



Nitocote CM210

Elastomeric cementitious waterproof coating

Uses

Nitocote CM210 is an cementitious coating, used for waterproofing water retaining structures and water excluding structures.

Nitocote CM210 provides an elastomeric waterproof coating suitable for use in portable water tanks, reservoirs, canals and culverts.

The materials can be used on concrete, brick and blockwork substrates and exhibits good crack accommodation capabilities even after long term water immersion. This is a condition a number of cementitious coatings cannot satisfy. Nitocote CM210 has been developed to readily accommodate the maximum permissible crack widths recommended in BS8007:1987 the British Standard Code of Practice for the design of concrete structures for retaining aqueous liquids.

Advantages

- Approved by - Drinking Water Inspectorate (DW)
- Withstands high positive and negative hydrostatic pressures
- Excellent crack accommodation after immersion
- Excellent bond to concrete and masonry
- Long working life
- Easy application by brush, roller, trowel or spray
- Bonds to green or damp concrete
- Effective barrier to sulphates and chlorides

Standard compliance

BS 6920:1990 Effect on Water Quality.

Water Byelaws Scheme approved.

DIN 1048: Water Penetration Test.

Fire Test to BS476:1987 Part 6 and 7.

DWI Regulations 25(1)(a) approved.

Description

Nitocote CM210 two-component polymer modified cementitious coating is supplied in a pre-packaged form. The product has been designed to be easily mixed on-site using a slow speed drill and paddle and then applied to the substrate using a brush, roller or trowel or by spray application. Nitocote CM210, available in grey and white, cures to form an elastomeric impermeable membrane.

Technical Support

Fosroc offers a comprehensive range of high performance, high quality repair, maintenance and construction products.

In addition, Fosroc offers a technical support package to specifiers, end users and contractors, as well as on-site technical assistance in locations all over the world.

Typical Properties

Typical properties of mixed material

Pot life at 20°C	1 hour
Colour	Grey or White
Mixed Density	1850 kg/m ³
Minimum application Temperature	5°C

Properties of cured coating (21 days cure at 23°C followed by 28 days immersion at 23°C).

The values obtained are for Nitocote CM210 when applied in two coats each 1mm wet film thickness:

Resistance to positive

Water pressure (DIN 1048): 7 bar (70m head of water)

Resistance to negative

Water pressure (DIN 1048): 3 bar (30m head of water)

Static crack accommodation: > 1.0 mm

Dynamic crack accommodation

Capability 0 - 300 - 0 microns

Cycling after 28 days immersion

(University of Surrey method) -

15°C 6000 cycles (no failure)

0°C 6000 cycles (no failure)

- 12°C 6000 cycles (no failure)

Note: Nitocote CM210 will bridge an existing crack up to 0.3mm wide and still withstand a positive water pressure of 7 bar.

Abrasion resistance: Water Indes 1 (ASTM 4060)
Equivalent to 40 N/mm³ Concrete

Chlorideion diffusion

Resistance (Taywood method): No penetration after 12 monthss continuous Testing

CO₂ diffusion resistance (Taywood method)

After 5000 hours QUV+: > 50 m

+ Note QUV test required coating to be exposed to 4 hours condensation at 50°C followed by 4 hours ultraviolet light at 50°C. Total exposure time was 5000 hours.



Nitocote CM210

Specification clauses

The waterproofing coating shall be Nitocote CM210, an elastomeric cementitious coating approved under the U K Water Byelaws Scheme (WRc Listed). The cured coating, after immersion, shall be capable of withstanding cracked substrate cyclic movement from 0 - 300 - 0 microns at 15°C for 6000 cycles without failure. It shall have the capability to resist a positive water pressure of 7 bar and a negative water pressure of 3 bar when tested to DIN 1048.

Application instructions

Surface preparation

All surfaces which are to receive the coating must be free from oil, grease, wax, dirt or any other form of foreign matter that might affect adhesion. Typically, concrete surfaces can be cleared using a high pressure water jet. Poor quality, friable, or contaminated concrete may require grit-blasting.

Spalled surfaces or those containing large blowholes and other such defects should be repaired using Nitocote CM210 or a Fosroc approved repair mortar. Care must be taken when choosing the repair mortar to ensure that it has all necessary approvals for contact with potable water.

If the surface contains small blowholes, typically less than 1mm wide, the coating can be applied directly on to the substrate without the need for a treatment.

Crack which are less than 0.3mm in width can be overcoated as long as the crack is not likely to open up to greater than 0.3mm (this is greater than the maximum permissible crack widths recommended in BS 8007:1987, the British Standard Code of Practice for the design of concrete structures for retaining aqueous liquids).

Crack which are greater than 0.3mm in width should be chased-out to 4mm in width and approximately 15mm in depth. This should be filled with Nitocote CM210 (applied using a Fosroc "G" Gun). When the material in the crack has hardened the coating should be applied over the crack.

Mixing

The liquid component (5kg) should be poured into a plastic or metal drum having a volume of at least 25 litres. This should be placed onto a plastic sheet to avoid contamination. The powder component (18kg) is gradually added to the liquid whilst mixing with a Conbextra Mixing Paddle or other approved spiral paddle attachment on a variable speed drill. Mixing is continued, constantly moving the paddle around the drum, until a lump-free slurry is obtained. This should take a minimum of 3 minutes and a maximum of 5 minutes.

Note: The preferred drill speed is between 280 and 640 rpm.

Mixing Warning

Nitocote CM210 may exhibit satisfactory handling characteristics even though inadequately mixed. This will

result in a significantly lower level of performance or possible failure. It is therefore essential that mixing instructions are strictly adhered to with particular emphasis on the time of mixing operation.

Pre-wetting of substrate

Thoroughly dampen the substrate surface with water using a brush, roller or spray bottle. High porosity substrates will require more dampening than dense substrates. Do not apply the coating when the substrate is wet, but allow the water to soak in until the substrate is just visibly damp before proceeding.

Any excess water should be removed using a sponge. Any running water should be stopped with a suitably approved plugging mortar such as Renderoc Plug. Contact Fosroc office for further advice on suitable materials.

General

For optimum use of the product, Nitocote CM210 white should be applied as the first coat, with Nitocote CM210 grey as the second coat. This gives a visual indication of coverage.

The first coat should be applied at a wet film thickness of 1 mm (coverage per coat is 1.8 kg/m² or 1 litre/m²). To ensure the correct thickness is achieved, measure out an area (for example 200 m²), then calculate how much material will be needed to cover this area. Monitor the coating thickness during application at regular intervals using wet film gauge.

Care must be taken to attempt to fill all imperfections such as blowholes during application. If not they can be filled while the coating is still fluid by using a dry sponge. If the coating has dried before these imperfections are found they can be filled using fresh material.

All the mixed material should be used within 1 hour of mixing.

Allow first coat to cure for a minimum of 4 hours at 20°C/50% RH and longer at lower temperatures or higher humidities. The exact drying time will depend on surface temperature, relative humidity and air movement. High temperatures and/or low humidity will reduce the drying time. This can vary from 1 to 16 hours. The maximum ambient temperature for application is 40°C.

The first coat should be left to dry until firm and unmarkable to the touch. There is no maximum time between coats, however the surface may need cleaning with water prior to application of the second coat to remove potential contamination.

The second coat should also be applied at a wet film thickness of 1 mm. Pre-dampening of the surface is not necessary when applying the second coat.

No curing membrane is necessary, however the freshly applied coating should be protected from rain and strong wind

or until firm to the touch to prevent damage to the wet coating.



Nitocote CM210

Brush application

The most suitable type of brush is a soft bristled wallpaper paste brush (120 to 220 mm wide). Where larger areas are to be applied it is advisable to use a brush with a handle. Load the brush up well and spread the material to the required thickness. If the brush begins to drag during application, do not add water to the material but dampen the surface again. Finish in one direction for a neat appearance. For floor application, a soft bristled broom is recommended. Pour the material on to the substrate and then spread to the required thickness.

Roller application

Application by roller has the benefit of speed over brush application, particularly on smooth substrates. A good quality

medium hair roller is recommended. The roller should be well loaded for ease of application. A heavy roller pattern will be left, therefore it is important to use a finishing tool to produce a smooth coating, with a uniform 1 mm wet film thickness.

Trowel application

Application with a steel plastering trowel also has the benefit of speed over brush application, as well as producing a superior finish. It is recommended that a scratch coat of Nitocote CM210 be applied prior to the first coating to fill blowholes, which should be allowed to cure for the equivalent of 2 hours at 20°C.

Finishing tools

A finishing tool may be required to produce a smooth finish or to repair film defects. Examples of suitable tools include a steel plastering trowel, a caulking tool and a hard sponge. All

of these must be used immediately after coating application, otherwise the coating may drag or tear. When using a hard sponge it should be dry or very slightly damp. A wet sponge should not be used as this will cause polymer to come to the surface of the coating which causes an unsightly white streaky effect.

Spray application

Spray application should be carried out using the Nitocote CM210 Application Unit Model E4 (consult separate data sheet and instructions for use) or other recommended unit. This is the preferred method for applications over 150 m². In smaller tanks with restricted access it may be beneficial to spray. This means the material will be pumped into the restricted area rather than having to be physically carried.

Mixing should be carried out as previously described, and particular care should be taken to ensure that no lumps remain in the mix. The mixing container should be placed on plastic sheeting to stop gravel and stones from contaminating the mix. Material should be scraped off the mixing bucket above the wet line after every mix. The paddle should also be cleaned at this stage. All of these precautions are important to stop dried material or gravel from causing blockages in the pump.

Pour the material into the hopper. Scrape the sides of the hopper down regularly to stop material from hardening and then dropping into the mix. Place a cover over the hopper to prevent product skinning caused by water loss.

The mixed material is pumped through the hose to the spray gun. Substrate preparation and coverage rates described above should be adhered to. Wet film thickness should be measured using a wet film thickness gauge every 2 to 3 metres initially until the sprayer has judged the ideal application speed and distance from the wall. Any areas less than 1 mm thick should be sprayed over again. For the rest of the application, thickness measurements should be carried out every 10m².

Sealed joints

Sealant joints should be filled with a suitable joint sealant before application of Nitocote CM210. If potable water contact is expected, the sealant should be approved. Contact Fosroc for recommendations.

Apply debonding tape over the sealant. After application of the Nitocote CM210 remove the tape and overlying CM210 coating.

Curing

For contracts not requiring UK potable water approvals, allow a minimum cure time of equivalent to 7 days at 7°C (3 days at 20°C and above). This is to ensure that the full physical properties are developed.

UK potable water approvals

In the case of contracts requiring DWI and Water Byelaws Scheme certification, Nitocote CM210 white should be applied as the first coat followed by a second coat of Nitocote CM210 grey. The product must be allowed to cure for a minimum of 7 days at 7°C or greater.

Tanks with a surface area less than 250m² should be flushed with water prior to filling.

The tank should be disinfected in accordance with local regulations before reconnection to the public water supply.

Limitations

Nitocote CM210 should not be used when the temperature is below 5°C. The product should not be exposed to rainfall or moving water during application or within 4 hours at 20°C. The maximum ambient temperature for application is 40°C.

Nitocote CM210 should not be used on external surfaces where an aesthetic appearance is critical because differences in environmental conditions during cure may cause colour differences in the final surface. If any doubts arise concerning temperature or substrate conditions, consult the local Fosroc office.



Nitocote CM210

Estimating

Supply

Powder component (grey or white):	18 kg bag
Liquid polymer component:	5 kg plastic container

Coverage

Coverage rate at 1mm wet film thickness:	12.7m ² /23 kg
---	---------------------------

The coverage figure given is theoretical - due to wastage factors and the variety and nature of possible substrates, practical coverage of 3.6 kg/m² applied in not less than two coats is recommended.

Note: In accordance with Commercial or Health & Safety requirements packaging detail may alter. Please contact your local Fosroc office for detail.

Storage

Shelf life - 6 months in unopened packs. The liquid component must not be allowed to freeze.

Precautions

Health and safety

Nitocote CM210 powder is irritating to eyes, respiratory system and skin. Avoid inhalation of dust and wear suitable respiratory protective equipment.

Nitocote CM210 liquid is not classified as dangerous. Nitocote CM210 when mixed becomes highly alkaline. Wear suitable protective clothing, gloves and eye protection.

For components and mixed material avoid contact with skin and eyes. In case of contact with eyes or skin rinse immediately with plenty of water and seek medical advice. For further information see relevant Material Safety Data Sheet.

Cleaning and disposal

Immediately after application is completed, clean all tools and equipment with clean water. Hardened material can be removed by mechanical means and by use of suitable solvent.

Waste material should be allowed to harden overnight then disposed of as nonhazardous waste.

Nitocote is the trademark of Fosroc International Limited.



Important note

Fosroc products are guaranteed against defective materials and manufacture and are sold subject to its standard Conditions for the Supply of Goods and Services, copies of which may be obtained on request. Whilst Fosroc endeavours to ensure that any advice, recommendation, specification of information it may give is accurate and correct, it cannot, because it has no direct or continuous control over where or how its products are applied, accept any liability either directly or indirectly arising from the use of its products, whether or not in accordance with any advice, specification, recommendation of information given by it.