

Installation Guide

NEWTON HYDROBOND SYSTEM

Externally Applied Type A Gas & Waterproofing System



PRODUCT CODE: HB

Rev 1.0 - January 2019
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INTRODUCTION

The Newton HydroBond® System is an Agrément Certified gas and waterproofing system that is applied externally to below ground structures to protect the internal space against ingress of water and gases from the ground.

The system comprises of a number of ancillary products and four primary products, which depending on the build and the required performance, can be used independently of each other or in combination with each other. The index below confirms which section should be used as a guide for installation of the HydroBond System.

Please note that this is an Installation Guide only. Product Technical Data Sheets (TDS), Safety Data Sheets (SDS), Declaration of Performance (DoP) documents should be accessed via the Newton Waterproofing website using the hyperlinks within the index below.

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IMPORTANT

Please read the whole of the relevant section before attempting installation of the system. This document is designed to flow as a guide and there may be important information pertaining to your specific installation on later pages. We especially recommend that the LIMITATIONS within the relevant section are read before commencing work.

CONSTRUCTION - GENERAL

The construction should conform with current Building Regulations, British Standards and relevant Codes of Practice. New concrete should be designed by a Structural Engineer to EN 1992 to be structurally capable for the intended use as an earth retained structure, resisting loading from earth as well as water pressure as recommended within BS 8102:2009.

SECTION 1: NEWTON 403 HYDROBOND PRE-APPLIED BELOW RAFT AND TO PERMANENT FORMWORK

NOTE: This section describes the installation of Newton 403 HydroBond as a waterproofing system. If the system is required to also offer gas protection to the structure, please use Newton HydroBond-GB and refer to Section 4 for installation guidance.

INTRODUCTION

Newton 403 HydroBond is a high performance, self healing, composite sheet membrane that includes a hydrophilic polymer coating sealed and constrained between a layer of waterproof LDPE to the outer face and a polypropylene locking fleece to the inner face.

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 and preventing 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 pouring and compaction of the concrete.

SIZE & PACKAGING

Newton 403 HydroBond is supplied in rolls of 1.0 m x 20.0 m (20 m²). The weight of a roll is 24.3 kg.

METHODS OF APPLICATION

Newton 403 HydroBond is placed to formwork ready for the placement of concrete. For concrete rafts and slabs, Newton 403 HydroBond is fitted above a sound and uniform support such as a concrete blinding or compacted hardcore.

When installed to walls, Newton 403 HydroBond is fitted to sound and uniform permanent formwork such as existing walls or faced-off piles. Please see below for a list of suitable support substrates.

CONSTRUCTION

The construction should conform with current Building Regulations, British Standards and relevant Codes of Practice. New concrete should be designed by a Structural Engineer to EN 1992 (Formally BS 8110 & BS 8007) to be structurally capable for the intended use as an earth retained structure, resisting loading from earth as well as water pressure as recommended within BS 8102:2009.

PRODUCT INFORMATION & ANCILLARY PRODUCTS

The following products are required for a Newton 403 HydroBond installation to below the raft or slab and for installation to wall permanent formwork:

- Newton 403 HydroBond (Product Code HB)
- Newton HydroBond Tape - Double-sided adhesive tape - 20 m length x 75 mm width - Product Code HBT
- [Newton 106 FlexProof-X1](#) - Paste for repairs & detailing - 290 mm cartridges or containers of 15 kg - Product Code 106-2 & 106-1
- [Newton 314-BP](#) - Sodium bentonite detailing powder - 25 kg sacks - Product Code BP314

SUITABLE SUBSTRATE

RAFT OR SLAB

- Concrete or sand blinding
- Compacted type 1 Hard-core

The following can be placed above the blinding or hard-core prior to the installation of 403 HydroBond:

- Void former
- Closed cell flooring grade insulation
- [Newton 410 GeoDrain](#)

WALL PERMANENT FORMWORK

- Existing structure
- Secant or contiguous concrete piles
- Metal sheet piles
- Diaphragm walls
- King post wall
- Sufficiently stable ground such as clay or chalk. Please speak with our technical department for confirmation of suitability

PERMANENT FORMWORK

Where the permanent formwork has an irregular surface, such as a piled wall, 403 HydroBond can be either fitted to follow the undulating face of the wall or the surface will need to be faced-off to leave a stable and uniform surface. Facing off undulating wall permanent formwork surfaces can be achieved using the following methods:

- Sprayed concrete
- Closed cell insulation
- Faced-off with shuttered and placed concrete
- Permanent formwork sheets

TOOLS

- Craft knife or shears
- Tape measure
- Hammer & nails
- Hard roller
- Heat gun
- Scaffold pole or broom handle

TRAINING & COMPETENCY OF USER

Newton 403 HydroBond should be used by those with an understanding of the requirement to waterproof structures and the knowledge and training to use the product as part of a coordinated 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 Waterproofing has a list of trained registered contractors who are capable of designing and installing a full waterproofing solution for your project. Please contact us for a list of contractors for your area.

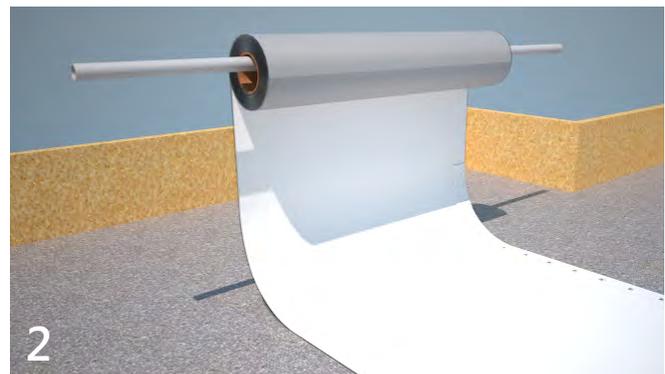
INSTALLATION - GENERAL INFORMATION

Newton 403 HydroBond is manufactured with an adhesive edge to one edge of the fleece side of the membrane for overlapping and adhesion to adjacent lengths of 403 HydroBond. On the grey polymer side there is a removable strip of film designed be removed prior to the 403 HydroBond overlap.

INSTALLATION - BELOW RAFT



Sweep the support surface clean. Substrate should be smooth and firm. Concrete surfaces should be free of voids and sharp projections. Surface irregularities should be removed before installation. Voids must be filled with mortar, and holes filled with proprietary non-shrink mortar/grout.



Unroll Newton 403 HydroBond with the geotextile towards the concrete to be waterproofed (white fleece facing up) using a 2m long scaffold pole or similar.

Schedule waterproofing installation to coincide with placement of concrete. Concrete must be placed within 10 days of installation.



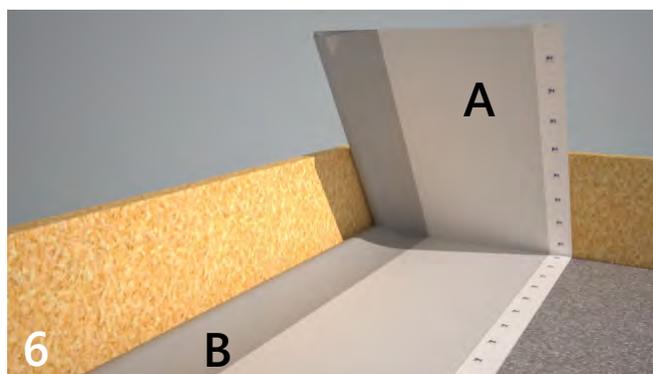
3 Measure the perimeter of the formwork to determine the length of the membrane required. Make provision for 70 mm overlaps to each end joint of the 20 m long membrane rolls. When cutting the membrane use a retractable craft knife or sharp shears whilst wearing safety gloves.



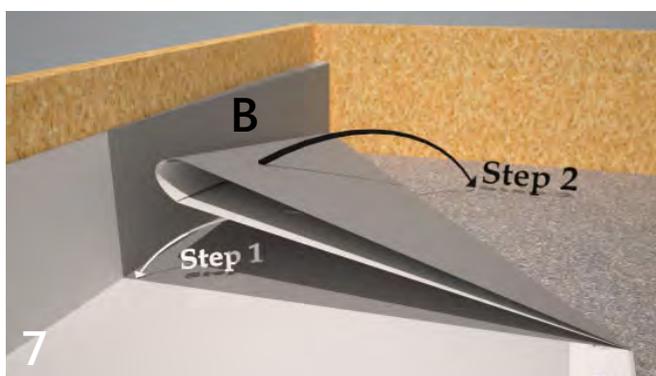
4 403 HydroBond is fitted to within 50 mm of the top of the vertical raft temporary formwork. Mark out the height of the fold onto the membrane, marking out twice the height of the up-stand, creating a guide for the fold.



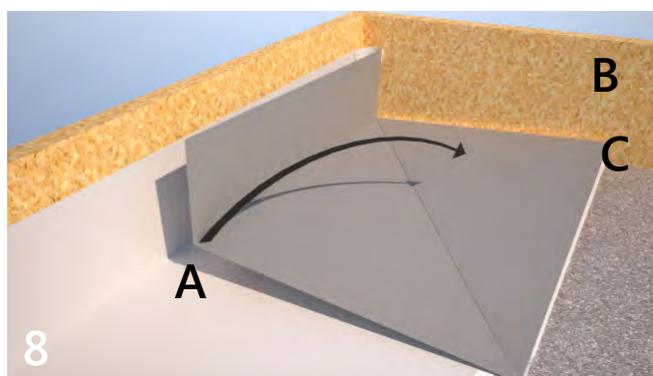
5 Fold along the guide created in the previous stage. Sharpen the crease with a hard roller.



6 At internal corners, make a crease at the change in direction. Once the crease is formed, lift up the flap marked A and invert the up-stand marked B so that the up-stand of the flap A is in front of the main sheet up-stand as shown in Fig. 7.



7 Step one: Form a crease as shown. Step 2: Fold back.



8 Holding the membrane at point A of the grey flap and fold back so that your hand is at point C. The up-stand B of figure 7 should now be against the formwork at point B. At this stage only the white fleece should be facing upwards.

SECTION 1

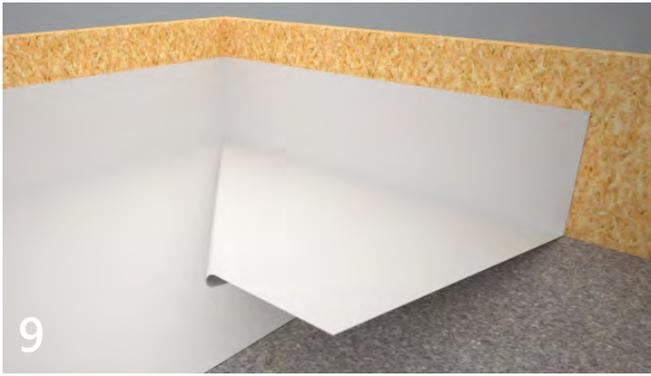


Fig. 9 shows the completed corner. At this stage only the white fleece should be seen. The fold is to the right hand side of the joint and the membrane is triple thickness.

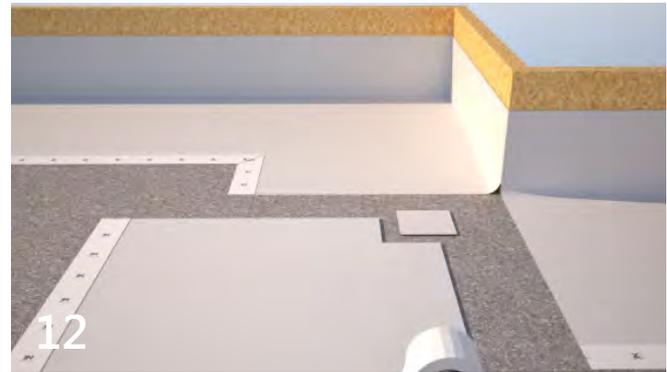


Seal the 45 degree joint with the double sided HydroBond tape. Use a hard roller to ensure a firm bond of the tape to the two surfaces of 403 HydroBond.

Stages 5 to 9 require accurate folding of the material and involve a number of procedures that may not be obvious when first attempted. Practicing first with a piece of paper is recommended.



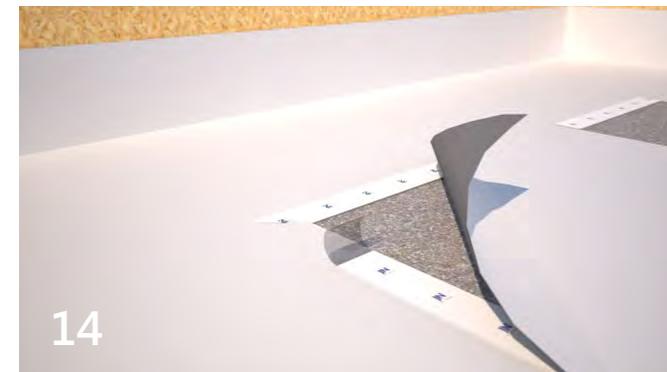
Nail the 403 HydroBond to the formwork leaving the nails exposed to give a key for the concrete and to ensure that the formwork can be easily removed. The nails are cut flush with the membrane after the formwork is removed. A dab of 106 FlexProof-X1 or 109-LM can be used over the small hole, although the membrane will self-heal.



For external corners, cut a square of 403 HydroBond and from a corner of that square, cut out a small square of about 75 mm x 75 mm. Fit the square to the corner and when in place, tape the square under the 403 HydroBond already in place.



Once all the perimeter of the substrate has been completed, ensure that all edges of the membrane above the floor support have either an adhesive edge or have been prepared with the double sided HydroBond Tape. Unroll strips of membrane, overlapping the 403 HydroBond that is already in place by 70 mm.



To complete the overlapped joints, peel off the protective release liner from the adhesive edge of the HydroBond Tape and press the laps together. Use a hard roller to ensure the laps are fully and constantly adhered.

MEMBRANE REPAIR

Repair damage by ensuring the area is clean and dry and free from dust. Repair small punctures (12 mm or less) and cuts by applying a patch of Newton 403 HydroBond centred over the damaged area and secure with HydroBond Tape, pressing firmly using a hard roller to ensure a good bond.

Repair holes and large punctures by applying a patch of Newton 403 HydroBond membrane, which extends 150 mm beyond the damaged area. Seal all edges of the patch with HydroBond Tape, pressing firmly using a hard roller to ensure a good bond.

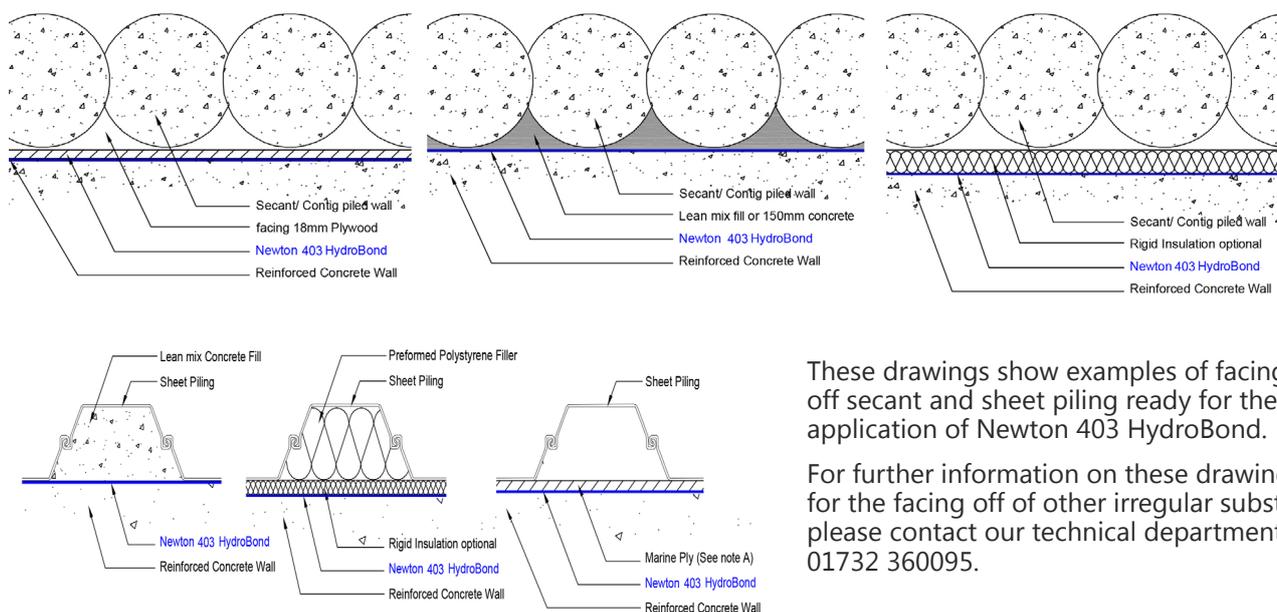
Where exposed adhesive edges have lost adhesion or laps have not been fully sealed, ensure the area is clean and dry and reseal with HydroBond Tape, rolling firmly with a hard roller and therefore resealing the lap.



INSTALLATION - PERMANENT WALL FORMWORK

Where the permanent formwork has an irregular surface, such as a piled wall, Newton 403 HydroBond can be either fitted to follow the undulating face of the wall or the surface will need to be faced-off to leave a stable and uniform surface. 403 HydroBond should be fitted with the adhesive edge uppermost ready for the next adjoining strip of membrane. Install to the wall permanent formwork before the installation to the floor support. Installation should be continued upwards until the 403 HydroBond is terminating above ground and/or to a designed termination point ready for further detailing.

FACED-OFF PILES



These drawings show examples of facing off secant and sheet piling ready for the application of Newton 403 HydroBond.

For further information on these drawings or for the facing off of other irregular substrate, please contact our technical department on 01732 360095.

UNDULATING WALL PERMANENT FORMWORK

If not faced-off, on contiguous piling ensure that soil columns between piles are cut back to no less than one third of the pile diameter, to create a fixing cleavage, and reduce the likelihood of soil dislodging behind the membrane.

Use shot fired nails to install the membrane so that it is tightly fitted into the undulations of the formwork. Ensure that the 403 HydroBond is fully supported by the formwork. Pay particular attention to the joints which should be fully adhered by either the adhesive edge or the double sided HydroBond Tape.

INSTALLATION ABOVE FLOOR SUPPORT

To faced-off formwork, install as instructed within page 4 to page 6. Use HydroBond Tape or the adhesive edge to make the final seal between the upturned 403 HydroBond to that already installed to the walls.

To undulating wall formwork, cut the 403 HydroBond into 500 mm wide strips to the measure of the perimeter, plus 70 mm end overlaps, plus a small error margin. Fold to make a 250 mm up-stand. To force the up-stand to the shape of the piles you will need to cut and splay the fold above the floor support to allow it to lay flat. Once the splayed membrane on the floor is laying flat, tape the up-stand to the membrane already fitted to the undulating wall with HydroBond Tape.

At the interface with the wall, cut the floor membrane to the shape of the undulations and lay over the top of the cut splays. Seal the floor membrane to the splays with Newton 106 FlexProof-X1. Overtape the joints with [Newton Mesh Tape](#). Seal all other joints with the adhesive edge or HydroBond Tape and then over-seal all joints with Newton Mesh Tape.

UNDER CONCRETE FLOOR SLABS

Newton 403 HydroBond is suitable for use below concrete floor slabs, giving the benefit of a self-healing and fully bonded membrane to protect the slab from water ingress via shrinkage cracks. It should be understood however that the slab is poured within walls and so a break is created that prevents the whole of the structure being waterproofed by a continuous HydroBond System. Therefore the walls will need to be waterproofed separately with the products mentioned on page 3.

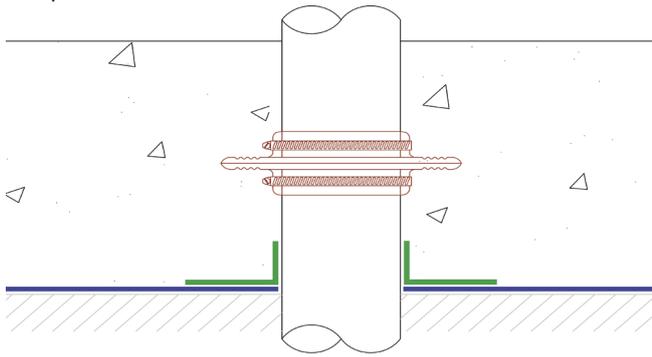
The slab support should be as described in the 'Suitable Substrate' section on page 3, and the walls should be faced-off with concrete to allow for installation of a waterbar. The slab should be structurally capable for the intended use as a basement slab as described in the 'Construction' section on page 2. Install the 403 HydroBond above a sound and uniform substrate with 70 mm overlaps between adjacent lengths of membrane using either the adhesive edge or HydroBond Tape to form the sealed laps.

DETAILING

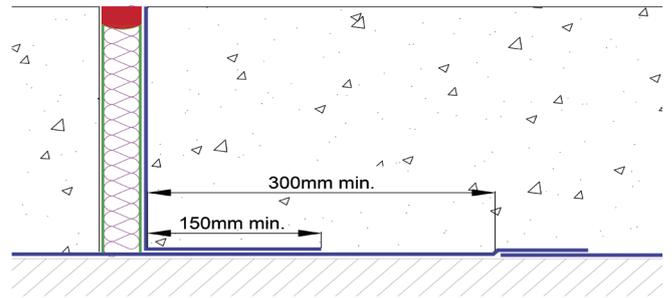
There are many potential detailing issues that may need to be overcome with a membrane system that completely encapsulates the structure. Newton Waterproofing have a library of many possible details and our technical team will be happy to confirm the appropriate detail for you. On the opposite page are a selection of common details. The additional products required for these details are:

- [Newton 104](#) - Crystalline waterproofing powder - Bags of 25 kg - Product Code CW104
- [Newton 307 PipeSeal](#) - EDPM Pipe Flange - Product Code SX307
- [Newton PipeCollar](#) - Fabric reinforcement collar - 110 mm diameter - Product Code PC110

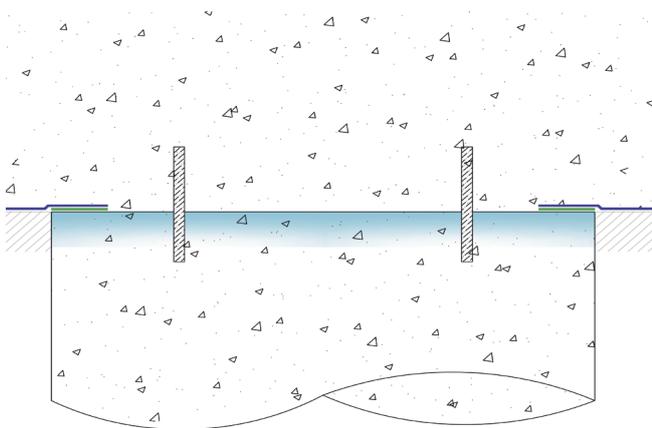
Pipe Protrusion



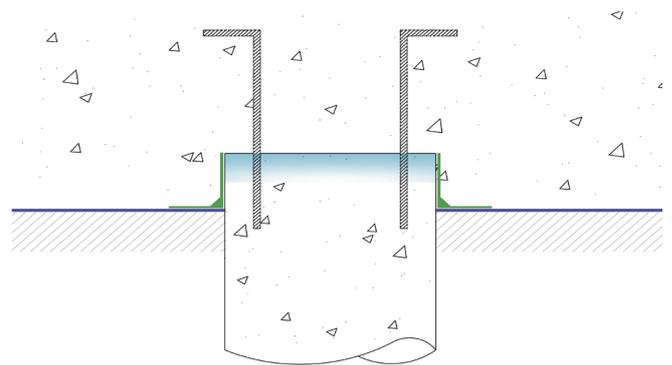
Movement joint



Interface with Pile



Interface with Small Pile



- Newton 104
- Newton 403 HydroBond
- Newton 307 PipeSeal
- Newton 106 FlexProof-X1
- Newton 106 FlexProof-NV

SECTION 2: NEWTON 403 HYDROBOND PRE-APPLIED BELOW RAFT NEWTON 108 HYDROBOND-LM POST-APPLIED TO WALLS

NOTE: This section describes the installation of Newton 108 HydroBond-LM together with Newton 403 HydroBond as a waterproofing system. Before following the instructions within this section for the application of Newton 108 HydroBond-LM, please install the Newton 403 HydroBond as described within section 1. For the application of Newton 108 HydroBond-LM as a standalone product, please refer to the product technical data sheet.

INTRODUCTION

[Newton 108 HydroBond-LM](#) is a highly radon resistant, cold and spray-applied seamless rubber waterproofing membrane for the external waterproofing of basements (including covered decks) and foundation walls.

SIZE & PACKAGING

Newton 108 HydroBond-LM is supplied in a barrel of 200 litres or an IBC of 1000 litres.

ANCILLARY PRODUCTS

- Newton 109-LM - Hand applied or airless spray-applied variant that does not require the specialist spraying machine. Can be applied by brush, roller or standard airless spraying machine. Also used for detailing such as at termination to DPC as the product is UV-stable
- [Newton 914-RT](#) - Strengthening tape for changes in direction and joints
- Newton 410 GeoDrain - Protection board or drainage membrane for sloping sites
- [Newton 408 DeckDrain](#) - Drainage membrane for the removal of water from horizontal sections or decks to suitable drainage. Can also be used as protection board and as a drainage membrane for sloping sites.
- Newton GeoTex - Non-woven geotextile filter layer for protecting the membrane when applied to covered and loaded decks
- Newton PipeCollar - Flexible preformed collar for sealing pipe protrusions to the membrane

APPLICATION RATE - RC WALLS

Joints - The membrane is applied to a total thickness of 2.0 mm, requiring an application rate of 3.2 litres/m². Bed in a band of Newton 914-RT reinforcement tape during the joint application.

Changes in direction - The membrane is applied to a total thickness of 2.0 mm, which requires an application rate of 3.2 litres/m². Internal changes of direction require a 25 mm x 25 mm smoothing fillet of [Newton 203-RM](#).

Main wall sections - The membrane is applied to a total thickness of 1.0 mm, which requires an application rate of 1.6 litres/m².

APPLICATION RATE - BLOCK & ICF WALLS

The membrane is applied to a total thickness of 2.0 mm, which requires an application rate of 3.2 litres/m².

APPLICATION RATE - RADON BARRIER

Minimum total thickness of 2.0 mm, which requires an application rate of 3.6 litres/m².

APPLICATION RATE - BURIED HORIZONTAL ELEMENTS

Minimum total thickness of 2.0 mm, which requires an application rate of 3.6 litres/m².

METHODS OF APPLICATION

Newton 108 HydroBond-LM can only be sprayed with a specialist spray machine. A nationwide network of trained applicators is in place.

CONSTRUCTION - CONCRETE WALLS

Concrete walls should be constructed to BS EN 1992-3, with the intention of providing a Type B form of waterproofing as described within BS 8102:2009. Joints should be designed out where possible and where unavoidable, they should be waterproofed with a [Newton System 300](#) waterbar or by a proprietary shrinkage joint sealing system.

CONSTRUCTION - BURIED CONCRETE HORIZONTAL ELEMENTS

Where the structure continues horizontally below the ground, they should be constructed to the same standard, and as a continuation of the concrete walls.

If other means of construction are used, such as precast beams or block and beam, a structural concrete slab must be placed over the precast elements, isolated by a slip membrane to ensure that movement is not transferred to the waterproofing.

The horizontal elements should be constructed to adequate falls so that water drains away and where possible is collected by a perforated pipe or similar. If a screed is required to form the fall, this must be concrete screed or a 3:1 sand/cement with [Newton 908 LiquaBond](#) mixed into the gauging water at 1:2.

CONSTRUCTION - BLOCK & ICF WALLS

Walls should be designed by a Structural Engineer to withstand the load of the retained earth, as well as the expected water pressure defined by BS 8102:2009. The mortar joints should be pointed flush to the surface of the wall.

SURFACE PREPARATION - CONCRETE

- The surface must be clean, and free from dust, laitance, release agents, oils, paints or other forms of contamination. Jet washing with a mild detergent may be required. If contaminants are still present, more aggressive preparation, such as grit blasting, will be needed
- Holes, cracks, voids and honeycombing should be filled and made good with Newton 203-RM
- Pin holes and non-structural cracks that are between 0.5 mm and 2 mm wide, and block walls, should be filled with Newton 203-RM using a bag rubbing technique

Concrete must have reached first stage cure at between 14 and 28 days, which is dependent on the water/cement ratio of the mix.

SURFACE PREPARATION - BLOCK WALLS

- Mortar joints should be flush pointed. If they are not, re-point or apply a smoothing coat of sand/cement render with Newton 908 LiquaBond mixed into the gauging water at a ratio of 1:2
- Large holes or indentations should be filled with Newton 203-RM
- Remove snots
- Blocks with an open surface should be smoothed with Newton 203-RM using a bag rubbing technique

SURFACE PREPARATION - ICF

- Holes, voids and indentations should be filled with Newton 203-RM
- Where the insulation is badly damaged, remove back to good formwork and make good with Newton 203-RM

SURFACE PREPARATION - BURIED CONCRETE HORIZONTAL ELEMENTS

Horizontal elements will require priming with [Newton 901-P](#) and/or [Newton 902-P](#) primers. Please refer to the preparation requirements within the documents for these two products.

PRIMING

Newton 108 HydroBond-LM does not require a primer unless applied to horizontal surfaces. With porous substrates, the operative may apply a mist coat of the product without the salt catalyst to seal the surface prior to the main application.

JOINTS & CHANGES OF DIRECTION

- Reinforce static joints with Newton 914-RT
- Over shrinkage or movement joints, apply the Newton 914-RT over a strip of 25 mm wide masking tape to create delamination over the shrinkage/movement element of the joint
- With movement joints, lap the 108-LM into the joint and then use our standard Newton 106 FlexProof movement joint detail. Please speak to our Technical Department if you require assistance on the correct specification to joints
- Internal changes of direction require a smoothing fillet of 25 mm x 25 mm. Consider using Newton 203-RM for the smoothing fillet as the fillet will be cured ready for application in 15-30 minutes

MIXING & STIRRING

Newton 108 HydroBond-LM does not require mixing or stirring.

APPLICATION

Trained operatives will apply the correct thickness of material by spraying with the specialist spraying machine.

LAPPING TO NEWTON 403 HYDROBOND

Overlap the exposed Newton 403 HydroBond by a minimum of 150 mm.

CURING

The product forms an instantly set rubber membrane that is dry to the touch within seconds of application. There are no curing requirements.

POT LIFE & FURTHER USE

Unused product remains in the storage container and so has no pot life. If the container is sealed, the product has a useful life of up to 3 months.

CLEANING

The machine is cleaned by the trained operatives ready for next use. Tools can be cleaned with water immediately after use.

PROTECTION OF THE MEMBRANE

Newton 108 HydroBond-LM should be protected during the backfilling operation. This can be achieved with [Newton Fibran XPS 500-C](#) or protection boards. Alternatively, Newton 410 GeoDrain can be used as a drainage and protection layer.

To horizontal surfaces, the membrane must be both protected and loaded:

- Protect with Newton GeoTex geotextile
- Drain with Newton 408 DeckDrain
- Load with earth or floor finish

If screed or concrete is to be placed above the membrane, 100% broadcast a tack-coat of Newton 109-LM with dry-kiln sand, even if a DPM is used.

LIMITATIONS

The product is not seasonal, but careful planning is required for use in the winter.

- Regardless of the time of year, do not apply prior to rain
- Do not apply at temperatures lower than +3°C or higher than +35°C
- Always use the correct preparation and priming of the support substrate as directed above
- Newton 108 HydroBond-LM is sprayed by a large specialist spraying machine. In some cases it may not be possible to site the machine close enough to the working area
- Delivery to site and setting up of the machine can be costly for application to areas below 250 m²

STORAGE

Store in dry conditions at temperatures between +5°C and +25°C with containers fully sealed. Do not expose to freezing conditions.

If these conditions are maintained and the product packaging is unopened, then a shelf life of up to 12 months can be expected.

HEALTH & SAFETY

Use appropriate PPE for the environment the system is installed within. Use products only as stated within this Installation Guide, the Data Sheet (TDS) and Safety Data Sheet (SDS).

SECTION 3: NEWTON 403 HYDROBOND PRE-APPLIED BELOW RAFT NEWTON 109-LM POST-APPLIED TO WALLS

NOTE: This section describes the installation of Newton 109-LM together with Newton 403 HydroBond as a waterproofing system. Before following the instructions within this section for the application of Newton 109-LM, please install the Newton 403 HydroBond as described within section 1. For the application of Newton 109-LM as a standalone product, please refer to the product technical data sheet.

INTRODUCTION

Newton 109-LM is a radon gas certified, flexible, single-component, cold-applied, seamless rubber waterproofing membrane used primarily for the external waterproofing of earth-retaining structures such as basements and foundation walls.

SIZE & PACKAGING

Newton 109-LM is supplied in tins of 20 litres.

ANCILLARY PRODUCTS

- Newton 914-RT - Reinforcement tape for changes in direction and joints
- Newton 410 GeoDrain - Protection board or drainage membrane for sloping sites
- Newton 408 DeckDrain - Drainage membrane for the removal of water from horizontal sections or decks to suitable drainage. Can also be used as protection board and as a drainage membrane for sloping sites.
- Newton GeoTex - Non-woven geotextile filter layer for protecting the membrane when applied to covered and loaded decks
- Newton PipeCollar - Flexible preformed collar for sealing pipe protrusions to the membrane
- [Newton 109-LM Catalyst](#) - Post-applied catalyst that instantly cures the surface of the membrane

APPLICATION RATE - RC WALLS

Joints - The membrane is applied to a total thickness of 2.0 mm, requiring an application rate of 3.2 litres/m². Bed in a band of Newton 914-RT reinforcement tape during the joint application.

Changes in direction - The membrane is applied to a total thickness of 2.0 mm, which requires an application rate of 3.2 litres/m². Internal changes of direction require a 25 mm x 25 mm smoothing fillet of Newton 203-RM.

Main wall sections - The membrane is applied to a total thickness of 1.0 mm, which requires an application rate of 1.6 litres/m².

APPLICATION RATE - BLOCK & ICF WALLS

The membrane is applied to a total thickness of 2.0 mm, which requires an application rate of 3.2 litres/m².

APPLICATION RATE - RADON BARRIER

Minimum total thickness of 2.0 mm, which requires an application rate of 3.6 litres/m².

APPLICATION RATE - BURIED HORIZONTAL ELEMENTS

Minimum total thickness of 2.0 mm, which requires an application rate of 3.6 litres/m².

METHOD OF APPLICATION

- Brush
- Roller
- Airless Spray

CONSTRUCTION - CONCRETE WALLS

Concrete walls should be constructed to BS EN 1992-3, with the intention of providing a Type B form of waterproofing as described within BS 8102:2009. Joints should be designed out where possible and where unavoidable, they should be waterproofed with a Newton System 300 waterbar or by a proprietary shrinkage joint sealing system.

CONSTRUCTION - BURIED CONCRETE HORIZONTAL ELEMENTS

Where the structure continues horizontally below the ground, they should be constructed to the same standard, and as a continuation of the concrete walls.

If other means of construction are used, such as precast beams or block and beam, a structural concrete slab must be placed over the precast elements, isolated by a slip membrane to ensure that movement is not transferred to the waterproofing.

The horizontal elements should be constructed to adequate falls so that water drains away and where possible is collected by a perforated pipe or similar. If a screed is required to form the fall, this must be concrete screed or a 3:1 sand/cement with Newton 908 LiquaBond mixed into the gauging water at 1:2.

CONSTRUCTION - BLOCK & ICF WALLS

Walls should be designed by a Structural Engineer to withstand the load of the retained earth, as well as the expected water pressure as defined by BS 8102:2009. The mortar joints should be pointed flush to the surface of the wall.

SURFACE PREPARATION - CONCRETE

- The surface must be clean, and free from dust, laitance, release agents, oils, paints or other forms of contamination. Jet washing with a mild detergent may be required. If contaminants are still present, more aggressive preparation, such as grit blasting, will be needed
- Holes, cracks, voids and honeycombing should be filled and made good with Newton 203-RM
- Pin holes and non-structural cracks that are between 0.5 mm and 2 mm wide, and block walls, should be filled with Newton 203-RM using a bag rubbing technique

Concrete must have reached first stage cure at between 14 and 28 days, which is dependent on the water/cement ratio of the mix.

SURFACE PREPARATION - BLOCK WALLS

- Mortar joints should be flush pointed. If they are not, re-point or apply a smoothing coat of sand/cement render with Newton 908 LiquaBond mixed into the gauging water at a ratio of 1:2
- Large holes or indentations should be filled with Newton 203-RM
- Remove snots
- Blocks with an open surface should be smoothed with Newton 203-RM using a bag rubbing technique

SURFACE PREPARATION - ICF

- Holes, voids and indentations should be filled with Newton 203-RM
- Where the insulation is badly damaged, remove back to good formwork and make good with Newton 203-RM

SURFACE PREPARATION - BURIED CONCRETE HORIZONTAL ELEMENTS

Horizontal elements will require priming with the Newton 901-P and/or Newton 902-P primers. Please refer to the preparation requirements within the documents for these two products.

PRIMING

Newton 109-LM does not require a primer unless applied to horizontal surfaces. With porous substrates, the operative may apply a mist coat of the product without the salt catalyst to seal the surface prior to the main application.

JOINTS & CHANGES OF DIRECTION

- Reinforce static joints with Newton 914-RT
- Over shrinkage or movement joints, apply the Newton 914-RT over a strip of 25 mm wide masking tape to create delamination over the shrinkage/movement element of the joint
- With movement joints, lap the 108-LM into the joint and then use our standard Newton 106 FlexProof movement joint detail. Please speak to our Technical Department if you require assistance on the correct specification to joints
- Internal changes of direction require a smoothing fillet of 25 mm x 25 mm. Consider using Newton 203-RM for the smoothing fillet as the fillet will be cured ready for application in 15-30 minutes

MIXING & STIRRING

Newton 109-LM is a single component product and so does not require mixing. The product should be stirred for at least 30 seconds with a wooden stirrer within its own container.

SPRAYING SPECIFICATION

Newton 109-LM can be sprayed with an airless spray machine. For information on the machine and configuration, please contact our Training Department.

APPLICATION

Newton 109-LM can be applied by brush, roller or by airless spray.

Apply at a rate as explained within the relevant **APPLICATION RATE** sections above.

Apply the first coat at the recommended rate for the substrate.

Subsequent coats can be applied when the prior coat is dry to the touch. Further information on curing can be found on page two of the Technical Data Sheet.

SALT CATALYST

If there is risk of rain damage to the applied membrane, the surface can be skinned to be immediately rain tight if sprayed with Newton 109-LM Catalyst.

Conditions for catalyst use:

- Mix six parts water with one part catalyst (6:1) by weight
- Use only when rain is imminent or expected
- Do not use in warm or hot weather or when there is a dry wind; the product will skin quickly without the need of the catalyst
- Use only the recommended catalyst supplied by Newton Waterproofing Systems
- If further coats are required after catalyst use, the catalyst must be completely removed from the surface of the membrane before subsequent coats are applied. Use clean water and soft rags to remove the catalyst

LAPPING TO NEWTON 403 HYDROBOND

Overlap the exposed Newton 403 HydroBond by a minimum of 150 mm.

CURING

The product forms an instantly set rubber membrane that is dry to the touch within seconds of application. There are no curing requirements.

POT LIFE & FURTHER USE

Newton 109-LM is a single-component product with no chemical curing reaction, therefore the product is reusable if the lid is correctly fitted and the product is stored as confirmed on page 17. In these conditions, the product should be used within three months.

There is no practical pot life.

CLEANING

Thoroughly clean all tools and equipment with xylene immediately after use.

PROTECTION OF THE MEMBRANE

Newton 109-LM should be protected during the backfilling operation. This can be achieved with Newton Fibran XPS 500-C or protection boards. Alternatively, Newton 410 GeoDrain can be used as a drainage and protection layer.

To horizontal surfaces, the membrane must be both protected and loaded:

- Protect with Newton GeoTex geotextile
- Drain with Newton 408 DeckDrain
- Load with earth or floor finish

If screed or concrete is to be placed above the membrane, 100% broadcast a tack-coat of Newton 109-LM with dry-kiln sand, even if a DPM is used.

LIMITATIONS

The product is seasonal, but careful planning and use of the Newton 109-LM Catalyst will allow for use during the winter months.

- Regardless of the time of year, do not apply prior to rain
- Do not apply at temperatures lower than +5°C or higher than +35°C
- Always use the correct preparation and priming of the support substrate as directed above
- Familiarise yourself with the curing table on page 2 of the Technical Data Sheet and plan the work sequencing accordingly
- Not suitable as a permanent vehicle or pedestrian traffic surface. Where occasional pedestrian traffic is required, apply a further tack coat and 100% broadcast with small aggregate
- Do not apply too much product. Apply to a maximum thickness of 1 mm per coat

STORAGE

Store in dry conditions at temperatures between +5°C and +25°C with containers fully sealed. Do not expose to freezing conditions.

If these conditions are maintained and the product packaging is unopened, then a shelf life of up to 12 months can be expected.

HEALTH & SAFETY

Use appropriate PPE for the environment the system is installed within. Use products only as stated within this Installation Guide, the Data Sheet (TDS) and Safety Data Sheet (SDS).

SECTION 4: NEWTON 403 HYDROBOND-GB PRE-APPLIED BELOW RAFT AND TO PERMANENT FORMWORK (RADON & WATERPROOFING)

NOTE: This section describes the installation of Newton 403 HydroBond-GB as a combined radon gas waterproofing system. If the system is only required to give waterproofing protection, please use the standard Newton 403 HydroBond.

The application of Newton 403 HydroBond-GB is exactly the same in all aspects as the installation of Newton 403 HydroBond as described in Section 1. Please use the instructions as detailed within that section.

SECTION 5: NEWTON 403 HYDROBOND-GB PRE-APPLIED BELOW RAFT NEWTON 108 HYDROBOND-LM POST-APPLIED TO WALLS

NOTE: This section describes the installation of Newton 108 HydroBond-LM together with Newton 403 HydroBond-GB as a combined radon gas waterproofing system.

The application of this waterproofing and radon gas system is exactly the same in all aspects as the installation described within Section 2 except that gas certified Newton 403 HydroBond-GB should be used instead of Newton 403 HydroBond.

SECTION 6: NEWTON 403 HYDROBOND-GB PRE-APPLIED BELOW RAFT NEWTON 109-LM POST APPLIED TO WALLS

NOTE: This section describes the installation of Newton 109-LM together with Newton 403 HydroBond-GB as a combined radon gas waterproofing system.

The application of this waterproofing and radon gas system is exactly the same in all aspects as the installation described within Section 3 except that gas certified Newton 403 HydroBond-GB should be used instead of Newton 403 HydroBond.

SECTION 7: NEWTON 403 HYDROBOND-GB PRE-APPLIED BELOW RAFT AND TO PERMANENT FORMWORK (RADON, HYDROCARBON GAS, HYDROCARBON CONTAMINATION & WATERPROOFING)

NOTE: This section describes the installation of Newton 403 HydroBond-GB as a combined gas, hydrocarbon and waterproofing system. If the system is required to give waterproofing protection only, please use Newton 403 HydroBond.

The application of Newton 403 HydroBond-GB for protection of the structure against hydrocarbon contamination within the ground, ground water and all ground gases is exactly the same as the installation of Newton 403 HydroBond-GB as described in Section 4, except that extra protection is required at the joints/laps.

Please use the instructions as detailed within Section 4 and then follow the additional sealing instructions as laid out below.

ADDITIONAL PRODUCT REQUIRED

Newton HydroBond Gas Tape - Product Code: HBGT

SIZE & PACKAGING

20 m length x 300 mm width.

ADDITIONAL SEALING - 403 HYDROBOND-GB

Watertight does not mean gas-tight. Gas molecules are much smaller than water or even water-vapour molecules. Third party testing has proven that a watertight lap is not a gas-tight lap. Therefore in order that the average gas transmission rates for methane and carbon dioxide of the Newton HydroBond-GB System comply with the requirement of BS 84851 article 7.2.4: $<40.0 \text{ ml.}(m^2 \cdot d \cdot \text{atm})^{-1}$ (average) for sheet and joints (tested in accordance with the manometric method in BS ISO 15105-12), further sealing of the laps is required.

To ensure the laps between sheets of Newton 403 HydroBond-GB are fully gas-proof, the lapping sequence as conveyed in Section 1 for the standard 403 Hydrobond requires an additional accessory product in the form of HydroBond Gas Tape. (HBGT).

- Unroll a sheet of 403 HydroBond-GB with light blue side down and the white fleece upwards
- Unroll a length of HydroBond Gas Tape with foil side down and release film upwards
- Place the tape halfway under the edge lap of the membrane, along the whole edge of the sheet to be lapped
- Start to peel away the release film from half of the HydroBond Gas Tape and press down firmly through the top of the HydroBond-GB membrane
- Ensuring that the HydroBond Gas Tape stays aligned all the way along the roll, continue to remove the release film whilst pressing down firmly on the top of the membrane to ensure a good bond. **NOTE:** In inclement conditions ensure the area is dry prior to application. In all situations, but especially when cold, the gentle use of a hot air gun favours a superior bond
- Unroll the next sheet of HydroBond-GB and locate over the previous roll to cover the standard water tight HydroBond taped edge
- Reaching underneath from one end, remove 2nd half of the HydroBond Gas Tape release film, and whilst ensuring that the sheets remain aligned, work along the length of the lap removing the remaining release film from half of the Hydrobond Gas Tape roll whilst pressing down firmly on the top of the membrane to ensure a good bond
- Remove Hydrobond Tape release film in the usual way. **NOTE,** the purpose of this tape is to eliminate any risk of poured concrete bridging the lap and must be done regardless of the fact that the Hydrobond Gas Tape is adhered beneath
- It is always recommended that concrete continuity spacers be used to support the steel reinforcement and that where possible these are laid along the laps rather than perpendicular/across them

JN[®]

NEWTON

WATERPROOFING

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