

HydroBond 403 Plus + GB

Externally Applied Waterproofing Membrane

Revision: 6.2 - 30th January 2023
Code: HB & HBGB

INTRODUCTION

Newton 403 HydroBond[®] is a high performance, self-healing, composite sheet membrane, available in two variants, with Newton HydroBond-GB adding ground gas resistance (in compliance with BS 8485:2015) as well as the exceptional waterproofing capabilities of the standard membrane. When fitted above the raft support or to wall formwork, the membrane locking fleece is fully 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, effectively sealing small holes that may be accidentally formed during fixing of the reinforcing steel or the placing and compaction of the concrete.

Newton 403 HydroBond provides a complete waterproof envelope to the structure to achieve Type A (barrier) waterproofing suitable for Grades 1, 2 and 3 as defined by BS 8102:2009, and is suitable for all below ground and earth-retained structures from domestic basements to the largest civil engineering projects. Both variants can be used as part of the HydroBond[®] System in conjunction with [Newton 108 HydroBond-LM](#), which is sprayed to the exposed walls of the basement after the temporary formwork is removed. Where space is tight, [Newton 109-LM](#) can be applied by roller or brush or small airless spray machine.

Newton 403 HydroBond can be used alongside other Newton products 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. The Newton HydroBond system is supported by BDA Agrément Certificate BAB 17-031/04/A and is accepted by the NHBC as a suitable waterproofing system for Type A Waterproofing to Grades 1, 2 & 3 according to BS 8102:2009.



KEY BENEFITS

- Agrément certificated and NHBC accepted waterproofing system
- 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 encapsulates 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 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 403 HydroBond:

- Void former
- Clay heave board
- Closed-cell flooring grade insulation
- [Newton 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

HydroBond 403 Plus + GB

Externally Applied Waterproofing Membrane

TECHNICAL DATA

Performance	403	403-GB	Units	
Colour	White/Dark Blue	White/Light Blue		
Material	Composite*		mm	
Width	1.00	1.50	m	
Length	20.00		m	
Area	20.00	30.00	m ²	
Thickness	1.60	1.74	mm	
Density	1.215	1.410	g/m ²	
Packaged weight	24.3	42.3	kg	
Shelf life	12		Months	
Application temperature	-10 to +40		°C	
Installed Performance	403	403-GB	Units	Test Method
Service temperature	-40 to +100		°C	Manufacturer test
Adhesion to concrete	0.4	0.4	N/mm ²	
Elongation at break (Machine)	20	57.4 (± 3.86)	%	DIN EN 12311-2
Elongation at break (Traverse)	50	81.7 (± 7.79)	%	DIN EN 12311-2
Tensile strength (Machine)	> 250	411 (± 15)	N/50 mm	BS EN 12311-2
Tensile strength (Traverse)	> 200	695 (± 16.4)	N/50 mm	BS EN 12311-2
Resistance to static loading - 20 kg load	Watertight		BS EN 12730	
Resistance to impact – Al plate - 200 mm drop	Watertight	N/A	BS EN 12310-1 - Method 1	
Resistance to impact – EPS panel - 500 mm drop	Watertight	N/A	BS EN 12310-1 - Method 1	
Resistance to impact – Al plate - 250 mm drop	N/A	Watertight	BS EN 12310-1	
Resistance to impact – EPS panel - 1750 mm drop	N/A	Watertight	BS EN 12310-1	
Joint strength - Glued seam	> 100	409	N/50 mm	BS EN 12311-2
Resistance to tearing - Nail shank – MD**	> 150	518	N	BS EN 12310-1
Resistance to tearing - Nail shank – Across	> 150	470	N	BS EN 12310-1
Resistance to fire	Euroclass E		BS EN 13501-1	
Water vapour diffusion resistance – S _d value	68	1000	m	BS EN 1931 - Method B
Water vapour diffusion resistance – μ value	42500	574713	μ	Calculated from S _d value
Water vapour diffusion resistance	340	5000	MNs/g	Calculated from S _d 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	
Resistance against chemicals - 2 kPa for 28 days	Watertight		BS EN 1928 / DIN EN ISO 291-23/50-2	
CO ₂ gas diffusion resistance	Not tested	8.38 x10 ⁻⁷	m ² /s	Rilem Report 12***
CO ₂ permeability – Membrane	Not tested	1.94	ml/(m ² /d/atm) ⁻¹	ISO 15105-1:2007 to BS 8485:2015
CO ₂ permeability – Joint	Not tested	20.00	ml/(m ² /d/atm) ⁻¹	ISO 15105-1:2007 to BS 8485:2015
CO ₂ permeability – Combined Average****	Not tested	2.02	ml/(m ² /d/atm) ⁻¹	ISO 15105-1:2007 to BS 8485:2015
Radon gas diffusion resistance – Membrane	Not tested	1.0 x10 ⁻¹²	m ² /s	K124/02/95
Radon gas diffusion resistance – Joint	Not tested	1.5 x10 ⁻⁹	m ² /s	K124/02/95
Methane permeability – Membrane	Not tested	0.44	ml/(m ² /d/atm) ⁻¹	ISO 15105-1:2007 to BS 8485:2015
Methane permeability – Joint	Not tested	91	ml/(m ² /d/atm) ⁻¹	ISO 15105-1:2007 to BS 8485:2015
Methane permeability – Combined Average****	Not tested	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	Not tested	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	Not tested	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	
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

*Composite of LDPE, self-healing polymer, polypropylene backing. Aluminium included within GB (gas barrier) version. **Machine Direction. ***Vinci Technology Centre UK Limited – In house Test Procedure TP950/05/13569. **** According to BS 8485 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.

HydroBond 403 Plus + GB

Externally Applied Waterproofing Membrane

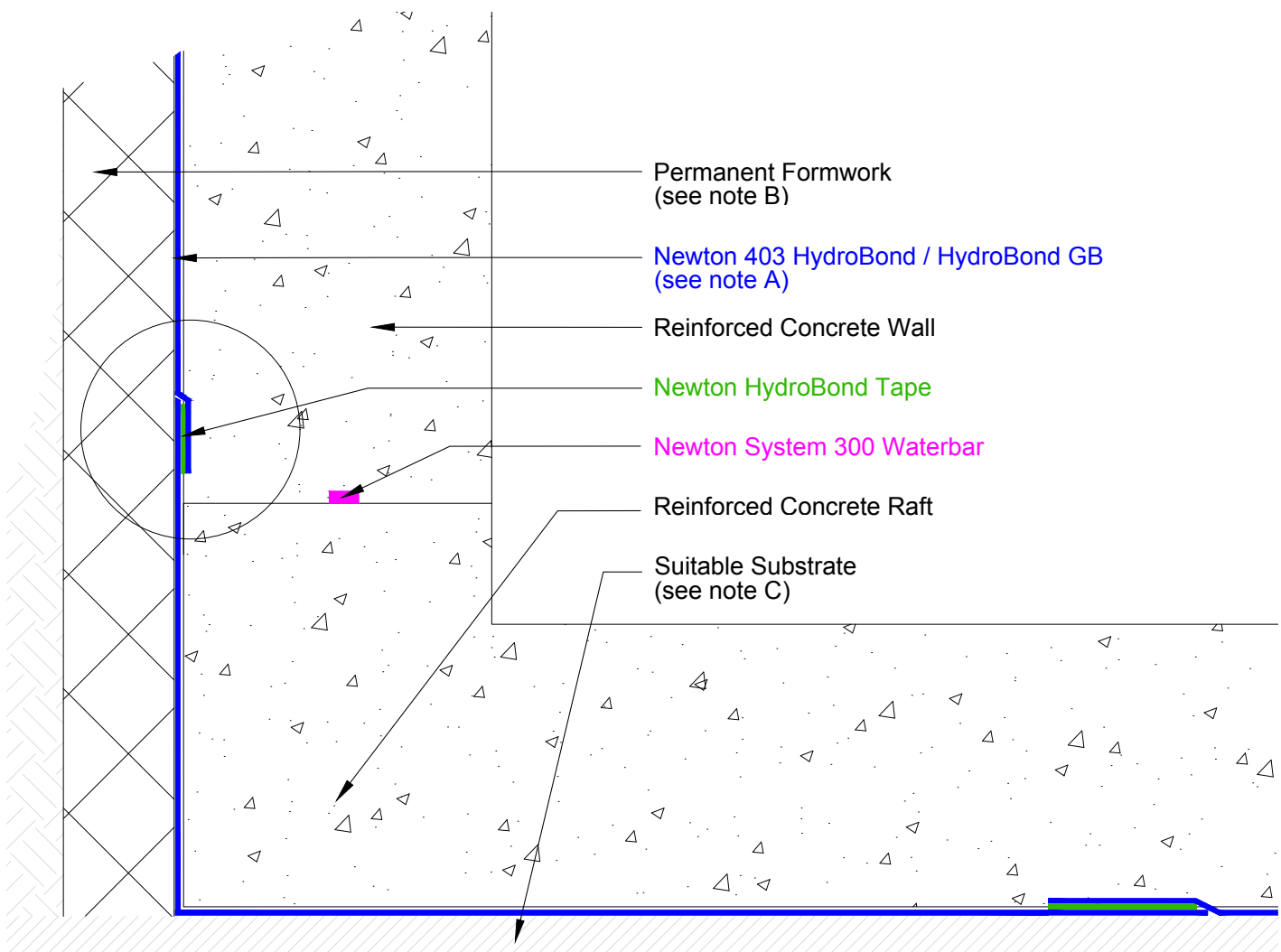
Performance	HydroBond Tape	Units
Product code	HBT	
Colour	White/Dark Blue	
Material	Composite	
Width	75	mm
Length	20.00	m
Area	1.5	m ²
Thickness	1.60	mm
Density	1.215	g/m ²
Packaged weight	0.5	kg
Shelf life	12	Months
Application temperature	-10 to +40	°C

TYPICAL DETAIL

Full HydroBond System showing Newton 403 HydroBond below the RC raft and between the permanent formwork and the new RC wall.

The building is fully encapsulated by the membrane. If a defect occurs during application:

a) the defect will heal thanks to the swelling polymer of the inner core, and b) water cannot track because the fleece inner core of the membrane is fully and monolithically adhered to the concrete.



HydroBond 403 Plus + GB

Externally Applied Waterproofing Membrane

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'.

EXTERNAL pre- and post-applied membranes are resisting a positive hydrostatic head, therefore it is essential that these systems form a full homogenous tank around the structure. Consequently, the membrane itself and all edge and end laps should be tested for resistance to water pressure.

The membrane should also 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.

INTERNAL post applied membranes are resisting a negative hydrostatic head, therefore have to form a full homogenous tank that will achieve a sound enough bond to the structure to withstand counterthrust water pressure without the need for a loading structure.



This can be tested to DIN 1048/BS EN 1542 and 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.

TRAINING AND COMPETENCY OF THE USER

Newton 403 HydroBond 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 8102:2009.

[Newton NSBC contractors](#) are trained by Newton Waterproofing Systems in the correct specification and installation of Newton waterproofing products and will provide the client with a meaningful insurance backed guarantee for the waterproofing system.

LIFE EXPECTANCY

Newton 403 HydroBond 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 403 HydroBond is supplied in rolls of 1.0 m wide x 20.0 m long. Each roll weighs 24.3 kg.

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

HYDROBOND SYSTEM PRODUCTS

- HydroBond Tape - Double-sided sealing tape
- Newton 108 HydroBond-LM - Spray-applied, instant-cure, seamless, rubber waterproofing membrane for the external waterproofing of basements and foundation walls
- Newton 109-LM - Hand-applied membrane where the spraying of 108 HydroBond-LM is not possible.
- [Newton 314-BP](#) - Swelling detailing powder for use where 403 HydroBond terminates to otherwise difficult to detail building elements
- [Newton 914-RT](#) - Reinforcement tape for changes in direction and joints within 108 HydroBond-LM and Newton 109-LM
- [2C Adhesive Compound](#) - Two component adhesive polymer membrane used for sealing and detailing at protrusions and where difficult joints occur, for example at the base of piled walls

HydroBond 403 Plus + GB

Externally Applied Waterproofing Membrane

ANCILLARY PRODUCTS

- Newton 410 GeoDrain - Drainage membrane to move water around the structure on sloping sites. Can also be used as protection for all externally applied membranes
- [Newton 104](#) - Crystalline waterproofing powder used for continuation detailing at piles, capping beams, etc
- [Newton 301 EasyProof](#) - Weather-tolerant metal waterbar used to immediately waterproof the raft/wall joint to kickerless design RC structures
- [Newton 315 Polymer-Waterbar](#) - High grade, polymer hydrophilic waterbar to waterproof vertical joints between RC slabs and piled walls for example
- [Newton 307 PipeSeal](#) - EDPM pipe flange
- [Newton Pipe Collar](#) - Fabric reinforcement collar for 110mm diameter pipe

LIMITATIONS

- Cannot be post-applied. Where formwork is removed to expose the concrete, use Newton 108 HydroBond-LM or Newton 109-LM and lap to the 403 HydroBond at the raft edge
- Do not apply at temperatures lower than -10°C or higher than +40°C

INSTALLATION MANUAL

The Installation Manual and MSDS can be found at the System 400 section of our website or this hyperlink: [Newton 403 HydroBond](#)

PROTECTION OF THE MEMBRANE

Newton 403 HydroBond 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 or ICF wall is built from the raft, the removal of the raft edge formwork exposes the 403 HydroBond. This should be protected at the same time and with the same method used to protect the liquid waterproofing membrane applied to the walls (Newton 108 HydroBond-LM or Newton 109-LM for a full HydroBond System).

Please see installation manual for further information.





Protection methods include:

- Newton drainage membrane, Newton 410 GeoDrain

Newton Waterproofing Systems reserve the right to update product literature at any time. Please always refer to our [website](#) for the latest versions.

HydroBond 403 Plus + GB

Externally Applied Waterproofing Membrane

		<p>Newton Waterproofing Systems Newton House 17-20 Sovereign Way Tonbridge Kent TN9 1RH</p>	<p>HB</p>	<p>BS EN 13967:2012 0761 & 1640</p>		
		<p>Newton House 17-20 Sovereign Way Tonbridge Kent TN9 1RH</p>	<p>HBGB</p>	<p>Flexible sheets for waterproofing. Plastic and rubber damp proof sheets including plastic and rubber basement tanking sheets</p>		
<p>Essential characteristics to BS EN 13967:2012</p>	<p>Test Standard & Conditions</p>		<p>Declared performance (see end for abbreviations)</p>			
<p>5.6 Water tightness</p>	<p>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</p>		<p>Watertight</p>	<p>Watertight</p>	<p>unit of measure</p>	
<p>5.7 Resistance to impact</p>	<p>BS EN 12691 Method A: substrate aluminium plate Method B: substrate EPS panel</p>		<p>Tight at Drop Heights</p>			
<p>5.12.1 Durability against thermal aging</p>	<p>BS EN 1296 Storage temperature: 70°C Storage period: 12 weeks</p>		<p>Watertight</p>	<p>Watertight</p>		
<p>Water tightness</p>	<p>BS EN 1928 Method A Water pressure: 2kPa Test period: 24 hrs Test climate: EN ISO 291-23/50-2</p>		<p>Watertight</p>	<p>Watertight</p>		
<p>5.8.2 Resistance against chemicals</p>	<p>BS EN 1847 Storage temperature: 23±2°C Storage period: 28 days Test liquid: Ca (OH)₂</p>		<p>Watertight</p>	<p>Watertight</p>		
<p>Water tightness</p>	<p>BS EN 1928 Method A Water pressure: 2 kPa Test period: 24 hrs Test climate: EN ISO 291-23/50-2</p>		<p>Watertight</p>	<p>Watertight</p>		

HydroBond 403 Plus + GB

Externally Applied Waterproofing Membrane

5.8 Compatibility with bitumen	BS EN 1548 Storage temperature: 70°C Storage period: 28 days Test climate: EN ISO 291-23/50-2			
Water tightness	BS EN 1928 Method A Water pressure: 2 kPa Test period: 24 hrs Test climate: EN ISO 291-23/50-2	Watertight	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	Tear propagation resistance (arithmetic mean value, with standard deviation)		
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)		
		466 ±15.7 518 ±20.8	518 ±8.31 470 ±14.8	N N
5.11 Water vapour permeability	BS EN 1931 Method B Climate: 23-0/75	d: 1.60 g: 6.22/10 ⁻⁹ s _D : 68	d: 1.74 g: 6.07/10 ⁻⁹ s _D : >1,000	mm kg/(m ² /s) m
		Imposed load 20kg: tight		
5.13 Resistance to static loading	BS EN 12730 Method B Substrate: concrete			
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	Maximum tensile force (N/50mm) (arithmetic mean value, with standard deviation)		
		598 ±35.8 893 ±16.9		
		Elongation at break (arithmetic mean value, with standard deviation)		
5.16 Reaction to fire	BS EN ISO 11925-2 BS EN 13501-1	Class E		