeting, damp hessian or similar. In floor and deck applications, curing **MUST** commence immediately as work progresses.

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 packaging at 20°C.

Packaging, Yield and Coverage

CEMPROTEC E942 is supplied in 30kg composite packs

Yield: 16.2 litres per 30kg pack.

On prepared substrates, a 30kg pack will cover approximately 8.1m² at 2mm thickness.

Limitations

Do not use **CEMPROTEC E942** when the temperature is below 5°C and falling. Do not use **CEMPROTEC E942** on waterproof concrete without referring to the Flexcrete Technical Department.

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 **CURING MEMBRANE 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 and may dry with a patchy appearance until uniformly weathered. 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 **CURING MEMBRANE WB**.
 - If possible, avoid extreme temperatures by working at night.

The information herein is correct to the best of our knowledge, but it does not necessarily refer to the particular requirements of the customer. If the customer has any particular requirements it should make them known in writing to Flexcrete Technologies Limited, and obtain further advice accordingly.

