HydroBond 403 GB

External Waterproofing Membrane & Gas Barrier

Revision: 7.5 - 29th April 2025
Code: HBGB

INTRODUCTION

Newton HydroBond 403 GB® is a high-performance, self-healing, composite sheet membrane with exceptional waterproofing capabilities, that also provides ground gas resistance (in compliance with BS 8485:2015+A1:2019). When fitted above the raft support or to building line formwork, the membrane locking fleece is encapsulated into the newly placed concrete, becoming fully-engaged to prevent water tracking. If the waterproof LDPE layer is punctured, the exposed hydrophilic coating expands, preventing water ingress and effectively sealing small holes that may be accidentally formed during fixing of the reinforcing steel or the placing and compaction of the concrete.

Newton HydroBond 403 GB is a component of the HydroBond® System that also includes post-applied waterproofing membranes, protection and drainage boards that provide a complete waterproof envelope to the structure to achieve Type A (barrier) waterproofing suitable for Grades 1, 2 and 3 as defined by BS 8102:2022. The HydroBond System is suitable for all below-ground and earth-retained structures from domestic basements to the largest civil engineering projects.

The Newton HydroBond System can be used alongside other Newton products and systems to provide a co-ordinated and combined approach to the waterproofing of the whole structure that includes protection against water ingress to the deck, through construction joints, through and around service entries, and to movement joints.

Correctly protected, the Newton HydroBond System will provide, under normal service conditions, a durable waterproof barrier for the life of the building to which it is installed; the expected lifetime of the building itself should be at least 60 years.

KEY BENEFITS

- Full mechanical bond to concrete prevents water migration between membrane and structure
- Hydrophilic layer provides self-healing of punctures to the membrane
- Very flexible - Resistant to movement and fissures in substrates
- The HydroBond System completely surrounds the structure
- Excellent resistance to the high alkalinity of concrete
- Third-party test certification for radon, carbon dioxide and hydrocarbon gases

TYPICAL APPLICATIONS

As a continuous waterproofing and gas membrane to permanent raft and wall formwork such as the raft blinding and piled walls of reinforced concrete earth-retained structures.

SUITABLE SUBSTRATE

RAFT OR SLAB

- Concrete blinding
- Compacted type 1 hardcore
- Compacted sand

The following can be placed above the blinding or hardcore prior to the installation of HydroBond 403 GB:

- Void former
- Clay heave board
- Closed-cell flooring grade insulation
- HydroBond 410 GeoDrain

WALL FORMWORK

- Existing structure
- Secant or contiguous concrete piles
- Metal sheet piles
- Diaphragm walls
- King post wall
- Sufficiently stable ground such as clay or chalk
- Temporary timber shuttering/formwork

SPECIALIST TOOLS REQUIRED

No specialist tools needed.

COLOUR

- Locking fleece - White
- Outer face - HydroBond 403 GB - Light Blue

Newton House, 17-20 Sovereign Way
Tonbridge, Kent, TN9 1RH

www.newtonwaterproofing.co.uk
tech@newtonwaterproofing.co.uk
+44 (0)1732 360 095

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

HydroBond 403 GB

External Waterproofing Membrane & Gas Barrier

TECHNICAL DATA

Performance	Result	Units
Colour	White/Light Blue	
Material	Composite*	mm
Width	1.50	m
Length	20.00	m
Area	30.00	m^2
Thickness	1.74	mm
Density	1.410	g/m^2
Packaged weight	42.3	kg
Shelf life	12	Months
Application temperature	-10 to +40	°C

Installed Performance	Result	Units	Test Method
Service temperature	-40 to +100	°C	Manufacturer test
Adhesion to concrete	0.4	N/mm^2	
Elongation at break (Machine)	57.4 (± 3.86)	%	DIN EN 12311-2
Elongation at break (Traverse)	81.7 (± 7.79)	%	DIN EN 12311-2
Tensile strength (Machine)	411 (± 15)	N/50 mm	BS EN 12311-2
Tensile strength (Traverse)	695 (±16.4)	N/50 mm	BS EN 12311-2
Resistance to static loading - 20 kg load	Watertight		BS EN 12730
Resistance to impact – AI plate - 200 mm drop	N/A		BS EN 12310-1 - Method 1
Resistance to impact – EPS panel - 500 mm drop	N/A		BS EN 12310-1 - Method 1
Resistance to impact – AI plate - 250 mm drop	Watertight		BS EN 12310-1
Resistance to impact – EPS panel - 1750 mm drop	Watertight		BS EN 12310-1
Joint strength - Glued seam	409	N/50 mm	BS EN 12311-2
Resistance to tearing - Nail shank – MD**	518	N	BS EN 12310-1
Resistance to tearing - Nail shank – Across	470	N	BS EN 12310-1
Resistance to fire	Euroclass E		BS EN 13501-1
Water vapour diffusion resistance – Sd value	1000	m	BS EN 1931 - Method B
Water vapour diffusion resistance – μ value	574713	μ	Calculated from Sd value
Water vapour diffusion resistance	5000	MNs/g	Calculated from Sd value
Water tightness integrity - Lateral migration	500 kPa for 7 days - Watertight		BS EN 1928 – Method A
Water tightness integrity - Lateral migration	500 kPa for 28 days - Watertight		BS EN 1928 – Method A
Resistance against chemicals - 23°C for 12 weeks	Watertight		DIN EN 1847

*Composite of LDPE, self-healing polymer, polypropylene backing. With aluminium core. **Machine Direction.

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TECHNICAL DATA - CONTINUED

Installed Performance	Result	Units	Test Method
Resistance against chemicals - 2 kPa for 28 days	Watertight		BS EN 1928 / DIN EN ISO 291-23/50-2
CO_2 gas diffusion resistance	8.38 x10^{-7}	m^2/s	Rilem Report 12***
CO_2 permeability – Membrane	1.94	$ml/(m^2/d/atm)^{-1}$	ISO 15105-1:2007 to BS 8485:2015
CO_2 permeability – Joint	20.00	$ml/(m^2/d/atm)^{-1}$	ISO 15105-1:2007 to BS 8485:2015
CO_2 permeability – Combined Average****	2.02	$ml/(m^2/d/atm)^{-1}$	ISO 15105-1:2007 to BS 8485:2015
Radon gas diffusion resistance – Membrane	1.0 x10^{-12}	m^2/s	K124/02/95
Radon gas diffusion resistance – Joint	1.5 x10^{-9}	m^2/s	K124/02/95
Methane permeability – Membrane	0.44	$ml/(m^2/d/atm)^{-1}$	ISO 15105-1:2007 to BS 8485:2015
Methane permeability – Joint	91	$ml/(m^2/d/atm)^{-1}$	ISO 15105-1:2007 to BS 8485:2015
Methane permeability – Combined Average****	6.99	$ml/(m^2/d/atm)^{-1}$	ISO 15105-1:2007 to BS 8485:2015
Durability against thermal ageing - 70°C for 12 weeks	Watertight		BS EN 1926
Durability against thermal ageing - 2 kPa for 24 hours	Watertight		DIN EN 1928 / DIN EN ISO 291-23/50-2
Compatibility with Bitumen - 70°C / 28 days	Watertight		BS EN 1548 / BS EN 1928
Compatibility with Bitumen - 2 kPa / 24 hours	Watertight		BS EN 1928 / DIN EN ISO 291-23/50-2
Friction coefficient	0.8-1.2	µ	
Swelling capacity at 20°C - Linear	28	%	BS ISO 1817
Swelling capacity at 20°C - By volume	111	%	BS ISO 1817
Swelling capacity at 5°C - Linear	12	%	BS ISO 1817
Swelling capacity at 5°C - By volume	39	%	BS ISO 1817

Performance	HydroBond Tape	Units
Product code	HBT	
Colour	White/Dark Blue	
Material	Composite	
Width	75	mm
Length	20.00	m
Area	1.5	m^2
Thickness	1.60	mm
Density	1.215	g/m^2
Packaged weight	0.5	kg
Shelf life	12	Months
Application temperature	-10 to +40	°C

Vinci Technology Centre UK Limited – In house Test Procedure TP950/05/13569. * According to BS 84851 article 7.2.4 the gas resistance rate is ruled by the methane result, as stated in Note 1 to this article: A methane gas transmission rate of <40.0 ml/day/m2/atm (average) for sheet and joints (tested in accordance with the manometric method in BS ISO 15105-1) is usually considered sufficient.

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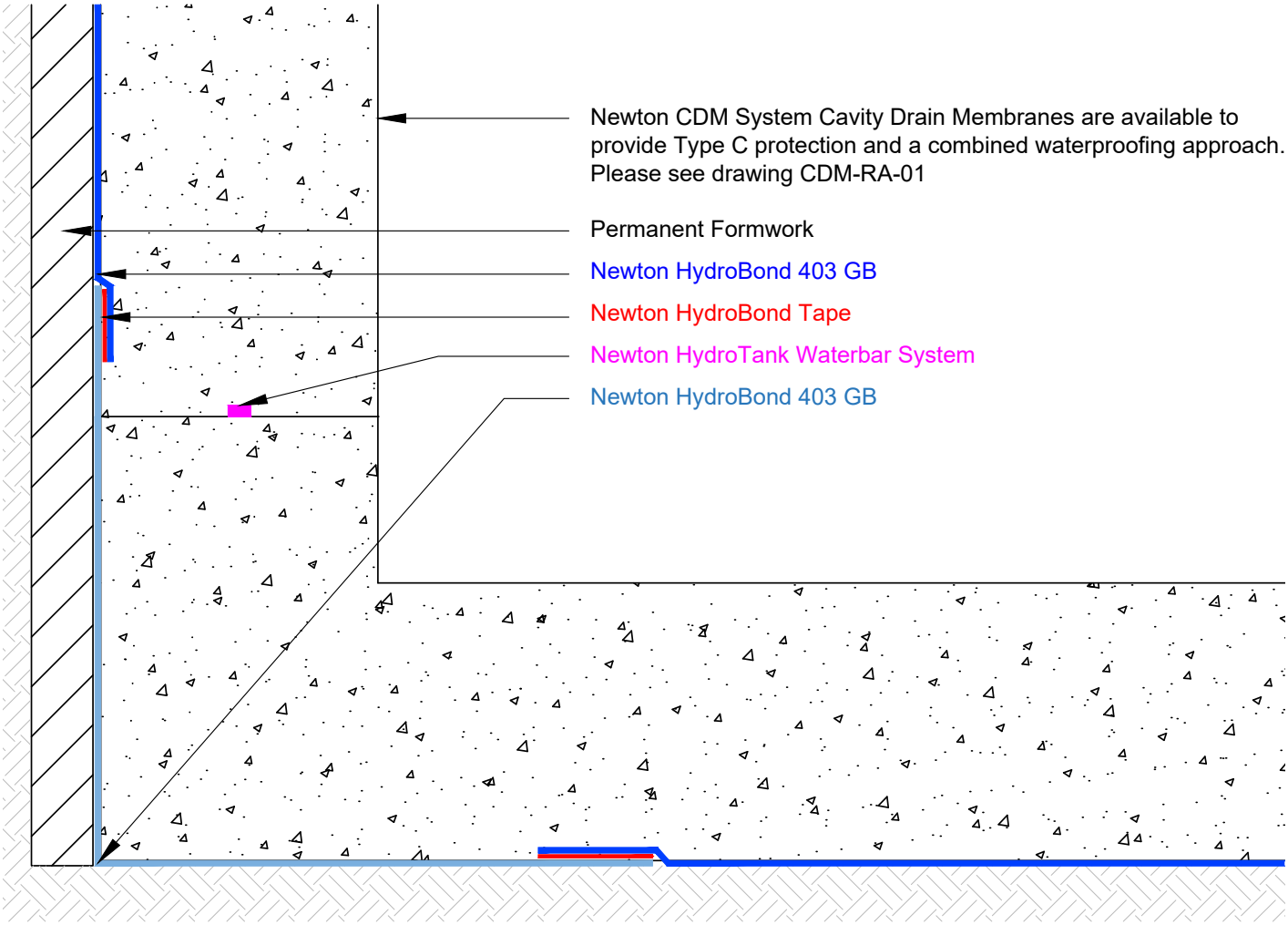
TYPICAL DETAIL

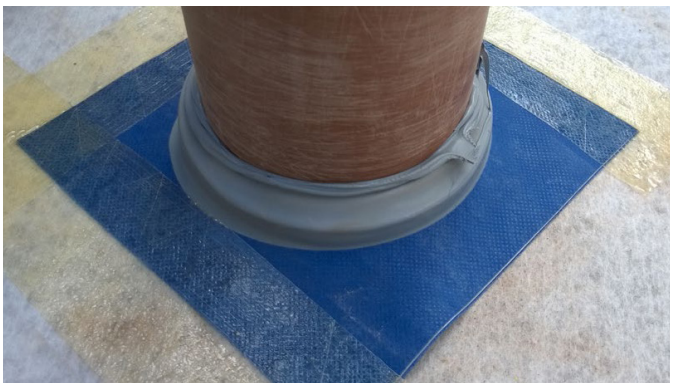


SPECIFICATION

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.



FULLY BONDED MEMBRANES

Type A (barrier) protection membranes should be designed and installed to try to overcome defects as outlined in BS 8102:2022 Section 4.3.2 'Defects and remedial measures'. The requirements for the specific properties of the Type A barrier membrane are outlined in Section 8 of the British Standard, on 'Type A (barrier) protection', including Table 3 – 'Waterproofing barriers'.

The membrane should be fully bonded to prevent water entering from a defect and tracking between the membrane and the structure; also known as lateral migration of water from a defect as per BS 8102:2022, Figure 9 – 'Effect of bonded or partially bonded barriers'.

This can be tested by BS EN 1928, Method A. The level of full bond and suitability of use is relevant to both the water depth/pressure tested for both lateral migration and watertightness of the membrane and the laps.

STORAGE

Store in dry conditions at temperatures between 5°C and 25°C. Do not expose to freezing conditions. Do not allow to freeze.

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TRAINING AND COMPETENCY OF THE USER

Newton HydroBond 403 GB should be installed 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 co-ordinated approach to the waterproofing of the structure, which in many cases will require further waterproofing products so as to achieve the required habitable grade as defined by BS 8102:2022.

Newton Specialist Contractors (NSBCs) are trained by Newton
Waterproofing Systems in the correct specification and installation of our waterproofing products and will provide the client with a meaningful insurance backed guarantee for the waterproofing system.

LIFE EXPECTANCY

Newton HydroBond 403 GB will provide, under normal service conditions, a durable waterproof covering for the life of the building to which it is installed. Please note that this is not the guarantee. The waterproofing guarantee is provided by the specialist waterproofing contractor who installs the product. Clauses can be accessed via the technical resources area.

PACKAGING

Newton HydroBond 403 GB is supplied in rolls of 1.5 m wide x 20.0 m long. Each roll weighs 42.3 kg.

INSTALLATION MANUAL

The Installation Manual, Safety Data Sheet and Declaration of Performance for HydroBond 403 GB can be found on the product page on our website.

HYDROBOND SYSTEM PRODUCTS

- HydroBond 403 GB - Waterproofing Membrane
- HydroBond SA - Post-applied and self-adhesive waterproofing membrane
- HydroBond SAGM - Post-applied and self-adhesive waterproofing and gas membrane
- HydroBond 2K Flex - Flexible and reinforced bitumen waterproof coating
- HydroBond Tape - Double-sided sealing tape
- HydroBond 109-LM - Detailing to DPC
- HydroBond 314 Bentonite Granuels - Swelling detailing powder for use where HydroBond 403 GB terminates to otherwise difficult to detail building elements
- HydroCoat 914-RT - Reinforcement tape for changes in direction and joints within HydroBond 109-LM

ANCILLARY PRODUCTS

- HydroBond 410 GeoDrain - Drainage membrane to move water around the structure on sloping sites. Can also be used as protection for all externally applied membranes
- HydroCoat 104 Super - Crystalline waterproofing powder used for continuation detailing at piles, capping beams, etc
- Newton Pipe Collar - Fabric reinforcement collar for 110mm diameter pipe
- HydroBond Protection Board - Bitumen impregnated protection board

LIMITATIONS

- Cannot be post-applied. Where formwork is removed to expose the concrete, use HydroBond SA or HydroBond 2K-Flex and lap to the HydroBond 403 GB at the raft edge
- Do not apply at temperatures lower than -10°C or higher than +40°C

PROTECTION OF THE MEMBRANE

Newton HydroBond 403 GB is pre-applied to the horizontal raft support and to permanent wall support such as a piled wall or building line and so is not exposed to potential damage to these areas.

Where the RC wall formwork is removed or where a block wall is built from the raft, the removal of the raft edge formwork exposes the HydroBond 403 GB. This should be protected at the same time and with the same method used to protect the post-applied membrane.

Please see installation manual for further information.

Protection methods include:

- Newton drainage membrane, Newton 410 GeoDrain (to sloping sites only)
- HydroBond Protection board
- Suitable closed cell insulation board

HEALTH AND SAFETY

Use appropriate PPE for the environment the system is installed within. Use products only as stated within this Data Sheet and the SDS and Installation Manual.

CE 14 CE 17	JN NEWTON WATERPROOFING	Newton Waterproofing Systems Newton House 17-19 Sovereign Way Tonbridge Kent TN9 1RH	HBGB	BS EN 13967:2022 0761 & 1640 Flexible sheets for water-proofing. Plastic and rubber damp proof sheets including plastic and rubber basement tanking sheets

Essential characteristics to BS EN 13967:2012	Test Standard & Conditions	Declared performance (see end for abbreviations)	
		HBGB	unit of measure
5.6 Water tightness	BS EN 1928 Method A Water pressure: 2 kPa Test period: 24 hrs Test climate: EN ISO 291-23/50-2 and BS EN 1928 Method B Water pressure: 400 kPa (4 bar) Test period: 72 hrs Test climate: EN ISO 291-23/50-2	Watertight Watertight	
5.7 Resistance to impact	BS EN 12691 Method A: substrate aluminium plate Method B: substrate EPS panel	Tight at Drop Heights 250 1,720	 mm mm
5.12.1 Durability against thermal aging Water tightness	BS EN 1296 Storage temperature: 70°C Storage period: 12 weeks BS EN 1928 Method A Water pressure: 2kPa Test period: 24 hrs Test climate: EN ISO 291-23/50-2	Watertight	
5.8.2 Resistance against chemicals Water tightness	BS EN 1847 Storage temperature: 23±2°C Storage period: 28 days Test liquid: $Ca(OH)_2$ BS EN 1928 Method A Water pressure: 2 kPa Test period: 24 hrs Test climate: EN ISO 291-23/50-2	Watertight	

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5.8 Compatibility with bitumen Water tightness	BS EN 1548 Storage temperature: 70°C Storage period: 28 days Test climate: EN ISO 291-23/50-2 BS EN 1928 Method A Water pressure: 2 kPa Test period: 24 hrs Test climate: EN ISO 291-23/50-2	Watertight	
5.9 Resistance to tearing (nail shank)	BS EN 12310-1 Specimen: 100mm x 200mm v = 100 mm/min Nail spacing: 50 mm Test climate: EN ISO 291-23/50-2 • Lengthwise (along roll / direction of manufacture) • Across (across roll)	Tear propagation resistance (arithmetic mean value, with standard deviation) 518 ±8.31 470 ±14.8	 N N
5.10 Joint strength	BS EN 12317-2 Specimen: 50mm x 360mm v = 100mm/min Free clamping length: 200mm Test climate: EN 291-23/50-2	Shear resistance along glued seam: long edge (arithmetic mean value, with standard deviation) 409 ±14.6 Shearing in the glued edge	N/50mm
5.11 Water vapour permeability	BS EN 1931 Method B Climate: 23-0/75	d: 1.74 g: $6.07/10^{-9}$ s_D: >1,000	mm kg/(m²/s) m
5.13 Resistance to static loading	BS EN 12730 Method B Substrate: concrete	Imposed load 20kg: tight	
5.14 Tensile properties	BS EN 12311-2 Method A v = 100 mm/min Free clamping length: 120mm Test climate: EN ISO 291-23/50-2 • Lengthwise (along roll / direction of manufacture) • Across (across roll)	Maximum tensile force (N/50mm) (arithmetic mean value, with standard deviation) Elongation at break (arithmetic mean value, with standard deviation) 57.4 ±3.96 81.7 ±7.79	
5.16 Reaction to fire	BS EN ISO 11925-2 BS EN 13501-1	Class E	

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