HydroCoat 104 Super

Crystalline Waterproofing

Revision: 3.8 - 22nd March 2023
Code: 104

INTRODUCTION

Newton HydroCoat 104 Super is applied to the surface of concrete to provide in-depth protection against moisture movement through the capillaries and hairline cracks in the concrete. It consists of Portland cement, specially treated quartz sand and a compound of active chemicals. HydroCoat 104 Super is supplied as a powder and is either sprinkled onto fresh concrete or is mixed with water as a carrier and brush applied as a slurry for application to fully cured or older concrete or vertical surfaces.

The active chemicals within HydroCoat 104 Super combine with the free lime and moisture present within the capillaries to form insoluble crystalline complexes which effectively block the capillaries and any minor shrinkage cracks to prevent any further movement of moisture to provide a totally dry surface to the concrete.

Large areas can be quickly treated with HydroCoat 104 Super. The speed of application and the low material application rate (1 kg/m²) makes HydroCoat 104 Super a very low cost option for a large number of scenarios.

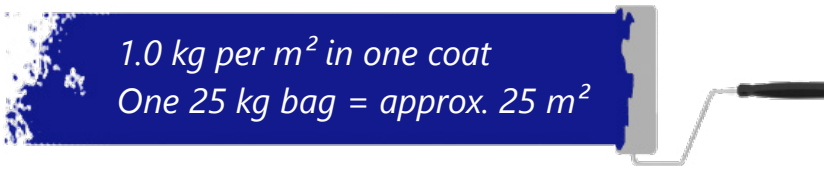
Because HydroCoat 104 Super penetrates deep into the concrete, it does not leave a physical membrane to the surface of the concrete element and so is completely unaffected by loadings imposed by further elements of the build. New concrete elements are placed 'concrete to concrete' with no potential for slip or separation as is the case with physical membranes. This makes HydroCoat 104 Super particularly useful as a means of isolating moisture within pile caps, ring beams and kicker joints to internal walls.

APPLICATION

PACKAGING

Single-component

COVERAGE



CLEANING

Clean all tools and equipment with water after use.

SUITABLE SUBSTRATE

Concrete with reinforcement to BS EN 1992 (Eurocode 2) with crack mitigation to 0.3mm.

PACKAGING

HydroCoat 104 Super is supplied in 25 kg bags.

TOOLS REQUIRED

A paddle mixer is required if applied as a slurry.

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Opening Hours:
Monday to Thursday 8:00am - 5:30pm
Friday 8:00am - 5:00pm

HydroCoat 104 Super

Crystalline Waterproofing

TECHNICAL DATA

Features	Result	Units
Form – Single Component	Powder	
Colour	Grey	
Density	1.25	
Pack size	25	kg
Shelf life	12	Months
Application rate	1	kg/m^2
Pot life @ 20ºC & RH of 40%	N/A	
Application temperature	+5 to +35	ºC
Service temperature	-15 to +180	ºC
Odour	None	
VOC content	0	%

Curing*	5°C	10°C	15°C	20°C	25°C	Units
To not be adulterated by rain	3	3	3	3	3	Hours
Ready for temporary traffic/protection boards	3	3	3	3	3	Hours
Initial set	6	4	2	1	*45	Hours/*Minutes
Fully cured	28	28	28	28	28	Days

Cured Performance	Result	Units	Test Method
Colour	Grey		
Membrane thickness	N/A		
Adhesion to concrete	> 0.8	MPa	BS EN 1542
Tensile adhesion	0.7	MPa	BS EN 1015-12
Elongation	3 to 5	%	Manufacturer test
Loading capability	As concrete applied to	MPa	BS 4551
Water permeability	< 5.0 x 10-13		BTD/TP/02/2002
Water penetration	< 20	mm	DIN 1048: Part 5:1991
Fire testing – non-combustibility	Non-combustable		BS 476-4

All technical data stated herein is based on test results carried out under laboratory conditions

NOTE: HydroCoat 104 Super is not a decorative material. When applied as a slurry, the slurry residue remains on the surface of the concrete and can be unsightly. Where applied as a dry powder to green concrete and trowelled or power floated, uneven colouring or blotching may be apparent once the concrete is cured. If a decorative finish is required, other products should be considered. Please speak with Newton Waterproofing for further advice.

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COVERAGE

HydroCoat 104 Super is applied in one coat at a coverage rate of 1.0 kg per m^2. One 25 kg bag of HydroCoat 104 Super will treat approximately 25 m^2.

STORAGE

HydroCoat 104 Super should be stored at room temperature (min 10°C and max 38°C), kept dry and out of direct sunlight. If these conditions are maintained and the product packaging is unopened, then a shelf-life of 12 months can be expected.

HEALTH & SAFETY

HydroCoat 104 Super should only be used as directed. We always recommend that the Safety Data Sheet (SDS) is carefully read prior to application of the material. Our recommendations for protective equipment should be strictly adhered to for your personal protection. The SDS is available upon request from Newton Waterproofing Systems or online via our website.

LIMITATIONS

Do not apply below 5ºC.

KEY BENEFITS

- Ease of application - sprinkled onto new concrete and applied as a simple slurry to vertical and cured concrete
- Permeates deep into the concrete to form a barrier against moisture that cannot be damaged or punctured
- Loading capabilities only limited by the strength of the concrete
- No physical membrane - subsequent concrete placement is 'concrete to concrete'
- Concrete treated with HydroCoat 104 Super remains vapour permeable, allowing the structure to 'breathe'
- Easy to detail and specify as the concrete surface becomes the membrane
- Very cost effective alternative to conventional physical membranes
- Sealing of cracks up to 0.3mm resulting in dry concrete with less reinforcing steel requirement

ASSOCIATED PRODUCTS

HydroCoat 313-WP: For sealing of leaks prior to application of HydroCoat 104 Super.

HydroCoat 203-RM: Rapid setting mortar for the repair of spalled or honeycombed concrete and surface cracks prior to the application of HydroCoat 104 Super. Can be used for the rapid creation of angle fillets.

POST-APPLICATION CURING

HydroCoat 104 Super requires controlled curing. Once the HydroCoat 104 Super begins to cure, moisten with a fine fog spray of water 2-3 times a day for three days. In hot or windy conditions water spray should be applied more frequently.

APPLICATION - DRY POWDER

The application of HydroCoat 104 Super must take place prior to initial set of the concrete.

- Sieve the powder evenly onto the green concrete at 1 kg/m^2
- Trowel or power float into the surface of the concrete, again prior to initial set

PROPERTIES

Concrete is a porous material with a micro structure of capillaries and fine cracks. The amount of reinforcement steel used within the concrete will control the size of the cracks by controlling the degree of shrinkage in the curing concrete. Formerly BS 8007, BS 8110, and EN 1992 Eurocode 2 gives guidance as to the amount of steel required to control crack widths. Concrete for basements and other earth retained structures should have sufficient steel included to control crack widths to no more than 0.3 mm. Further steel can be included to control cracks to 0.1 mm and 0.2 mm.

Concrete to EN 1992 Eurocode 2 is resistant to water pressure and is considered to be waterproof in that physical water, identifiable as water that can form a surface tension, cannot pass through the body of the concrete itself. Water will pass through joints between sections of placed concrete, and these joints should be waterproofed with a Newton HydroTank waterbar.

The cracks and the capillaries do however allow for the movement of moisture by capillary action, resulting in damp concrete. Where further placements of concrete take place, moisture will move from the damp concrete element unless a barrier to the movement of moisture is included. Conventional damp proof courses (DPC) can not be used in most cases due to the loading of the new building element being too high for the physical DPC to deal with. A conventional DPC can also create a 'slip joint' where the two elements, instead of binding to each other, are separated by a physical membrane.

HydroCoat 104 Super will seal the capillaries within concrete as well as cracks to 0.3 mm, producing a fully sealed, dry concrete, that will prevent the movement of moisture to other building elements and internal finishes.

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CONSTRUCTION

The construction should conform with current Building Regulations, British Standards and relevant Codes of Practice. Concrete should be designed by a Structural Engineer to EN 1992 - Eurocode 2 and have a surface finish to Class of finish U3 as documented in 'General Specification for Civil Engineering Works' section 14: 'Formwork and Finishes to Concrete', namely a 'Uniform, dense and smooth surface' with float marks of no more than 3 mm. A U5 power floated finish with no float marks is also suitable but not required. U1 (Abrupt irregularities permitted) or U2 (Tamp marks of up to 10mm) finishes are not suitable and should be avoided.

TRAINING & COMPETENCY OF USER

HydroCoat 104 Super should be used by those with an understanding of the requirement to waterproof retained structures and the knowledge and training to use the product as part of a coordinated approach to the waterproofing of the structure, which in most cases will require further waterproofing products so as to achieve the required habitable grade as defined by BS 8102:2022.

SPECIFICATION

Newton Waterproofing Systems work in partnership with RIBA NBS who publish our products on NBS Source. The platform integrates seamlessly into project workflows, providing all product data from Newton's NBS BIM Objects, NBS Plus Clauses and RIBA Product Selector into one single source of product information.

NBS Source also hosts a large selection of Newton case studies, as well as product literature and certifications.

A wide range of drawings are available on our website.

SURFACE PREPARATION

All concrete to be treated with HydroCoat 104 Super must be clean and have an open capillary system. Remove laitance, loose material, dust, dirt, oil, grease, general grime and contaminants by jet washing, grit blasting or scabbling.

Where there is evidence of fungus or mould growth, a suitable fungicide should be used prior to application.

Spalled concrete should be removed back to good concrete, treated with HydroCoat 104 Super and filled flush with HydroCoat 203-RM. If the reinforcing steel is exposed, abrade back to clean steel and coat with two coats of HydroCoat 103 2K to prevent the steel from further corrosion.

Honeycombed concrete should be removed back to good concrete, treated with HydroCoat 104 Super and filled flush with HydroCoat 203-RM. If the reinforcing steel is exposed, abrade back to the clean steel and coat with two coats of HydroCoat 103 2K to prevent the steel from further corrosion.

Holes and indentations in the concrete should be cut out with a dovetail cutter/router to a depth of at least 20mm. Treat with HydroCoat 104 Super and fill flush with HydroCoat 203-RM.

Cracks over 0.3mm should be cut out with a dovetail cutter/router to a depth of at least 20mm. Treat with HydroCoat 104 Super and fill flush with HydroCoat 203-RM. Cracks up to 0.3mm will be sealed by the HydroCoat 104 Super.

Leaking non-structural cracks should be cut out with a dovetail cutter/router to a depth of at least 20mm. Treat with HydroCoat 104 Super and plug with HydroCoat 313-WP. Structural cracks should be repaired by specialists.

Where practical, cover the application with moist hessian and plastic sheeting during the 3-day curing period.

During the curing period the surface of the concrete treated with HydroCoat 104 Super must be protected from frost, rain and standing water.
Where the treated concrete is to support a poured concrete structural element such as a supporting wall and the HydroCoat 104 Super was applied as a slurry and has fully cured, the slurry residue must be removed by jet washing, sand blasting or scabbling to ensure a clean interface for the subsequent concrete placement.

APPLICATION METHODS

HydroCoat 104 Super seals concrete by being absorbed approximately 40mm into the surface via the capillaries and hairline cracks. Moisture is required for this to occur.

Green concrete

The moisture still resident in the concrete acts as the carrier, allowing the active chemicals to be fully absorbed. HydroCoat 104 Super can be applied as a powder prior to the initial set of the concrete (when you walk on the concrete you leave an imprint of approximately 10mm).

Concrete cured past initial set

If the concrete is no longer green and cured beyond the initial set, HydroCoat 104 Super is mixed with water to create a slurry to allow the absorption into the concrete to take place.

APPLICATION - SLURRY

The concrete surface should be dampened to nearly saturation point but not wet with standing water prior to application of HydroCoat 104 Super.

- Create the slurry by pouring water into a clean mixing vessel then slowly add the HydroCoat 104 Super whilst slowly mixing with a mixing paddle until a consistency of thick paint is obtained. Approximately 9-10 litres of water is required per 25kg bag of HydroCoat 104 Super. Mixing ratio is 5 parts product to 2 parts water by volume
- Apply the slurry in one coat at a dry powder weight of 1kg/m^2 with a masonry brush

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TYPICAL APPLICATIONS

Pile caps and ring beams:

Pile caps and ring beams often support ground floor slabs and structural walls which are bearing with too much force for conventional membranes to deal with. Because HydroCoat 104 Super is fully absorbed into the surface of the concrete an indestructible isolating membrane is formed that prevents moisture from the pile cap or ring beam from transferring to the floor slab or structural wall; and does so without creating a potential slip surface between the two building elements.

Support plinths

Where a steel or concrete column is to be supported from a plinth, conventional membranes are often not suitable due to the point loading transmitted through the column. HydroCoat 104 Super will seal deep into the surface of the concrete to produce a membrane unaffected by the loading of the column.

Sealing of concrete surfaces

HydroCoat 104 Super will provide a dry surface to walls, rafts and slabs to car parks, garages and plant rooms, where a physical membrane is not suitable because of potential damage or where a physical membrane requires covering with a finish that is not required for the intended end use of the space.

Isolation of internal walls from moisture in the kicker joint:

HydroCoat 104 Super is the ideal product to prevent the migration of moisture to internal RC walls from kicker joints formed internally to the ground bearing raft. Once applied and correctly cured, HydroCoat 104 Super forms a barrier to moisture within the surface of the kicker that cannot be damaged by the loading of the structural wall and one that provides a clean concrete to concrete interface of the two building elements so that slippage is not a concern.

Isolation of internal walls from moisture at the abutment with earth retained walls:

HydroCoat 104 Super creates a simple to apply barrier to prevent the migration of moisture to internal walls at the interface with the retained concrete walls. HydroCoat 104 Super can be easily applied around reinforcing steel and dowel bars[1)] to provide a continuous barrier to moisture that cannot be damaged by placement of the internal concrete wall.

CE 16	JN NEWTON WATERPROOFING	Newton Waterproofing Systems Newton House 17-19 Sovereign Way Tonbridge Kent TN9 1RH	104 BS EN 1504-3:2005 class R1 0749 Non-Structural Repair

Essential Characteristics	Declared Performance	Harmonised Technical Standard
Compressive strength	Class R1	BS EN 1504-3:2005
Chloride ion content	≥0.05%	
Adhesive bond	≥ 0.5 MPa (cohesive failure)	
Impeded contraction/expansion	NPD	
Resistance to carbonation	NPD	
Modulus of elasticity	NPD	
Thermal compatibility	NPD	
Skid resistance	NPD	
Coefficient of thermal expansion	NPD	
Capillary absorption	NPD	
Reaction to fire	Euroclass B - s1, d0	
Hazardous substances	> 2500µm (Class A5)	

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