Cementitious Coating 851

Waterproofing and Protection of Concrete

Product Overview

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

Uses

Internal and external structural waterproofing of concrete and other mineral substrates. Provides chloride protection on highway and coastal structures and enhances the durability of reinforced concrete by reinstating effective cover to achieve the specified design life. Suitable for surface protection systems principles 1.3, 2.2, 8.2 as defined in BS EN 1504 -2.

Advantages

- Incorporates the latest proven cement chemistry, microsilica, fibre and styrene acrylic copolymer technology.
- Pre-packaged material only requiring mixing on-site.
- Brush, trowel or spray applied normally in two coats. Floors and decks only require a single coat application.
- Excellent adhesion to sound prepared concrete.
- Dense matrix offers low permeability to water at 10 bar positive and negative pressure and very high diffusion resistance to a carbon dioxide gas and chloride ions.
- Provides the equivalent of 100mm of good quality concrete cover.
- Protects concrete in sulphate contaminated ground conditions.
- Non-toxic when cured and listed as authorised for use under Regulation 31 for use in the supply of drinking water.
- Easily overcoated with specialist membranes to provide further protection and aesthetic properties.

Description

CEMENTITIOUS COATING 851 is a two component, thixotropic, polymer modified, cementitious waterproofing coating. It cures to form a hard, durable, highly alkaline coating with a degree of elasticity which protects concrete and other mineral substrates from the effects of aggressive acid gases and chlorides and water ingress.

Compliance

- CE-marked in accordance with BS EN 1504-2. Suitable for surface protection systems principals 1.3, 2.2, 8.2 as defined in BS EN 1504-2.
- BBA Approved, Certificate No. 05/4276.
- Listed under Regulation 31 – England and Wales: Regulation 33 – Scotland: Regulation 30 - NI: for use with potable water.
- WRAS Approved for use with potable water.
- Compliant with LU Standard 1-085 'Fire Safety Performance of Materials'.

Specification Clause

The structural waterproofing coating shall be a two component, thixotropic, polymer modified cementitious coating. It shall be CE-marked in accordance with BS EN 1504-2, Protection against Ingress and shall comply with the following performance specification:

- Impermeable to water under 10 bar hydrostatic pressure such that a 2.0mm coating is equivalent to 1000mm of concrete.
- Carbon dioxide gas diffusion resistance coefficient of at least 2,600,000 in accordance with the Taywood Test, such that the equivalent air layer thickness at 2.0mm coating is 5,200m.
- Chloride Ion Diffusion resistance with at least 31 years testing without steady state flux of chlorides.

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EN1504-2: Surface Protection Systems - Coating
Protection against Ingress (PIC) Rigid trafficked system

Compressive Strength	:	Class I ≥ 35 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.	:	≤ 30 x $10^{-6}K^{-1}$
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
Chloride Ion Diffusion (UK)	:	Steady state not reached after 31 years on test

Technical Data / Mechanical Characteristics

Property	Standard	BS EN 1504-2 Requirement	Result
Compressive Strength	EN 12190	≥ 35 MPa (Class 1) Traffic with Polyamide wheels	28 days: 40.0MPa
Compressive Strength Development @20°C	BS4551		1 day 10.5MPa 7 days 25.0MPa 28 days 40.0MPa
Adhesive Bond	EN 1542	≥ 2.00 MPa	2.07MPa
Chloride Ion Diffusion Resistance	Vinci Technology		No steady state of flux reached after 31 years on test
Permeability to CO_2	EN 1062-6	R≥ 50m	2mm equivalent to 100mm of concrete
Permeability to Water Vapour	BS EN ISO7783-2	Class 1: S_D ≤ 5m	S_D = 0.91m
Thermal Compatibility	EN13687-1	≥ 2.00 MPa	3.5MPa
Water Permeability Coefficient Equivalent Concrete Thickness	Vinci Technology		6.00 x 10^{-16}m/sec 2mm = 1000mm of concrete
Resistance to Water Pressure	DIN 1048		10 bar (100m hydrostatic head) positive and negative)
Coefficient of Thermal Expansion	EN1770	≤ 30 x $10^{-6}K^{-1}$	16.6 x $10^{-6}K^{-1}$
Tensile Strength	BS 6319:7		2.66 MPa
Wear Resistance	EN13813		Exceeds BCA AR0,5: Highest classification of wear resistance.
Liquid Water Transmission Rate (Capillary Absorption and Permeability to Liquid water)	EN1062-3	Class III (low) w<0.1kg.m^{-2}.$h^{0.5}$	w = 0.018kg.m^{-2}.$h^{-0.5}$
Reaction to Fire	EN 13501-1	Euroclass	Euroclass A2 – s1, d0
Mixed Colour			Concrete Grey and White
Mixed Density			1950 kg/m³
Application Thickness			2mm in 1 or 2 coats
Drying Time			30 minutes at 20ºC
Minimum Application Temp Maximum Application Temp			5ºC See Hot Weather Working Guide
Working Life (approx.)			30 minutes at 20ºC

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, dust, oil, grease, corrosion by-products and organic growth.

Smooth surfaces should be roughened, all loose material and surface laitance removed and reinforcement cleaned to bright steel using wet grit blasting techniques or equivalent approved methods.

The strength of the concrete sub-base should be a minimum of 20MPa.

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

Priming of Concrete

Highly porous substrates may require sealing with **CEMPROTEC EF PRIMER.** All floor and deck applications must be primed with **CEMPROTEC EF PRIMER.** In drinking water applications, use **POLYMER ADMIXTURE 850** diluted with clean water (See separate Data Sheets for further information).

Mixing

CEMENTITIOUS COATING 851 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: It is vital to the success of the application that these instructions are strictly adhered to. Flexcrete cannot be held responsible for any product failures due to incorrect mixing.

Placing

CEMENTITIOUS COATING 851 is applied using brush, trowel or spray techniques. Care should be taken to ensure that air is not entrapped onto the surface.

For vertical and overhead applications, apply in 2 x 1mm thick coats, applying the second coat when the first coat is stable but not fully set (typically 30-60 minutes depending on temperature). On horizontal applications (floors, decks, etc.) apply in a single 2mm thick layer, spreading with a notched trowel, squeegee or skid leveller, and immediately use a spiked roller to remove entrapped air.

Detail Work

Where movement is anticipated around details and over joints, large cracks, etc. apply a 1mm thick stripe coat of **CEMENTITIOUS COATING 851** by brush and immediately embed **CEMPROTEC 2000-S** tape. Allow to stabilise before proceeding with the main application.

Curing

Normal concreting procedures should be strictly adhered to. It is important that the surface of the coating is protected from strong sunlight and drying winds with **CURING MEMBRANE WB,** polythene sheeting or similar. In floor and deck applications **CEMPROTEC EF GRIT** can be broadcast onto the surface of the wet coating to provide effective curing, whist also providing an abrasion and slip-resistant finish. Curing **MUST** commence within 10-15 minutes of the completed application of the coating.

Important Notes

1. **CEMENTITIOUS COATING 851** is not a decorative finish and may temporarily discolour until uniformly weathered. Can be overcoated with Flexcrete membranes to give a coloured finish.

2. When treating structures in a tidal zone, the **CEMENTITIOUS COATING 851** must be allowed to cure for a minimum of 2 hours before being immersed. Protect from abrasion or aggressive tidal flow if necessary.

3. When treating potable water structures please refer to the IFU Document (contact Technical Dept).

Cleaning and Storage

All tools should be cleaned with water immediately after use**.** Materials can be stored for 12 months in dry, frost free conditions with unopened bags at 20°C.

Packaging

CEMENTITIOUS COATING 851 is supplied in a 30kg composite pack.

Coverage and Yield

15.4 litres per 30kg pack.

A 30kg pack will cover approximately 7.7m² at 2mm thickness.

Health and Safety

Safety Data Sheets are available on request.

Application Top Tips

1. Regularly check the coating thickness during application using the wet film thickness gauge available from Flexcrete.

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

3. **CEMENTITIOUS COATING 851** is not a decorative coating and may dry with a patchy appearance until uniformly weathered. It can be overcoated with Flexcrete membranes to give a coloured finish.

4. When broadcasting **CEMPROTEC EF GRIT** use techniques so that the particles are thrown upwards and fall evenly without disrupting the smooth surface of the coating. Use a grit blower on larger areas.

5. In cold, humid conditions condensation may form on surfaces treated with **CEMENTITIOUS COATING 851,** resulting in darkening of the finish and retardation of set.

6. Please consult our Technical Department when waterproofing underneath road asphalt.

7. Seal sanded surfaces with **CEMPROTEC SANDSEAL WB**.

8. In tidal zones, **CEMENTITIOUS COATING 851** must be allowed to cure for a minimum of 2 hours before immersion. Protect from abrasion or aggressive tidal flow.

9. Cold Weather Working (See separate Guide): minimum application temperatures:

- ≥3ºC on a rising thermometer.
- ≥5ºC on a falling thermometer.
- Do not use any Part A which has been frozen.
- **When applying to potable water structures the minimum application temperature is 7°C: see IFU document for full information.**

10. Hot Weather Working (See separate Guide)

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