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Agrément Certificate  
**94/3010**  
Product Sheet 4

### NEWTON MEMBRANE SYSTEMS

### NEWTON 503 MESH

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to Newton 503 Mesh, a moulded HDPE membrane incorporating a polypropylene mesh as a key for plaster, render or dry lining applied on plaster dabs, for use as damp-proofing on walls, over a contaminated or damp background. The product is part of the Newton System 500 below-ground internal waterproofing system and can also be used above ground as a damp-proofing membrane.

(1) Hereinafter referred to as 'Certificate'.

#### CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



#### KEY FACTORS ASSESSED

**Resistance to water and water vapour** — the membrane is water resistant and has a high resistance to water vapour transmission (see section 6).

**Resistance to salt transfer** — the membrane provides an effective barrier to the transmission of salts or other contaminants from the substrate (see section 8).

**Resistance to impact** — the membrane, plastered, rendered or dry-lined, has a satisfactory resistance to soft and hard body impacts (see section 9).

**Durability** — under normal conditions of use the system will provide an effective barrier to the transmission of salts, liquid water and water vapour for the life of the structure in which it is incorporated (see section 12).

The BBA has awarded this Certificate to the company named above for the product described herein. The product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Second issue: 21 August 2014

Simon Wroe  
Head of Approvals — Materials

Claire Curtis-Thomas  
Chief Executive

Originally certificated on 28 October 2009

*The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at [www.bbacerts.co.uk](http://www.bbacerts.co.uk)*

*Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.*

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# Regulations

In the opinion of the BBA, Newton 503 Mesh, if installed, used and maintained in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



## The Building Regulations 2010 (as amended) (England and Wales)

For new construction and a 'Material Change of Use' of an existing buildings, as defined in Regulation 5a	
<b>Requirement:</b> C2(a)(b)	<b>Resistance to moisture</b>
<b>Comment:</b>	The system adequately resists the passage of moisture. See section 6.1 of this Certificate.
<b>Regulation:</b> 7	<b>Materials and workmanship</b>
<b>Comment:</b>	The system is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.



## The Building (Scotland) Regulations 2004 (as amended)

For new construction and a 'Conversion' of an existing building, as defined in Regulation 4	
<b>Regulation:</b> 8(1)	<b>Durability, workmanship and fitness of materials</b>
<b>Comment:</b>	The system is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> 9	<b>Building standards applicable to construction</b>
<b>Standard:</b> 3.3	Flooding and ground water
<b>Comment:</b>	The system can contribute to minimising or eliminating the effects of flooding on the building fabric and/or the building element, with reference to clause 3.3.1 <sup>(1)(2)</sup> . See section 6.1 of this Certificate.
<b>Standard:</b> 3.4	Moisture from the ground
<b>Comment:</b>	The system adequately resists the passage of moisture, with reference to clauses 3.4.1 <sup>(1)(2)</sup> , 3.4.2 <sup>(1)(2)</sup> , 3.4.5 <sup>(1)(2)</sup> , 3.4.6 <sup>(1)(2)</sup> and 3.4.7 <sup>(1)(2)</sup> . See section 6.1 of this Certificate.
<b>Standard:</b> 3.6(a)	Surface water drainage
<b>Comment:</b>	The system can contribute to satisfying this Standard, with reference to clause 3.6.3 <sup>(1)(2)</sup> . See section 6.1 of this Certificate.
<b>Standard:</b> 3.10	Precipitation
<b>Comment:</b>	The system adequately resists the passage of moisture, with reference to clause 3.10.1 <sup>(1)(2)</sup> . See section 6.1 of this Certificate.
<b>Standard:</b> 7.1(a)	Statement of sustainability
<b>Comment:</b>	The system can contribute to meeting the relevant Requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
<b>Regulation:</b> 12	<b>Building standards applicable to conversions</b>
<b>Comment:</b>	All comments given for this system under Regulation 9, also apply to this Regulation, with reference to clause 0.12.1 <sup>(1)(2)</sup> and Schedule 6 <sup>(1)(2)</sup> . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



## The Building Regulations (Northern Ireland) 2012

For new construction and a 'Material Change of Use' of an existing building, as defined in Regulation A9	
<b>Regulation:</b> 23(a)(i)(iii)(b)(i)	<b>Fitness of materials and workmanship</b>
<b>Comment:</b>	The system is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> 28(a)(b)	<b>Resistance to moisture and weather</b>
<b>Comment:</b>	The system adequately resists the passage of moisture. See section 6.1 of this Certificate.

## Construction (Design and Management) Regulations 2007

## Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section: 1 *Description* (1.1) of this Certificate.

# Additional Information

## NHBC Standards 2014

NHBC accepts the use of Newton 503 Mesh, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 5.1 *Substructure and ground bearing floors* and 5.2 *Suspended ground floors*.

## CE marking

The Certificate holder has taken the responsibility of CE marking the products in accordance with harmonised European standard BS EN 13967 : 2012. An asterisk (\*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

# Technical Specification

## 1 Description

1.1 Newton 503 Mesh membrane is a white, translucent high-density polyethylene (HDPE) sheet with moulded studs at 28 mm centres, for use as part of Newton System 500<sup>(1)</sup>, or above ground as a damp-proofing membrane. It has a woven polypropylene mesh thermally bonded to the membrane on the face side to form a key for plaster and render finishes. The membrane is manufactured to the following nominal characteristics:

Thickness (mm)	0.5
Dome height (mm)	3.0
Weight per unit area (kg·m <sup>-2</sup> )	0.5
Roll length (m)	20.0
Roll width (m)	2.0
Weight per roll (kg)	23
Air gap volume (litres per m <sup>2</sup> )	1.56
Watertightness* 60 kPa	pass
Compressive strength* (kN·m <sup>-2</sup> )	170

(1) Newton System 500 is a below-ground waterproofing system for both new build and refurbishment projects, consisting of Newton waterproof membranes linked to a water drainage system to convey excess water safely away from the property.

1.2 Ancillary items used with the membrane include:

- Newton MultiPlug — dark blue plastic plug supplied with preformed rubber seal, for use in masonry walls and concrete. The MultiPlug acts as a waterproof wall plug for securing the membrane to the wall. Battens, independent wall lining systems or wall ties can be secured into the head of the plug without having to make additional holes through the membrane
- Newton Nu-Seal Plug — red glass-filled nylon plug for securing Newton membranes in below-ground situations. The Nu-Seal Plug requires the Newton Waterseal Rope to be wrapped in a bead around the plug head prior to fixing the membrane. Nu-Seal fixing plugs are recommended when affixing the Newton 508 or 508 Mesh<sup>(1)</sup> membrane to vaulted brick arches
- Newton Waterseal Tape — black or white butyl tape for sealing joints in the membrane
- Newton Waterseal Rope — black or white butyl beading for sealing the air gap around pipes and the edges of the membrane, and joining floor and wall membranes. It is also used to seal around the head of the Nu-Seal Plugs prior to fixing Newton membranes
- Newton Mastic Sealer — silicone sealant for sealing the Newton membranes in an above-ground situation where no hydrostatic pressure is possible
- Newton Overtape — a self-adhesive membrane strip for sealing junctions between walls and floors, and for sealing joints at corners. It can also be used for sealing around service penetrations
- Newton Basedrain — a PVC-U system of drainage channels with 18 mm diameter holes every 100 mm along its length, to collect excess water from behind the membrane and conduct it to a collection point for subsequent discharge. It is available in straight lengths and also in preformed angles for use at corners and junctions. Newton Basedrain is a part of the Newton System 500 internal cavity drain system
- Newton Floordrain — as Newton Basedrain but without the upstand or flange. Floordrain is used to receive water from floor construction joints and to connect Basedrain to internally-sited sumps
- Newton Drainage Adaptor — changes profile from Basedrain or Floordrain to receive 63 mm outside diameter pipe for connections to services or to sumps.

(1) Newton 508 and 508 Mesh are used as part of the Newton 500 system and are the subjects of Product Sheets 1 and 2 respectively.

## 2 Manufacture

2.1 The membrane is formed in a continuous process in which HDPE is extruded into sheets and the studs impression formed. A woven polypropylene mesh is then thermally bonded onto the face side of the membrane.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated

- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

### 3 Delivery and site handling

3.1 The membrane is delivered to site in rolls packaged in woven plastic sacks, bearing the product and Certificate holder's name, and the BBA logo incorporating the number of this Certificate.

3.2 Rolls should be stored on end, under cover and protected from sharp objects, sunlight and high temperatures.

3.3 The packaging details of the ancillary items are shown in Table 1

Item	Dimensions/Volume	Packaging/Quantity
Newton Nu-Seal Plug	25 mm diameter head 70 mm long (Use 11 mm drill bit)	bags of 100
Newton Multiplug	25 mm diameter head 57 mm long (Use 10 mm drill bit)	bags of 100
Newton Waterseal Tape	22.5 m long x 30 mm wide x 2 mm thick	12 rolls per box
Newton Waterseal Rope	4.75 m long x 10 mm diameter	12 rolls per box
Newton Mastic Sealer	0.4 litre cartridge	25 cartridges per carton
Newton Corner Detail	20 m x 150 mm in black or white 20 m x 100 mm in black	2 rolls per box at 150 mm wide 4 rolls per box at 100 mm wide
Newton Basedrain and Newton Floordrain	2 m lengths	6 lengths per pack

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Newton 503 Mesh.

### Design Considerations

#### 4 Use

4.1 Newton 503 Mesh is satisfactory for damp-proofing or waterproofing walls, above and below ground, in new construction or in existing buildings over a contaminated or damp background. The membrane can be used as a substitute for Newton 508 Mesh membrane on walls in situations where space saving is a consideration and the anticipated drainage rate can be accommodated by the lower drainage capacity of the membrane. It can support plastering, rendering or a dry lining fixed by plaster dabs (where appropriate) in the following situations:

- on damp walls in underground situations subject to high groundwater levels, and perennial moisture
- in conjunction with a remedial dpc system where the walls have a high salt content, and/or it is necessary to complete the installation immediately without allowing a period for initial drying
- over walls which have a friable or painted surface, are contaminated with oil or mould, or have a high salt content
- as a waterproofing membrane in areas subject to vibration, as part of Newton System 500.

4.2 Depending on the application required and the site conditions, the membrane may be used as:

- a dry lining for walls for use above ground
- part of Newton System 500 for use below ground, covering floor, walls and ceiling, with provision made for disposing of water build-up behind the membrane via a sump and pump. If available and considered suitable, natural gravity feed drainage that is below the internal basement floor level can be utilised instead of a sump and pump, in which case the advice of the Certificate holder should be sought.

4.3 The membrane has not been assessed for use in chemically contaminated areas, such as brownfield sites.

4.4 The membrane consists of a 0.5 mm thick HDPE and, in the opinion of the BBA, meets the criteria for a radon barrier according to BRE Report (BR 211 : 2007) *Radon : guidance on protective measures for new buildings*. However, the effectiveness of the joint sealing system used with Newton 503 Mesh has not been assessed against radon, and is outside the scope of this Certificate.

4.5 The system is satisfactory for use in Type C (drained protection) constructions in accordance with BS 8102 : 2009.

#### 5 Practicability of installation

The membrane should only be installed by installers who have been trained and approved by the Certificate holder.

#### 6 Resistance to water and water vapour

6.1 The membrane is water resistant and has a high resistance to water vapour transmission. However, the system as installed is not resistant to hydrostatic pressure and, consequently, the measures described in the *Installation* part of this Certificate must be followed to ensure that the membrane acts as a drainage layer with no excessive build-up of water behind the system.

6.2 All joints and fixings must be sealed with Newton sealing products, and drainage channels and gullies or sumps and pumps should be installed as necessary to disperse excess or standing water.

## 7 Risk of condensation

7.1 The generation and dispersal of moisture in the internal environment must be controlled, and appropriate and robust designs selected to minimise the risk of both surface and interstitial condensation, especially where lining boards backed by an insulating layer are used, fixed to the membrane using adhesive dabs.

7.2 In this case the membrane (which has a very high resistance to vapour diffusion) will be on the cold side of the construction, which may increase the risk of interstitial condensation. A calculation should be carried out to BS 5250 : 2011 and designers should consider appropriate techniques for managing the safe egress of moisture vapour with care (such as control of the internal room environment or the use of a vapour control layer on the warm side of the insulation) and in particular the effect of moisture on any materials at, or in contact with materials below, the local dew-point.

## 8 Resistance to salt transfer

The membrane provides an effective barrier to the transmission of salts or other contaminants from the substrate.

## 9 Resistance to impact

The membrane plastered, rendered or dry lined has a satisfactory resistance to soft and hard body impacts.

## 10 Wall-mounted fittings

Wall-mounted fittings (apart from lightweight items such as framed pictures) should be fixed (using recommended proprietary fixings) through the membrane and lining board, plaster or render to the loadbearing structure behind. Holes made in the membrane must be filled with a flexible sealant before inserting the fixing.

## 11 Maintenance

11.1 As the membrane is confined within a wall space and has suitable durability (see section 12), maintenance is not required.

11.2 Regular maintenance of all gullies, sumps and pumps must be conducted to ensure that a build-up of water does not occur behind the membrane.

## 12 Durability



Under normal conditions of use the system will provide an effective barrier to the transmission of salts, liquid water and water vapour for the life of the structure in which it is incorporated.

## 13 Reuse and recyclability

The product comprises HDPE and polypropylene, which can be recycled.

# Installation

## 14 Survey

14.1 Where the property is below ground, or where conditions are damp, a full survey is necessary by a specialist waterproofing surveyor to diagnose the cause and to establish if treatment is required.

14.2 If rising damp to above-ground elevations is found, a remedial treatment is conducted in accordance with the relevant Agrément Certificate, BS 6576 : 2005 and the Property Care Association Code of Practice, 2006.

14.3 Appropriate remedial measures are taken to rectify major causes of damp conditions or water ingress, and to repair structural defects.

## 15 Surface preparation

15.1 When used in existing buildings any unsound plaster or render is removed to expose the substrate, which is cleaned with a stiff brush to remove loose material, laitance, salt residue, mould or adhesive. If mould is present the substrate is treated with a fungicidal wash.

15.2 Uneven wall substrates should be dubbed out with a cement-sand (1:4) render. They should be allowed to dry thoroughly before applying the membrane.

## 16 Procedure

### General

16.1 When used as part of Newton System 500, Newton 503 Mesh may be used in combination with any of the appropriate Newton membranes which are the subject of Product Sheets 1 to 3 and 5, and with the Newton Basedrain drainage system.

## Walls

16.2 Installation of the membrane is usually commenced at the top of the construction. The membrane may require initial fixing along the upper edge of a wall, prior to final fixing. Joints are formed by overlapping the two membrane sheets by a minimum of three studs and sealing with Newton Waterseal Rope positioned between the last two rows. For horizontal joints the lower sheet is always positioned in front of the upper sheet.

16.3 Fixings are made through the membrane into 10 mm holes, drilled centrally through the studs. Newton MultiPlugs (complete with preformed rubber seal) are inserted into the holes and hammered flush with the membrane with a club hammer. The seal must be compressed to function as a barrier against water ingress, and this should be visually checked as each plug is fixed.

16.4 Spacing between fixings should normally be a maximum of 250 mm. This is achieved by fixing in a square at 350 centres and then adding a plug in the centre of the square. On very flat walls, the horizontal and vertical centres can be moved out to 400 mm so that when the centre plug is added, the maximum spacing is 300 mm.

16.5 The installation is conducted over windows and the membrane is cut away to expose them. The gaps are then sealed with Newton Waterseal Tape or Rope.

16.6 For doors and some obstructions the technique covered in section 16.5 cannot be used. Instead, the membrane is installed up to the perimeter and the gap sealed in the same manner.

16.7 Power cables, points and light switches should preferably be remounted in front of the membrane.

16.8 In below-ground installations, the practice of leaving the top of the wall membrane unsealed where there is no requirement for a ceiling membrane to be installed may need to be reconsidered in cases where ingress of gases, odours or vermin is a consideration (such as in proximity to food preparation areas). The advice of the Certificate holder should be sought in these situations.

## 17 Plastering

17.1 The membrane should be plastered with a plaster recommended by the Certificate holder in accordance with BS 8481 : 2006, BS EN 13914-2 : 2005 and/or the appropriate BBA Certificate.

17.2 The plaster should be applied in three coats to a minimum total depth of 15 mm. Each coat should be scratched and left to dry before application of the next, to minimise the chance of cracking and crazing of the finish coat.

## 18 Rendering

18.1 The membrane should be rendered with a 6:1:1 mixture of sharp sand/cement/lime or plasticiser in accordance with BS 8481 : 2006.

18.2 The render should be applied in two coats, allowing 7 to 10 days between coats, to a minimum total depth of 15 mm.

## 19 Dry lining of walls

19.1 A gypsum-based drywall adhesive to BS EN 14496 : 2005 is mixed and applied in vertical strips over the fixing centres and in bands along the top and bottom of the membrane. The adhesive dabs are applied to a minimum thickness of 8 mm and should cover a minimum of 50% of the membrane.

19.2 Gypsum plasterboards to BS EN 520 : 2004, or similar dry-lining boards which are the subject of a current BBA Certificate, are pressed onto the adhesive dabs and jointed in the usual manner. Temporary spacers approximately 25 mm high are positioned under the dry lining to support it during the cure period.

## 20 Finishing works

After the system has been installed and the walls dry-lined, permanent decorations, such as vinyl paper or oil paint, may be applied. Temporary permeable decorations (necessary with traditional, cement-based waterproofer) are not necessary for use with this system.

# Technical Investigations

## 21 Tests

Tests were carried out, and the results assessed, to determine:

- thickness
- impact resistance of plastered, rendered and plasterboard dry lined membrane
- bond strength of mesh to membrane.

## 22 Investigations

22.1 A user survey of treated installations and contractors was conducted to establish the system's performance in use.

22.2 An assessment was made of the scope of use and durability of the system in relation to the generic properties of the membrane and investigations carried out previously on the Newton 508 membrane.

22.3 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.



## Bibliography

- BS 6576 : 2005 *Code of practice for diagnosis of rising damp in walls of buildings and installation of chemical damp-proof courses*
- BS 8102 : 2009 *Code of practice for protection of below ground structures against water from the ground*
- BS 8481 : 2006 *Design, preparation and application of internal gypsum, cement, cement and lime plastering systems — Specification*
- BS EN 520 : 2004 *Gypsum plasterboards — Definitions, requirements and test methods*
- BS EN 13914-2 : 2005 *Design, preparation and application of external rendering and internal plastering — Design considerations and essential principles for internal plastering*
- BS EN 13967 : 2012 *Flexible sheets for waterproofing — Plastic and rubber damp proof sheets including plastic and rubber basement tanking sheet — Definitions and characteristics*
- BS EN 14496 : 2005 *Gypsum based adhesives for thermal/acoustic insulation composite panels and plasterboards — Definitions, requirements and test methods*
- Property Care Association COPO2 *Code of Practice for Installation of Remedial Damp-proof Courses in Masonry Walls*

## Conditions of Certification

### 23 Conditions

23.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- is copyright of the BBA
- is subject to English Law.

23.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

23.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

23.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

23.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

23.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.