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Agrément Certificate
94/3010

Product Sheet 1

NEWTON WATERPROOFING SYSTEMS

NEWTON 508 AND NEWTON 508R

This Agrément Certificate Product Sheet⁽¹⁾ relates to Newton 508 and Newton 508R, moulded HDPE membranes for use as waterproofing and damp-proofing on walls, floors and vaulted ceilings, over a contaminated or damp background, to support a dry lining. Additionally, Newton 508R can be used on floors to support a flooring. The membranes are part of the Newton CDM System, Type C, (below-ground internal waterproofing system) and can also be used above ground as damp-proofing membranes.

(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 membranes are water resistant and have a high resistance to water vapour transmission (see section 6).

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

Properties in relation to fire — the membranes have not been classified in accordance with BS EN 13501-1 : 2018 and their use is restricted under the national Building Regulations in some cases (see section 9).

Resistance to underground gases — the Newton 508R membrane is capable of resisting the ingress of radon gas into the building (see section 10).

Resistance to puncture and loading — the membranes have a high resistance to puncture and will not be damaged by normal foot traffic during installation, or while laying concrete or screeding. They can support the long-term loadings likely to be experienced in service without undue deformation (see section 11).

Durability — under normal conditions of use, the membranes, when used as part of a system, will provide an effective barrier to the transmission of salts, liquid water and water vapour for the life of the structure in which they are incorporated (see section 14).



The BBA has awarded this Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Fourth issue: 9 December 2021

Originally certificated on 29 March 1994

Hardy Giesler
Chief Executive Officer

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

Readers MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

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Regulations

In the opinion of the BBA, Newton 508 and Newton 508R, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying 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 (England and Wales) (as amended)

Requirement:	B3(4)	Internal fire spread – structure
Comment:		The products can contribute to satisfying this Requirement. See section 9.1 of this Certificate.
Requirement:	B4(1)	External fire spread
Comment:		The products are restricted by this Requirement. See section 9 of this Certificate.
Requirement:	C1(2)	Site preparation and resistance to contaminants
Comment:		When properly installed in a correctly designed structure, Newton 508R forms an effective barrier to radon gas enabling compliance with this Requirement. See section 10.1 of this Certificate.
Requirement:	C2(a)(b)	Resistance to moisture
Comment:		The products, when used as part of a system, adequately resist the passage of moisture. See section 6.1 of this Certificate.
Regulation:	7(1)	Materials and workmanship (applicable to England only)
Comment:		The products are acceptable. See section 14 and the <i>installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Durability, workmanship and fitness of materials
Comment:		The products are acceptable. See section 14 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	2.4	Cavities
Comment:		The products can contribute to satisfying this Standard with respect to clause 2.4.2 ⁽¹⁾⁽²⁾ . See section 9.1 of this Certificate.
Standard:	3.2	Site preparation – protection from radon gas
Comment:		The products will enable a floor to satisfy the requirements of this Standard, with reference to clauses 3.1.2 ⁽¹⁾⁽²⁾ , 3.1.6 ⁽¹⁾⁽²⁾ , 3.1.7 ⁽¹⁾⁽²⁾ , 3.1.8 ⁽¹⁾⁽²⁾ , 3.2.1 ⁽²⁾ and 3.2.2 ⁽¹⁾⁽²⁾ . See section 10.1 of this Certificate.
Standard:	3.3	Flooding and ground water
Comment:		The products, when used as part of a 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 ⁽¹⁾⁽²⁾ . See section 6.1 of this Certificate.
Standard:	3.4	Moisture from the ground
Comment:		The products, when used as part of a system, adequately resist the passage of moisture, with reference to clauses 3.4.1 ⁽¹⁾⁽²⁾ , 3.4.2 ⁽¹⁾⁽²⁾ , 3.4.5 ⁽¹⁾⁽²⁾ , 3.4.6 ⁽¹⁾⁽²⁾ and 3.4.7 ⁽¹⁾⁽²⁾ . See section 6.1 of this Certificate.

Standard:	3.6(a)	Surface water drainage
Comment:		The products, when used as part of a system, can contribute to satisfying this Standard, with reference to clause 3.6.3 ⁽¹⁾⁽²⁾ . See section 6.1 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The products, when used as part of a system, adequately resist the passage of moisture, with reference to clause 3.10.1 ⁽¹⁾⁽²⁾ . See section 6.1 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The products 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.
Regulation:	12	Building standards applicable to conversions
Comment:		Comments in relation to the products under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ .
		(1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	23(a)(i)	Fitness of materials and workmanship
Comment:	(iii)(b)(i)	The products are acceptable. See section 14 and the <i>Installation</i> part of this Certificate.
Regulation:	26	Site preparation and resistance to contaminants
Comment:		When properly installed in a correctly designed structure, the products form an effective barrier to radon gas enabling compliance with this Requirement. See section 10.1 of this Certificate.
Regulation:	28(a)(b)	Resistance to moisture and weather
Comment:		The products, when used as part of a system, adequately resists the passage of moisture. See section 6.1 of this Certificate.
Regulation:	35(4)	Internal fire spread - structure
Comment:		The products can contribute to satisfying this Regulation. See section 9.1 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

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

Additional Information

NHBC Standards 2021

In the opinion of the BBA, Newton 508 and 508R, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapters 5.1 *Substructures and ground bearing floors*, 5.2 *Suspended ground floors* and 5.4 *Waterproofing of basements and other below ground structures*.

Where Grade 3 protection is required and the below-ground wall retains more than 600 mm (measured from the top of the retained ground to the lowest finished floor level), the products should be used in combination with either a Type A or Type B waterproofing protection.

In the opinion of the BBA, use of the products on existing structures, if installed and used in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards for Conversions and Renovations*, taking account of other relevant guidance within the chapter and the suitability of the substrate to receive the product.

CE marking

The Certificate holder has taken the responsibility of CE marking the products in accordance with harmonised European standard BS EN 13967 : 2012.

Technical Specification

1 Description

1.1 Newton 508 and Newton 508R are translucent high-density polyethylene (HDPE) sheets with moulded studs at 28 mm centres, for use as part of Newton CDM System⁽¹⁾, or above ground as damp-proofing membranes. The membranes are manufactured to the nominal characteristics shown in Table 1.

(1) Newton CDM System 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.

Table 1 Nominal characteristics

Characteristic (unit)	Newton 508	Newton 508R
Thickness (mm)	0.5	0.7
Dome height (mm)	8.0	8.0
Weight per unit area (kg·m ⁻²)	0.5	0.7
Roll length (m)	20.0	20.0
Roll width (m)	2.4	2.07 and 2.4
Weight per roll (kg)	24.50	29.40 and 33.82
Air gap volume (litres per m ²)	5.51	5.51
Watertightness 60 kPa	Pass	Pass
Compressive strength (kN·m ⁻²) ⁽¹⁾	170	280
Compressive strength (kN·m ⁻²) ⁽²⁾	N/A	7

(1) BS EN ISO 25619-2 – Destructive test and should not be used for design purposes

(2) BS EN ISO 25619-1

1.2 Ancillary items used with the membranes and included in this assessment are:

- Newton MultiPlug — a dark blue plastic plug supplied with preformed rubber seal, for use in masonry walls and concrete. The plug 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 plastic nylon plug for securing Newton membranes in below-ground situations. The plug requires Newton Waterseal Rope to be wrapped in a bead around the plug head prior to fixing the membrane. Nu-Seal Plugs are recommended when affixing Newton 508, Newton 508R or 508 Mesh⁽¹⁾ membrane to vaulted brick arches
- Newton Waterseal Tape — black butyl tape for sealing joints in the membrane
- Newton Waterseal Rope — black 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 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 — 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 at the base of 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 CDM System 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 Mesh is used as part of the Newton CDM System and is the subject of Product Sheet 2.

1.3 Also for use with the products, but outside the scope of this Certificate are:

- Newton CDM Lime Inhibitor, for use prior to the installation of a Newton CDM cavity drain membrane waterproofing system to prevent the 'leaching' of free lime from the concrete
- Newton Basedrain Inspection Port — large aperture port that allows access to the Basedrain drainage system for inspection and maintenance
- Newton Condensation Strip — a strip of 8 mm membrane that creates an opening that allows condensation forming on the face of the wall membrane to be received by the Basedrain drainage system
- Newton Fibran XPS 500-C Insulation — 50 mm insulated spacer that ensures that the floor membrane is above the Basedrain drainage system.

1.4 Newton CDM System is outside the scope of this Certificate.

2 Manufacture

2.1 The membranes are formed in a continuous process in which HDPE is extruded into sheets and the studs Impression formed.

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.

2.3 The management systems of Newton Waterproofing Systems have been assessed and registered as meeting the requirements of BES 6001 by BRE Global Certification (Certificate RS0057).

3 Delivery and site handling

3.1 The membranes are 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 2.

Table 2 Packaging details

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 Overtape	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 508 and Newton 508R.

Design Considerations

4 Use

4.1 Newton 508 and Newton 508R are satisfactory for waterproofing and damp-proofing walls and vaulted ceilings, above and below ground, as part of the Newton CDM System⁽¹⁾, in new construction or in existing buildings over a contaminated or damp background. It can support a dry lining in the following situations:

- on damp walls in underground situations subject to high groundwater levels and perennial moisture
- on vaulted ceilings of archways or cellars subject to water ingress
- in conjunction with a remedial dpc system where the walls have a high salt content and/or when 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 the Newton CDM System.

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

4.2 Depending on the application required and the site conditions, Newton 508 and 508R may be used as:

- an underfloor damp-proof membrane (508R only)
- a dry lining for walls for use above ground
- part of Newton CDM System for use below ground, covering walls, floors and vaulted ceiling, with provision made for collecting of water behind the membrane to drainage channels for disposal via a sump and pump. If available and considered suitable, natural gravity feed drainage that is below the internal basement floor level can be used instead of a sump and pump, in which case the advice of the Certificate holder should be sought.

4.3 Newton 508R is satisfactory for use as a gas-resistant barrier to restrict the ingress of radon into buildings from naturally occurring sources.

4.4 Buildings in areas of risk should be constructed in accordance with the recommendations of BRE Report BR 211 : 2015 *Radon: Guidance on protective measures for new buildings* and following the guidance set out in BS 8485 : 2015.

4.5 The membranes have not been assessed for use in chemically contaminated areas, such as brownfield sites.

4.6 The membranes are satisfactory for use in Type C (drained protection) constructions in accordance with BS 8102 : 2009.

4.7 Under normal operating conditions, Newton 508 and 508R are not affected by underfloor heating.

5 Practicability of installation

The membranes 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 membranes are water resistant and have 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 membranes act 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 drainage systems or sumps and pumps should be installed as necessary to disperse excess or standing water.

7 Risk of condensation

7.1 There is need to control the generation and dispersal of moisture in the internal environment and to select appropriate and robust designs to minimise the risk of both surface and interstitial condensation, especially where insulation is used over the membranes.

7.2 In common with most waterproofing membranes, the products have a very high resistance to vapour diffusion, and when placed on the cold side of a construction 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 (such as control of the internal environment or 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 membranes provide an effective barrier to the transmission of salts or other contaminants from the substrate.

9 Properties in relation to fire



9.1 The membranes have not been classified in accordance with BS EN 13501-1 : 2018. Where the products form the face of a cavity the permissible areas of use and the spacing of cavity barriers are restricted by the national Building Regulations.



9.2 When used as part of the external wall above ground level the membranes should not be used on buildings in England and Wales that have a storey at least 18 m above ground level and contain: one or more dwellings, an institution, a room for residential purposes (excluding any room in a hostel, hotel or boarding house), student accommodation, care homes, sheltered housing, hospitals or dormitories in boarding schools.

10 Resistance to underground gases



10.1 Newton 508R will restrict the ingress of from radon into buildings from naturally-occurring sources.

10.2 Measured gas permeability/ diffusion values on an unjointed Newton 508R membrane is given in Table 3.

Table 3 Gas permeability of Newton 508R

Gas	Method	Result
Radon	K124/02/95	$3.1 \times 10^{-12} \text{ m}^2 \cdot \text{s}^{-1}$

10.3 In the opinion of the BBA, Newton 508R when used with Newton Waterseal Tape, satisfies the criteria for a radon gas resistant membrane of BRE Report BR211 : 2015.

11 Resistance to puncture and loading

11.1 The membranes have a high resistance to puncture and will not be damaged by normal foot traffic during installation or while laying concrete or screeding to BS 8204-1 : 2003.

11.2 Newton 508R can support the long-term imposed loadings defined in the UK National Annex to BS EN 1991-1-1 : 2002, Table NA.2, categories A to D, without undue deformation.

12 Wall-mounted fittings

Wall-mounted fittings (apart from lightweight items such as framed pictures) should be fixed where possible into battens, whose position and number of support fixings into the loadbearing structure are predetermined. Only in exceptional circumstances should fittings be fixed (using proprietary fixings) through the membrane and lining board to the loadbearing structure behind. Holes made in the membrane must be repaired with either Newton Waterseal Rope or Newton Overtape.

13 Maintenance

13.1 As the membranes are confined within a wall or floor space and have suitable durability (see section 14), maintenance is not required.

13.2 Regular maintenance of all drainage system, sumps and pumps must be conducted to ensure that a build-up of water does not occur behind the membranes. Please refer to the Certificate holder for further guidance.

14 Durability



Under normal conditions of use, the membranes, when used as part of a system, will provide an effective barrier to the transmission of salts, liquid water and water vapour for the life of the structure in which they are incorporated.

15 Reuse and recyclability

The products comprise HDPE, which can be recycled.

16 Survey

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

16.2 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, 2013.

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

17 Surface preparation

17.1 When the Newton 508 and Newton 508R membranes are used in new constructions, the concrete base must be laid in accordance with BS EN 1992-3 : 2006.

17.2 If a board covering is to be laid directly on Newton 508R, the concrete base must have a surface regularity with a maximum permissible departure of 5 mm from the underside of a 2 m straight edge, resting in contact with the floor, in accordance with BS 8204-1 : 2003.

17.3 When the membranes are used in existing buildings, any unsound plaster, render or screed 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 an HSE-approved fungicidal wash.

17.4 Uneven floor substrates should be dubbed out with a levelling/smoothing compound, to the tolerance described in section 17.2. The Certificate holder can advise on suitable materials⁽¹⁾. They should be allowed to dry thoroughly before the membrane is applied above. When installed on walls, the membranes are able to accommodate uneven substrates.

(1) Outside of the scope of this Certificate.

18 Procedure

General

18.1 When used as part of the Newton CDM System, Newton 508 and Newton 508R may be used in combination with any of the appropriate Newton membranes which are the subject of Product Sheets 2 to 4, 8 and 9.

18.2 The membrane should preferably be used with the flanged edge positioned in front of and overlapping the previously installed membrane width by the width of the 70 mm flange. Joints with the flanged edge are sealed using Newton Waterseal Tape. Stud-into-stud joints (where the studs both overlap and fully interlock) can be sealed with Newton Waterseal Tape, by overlapping by three studs and positioning the sealing tape to the point of contact between both membranes, between the last row of studs.

18.3 Fixings are made through the membrane into 10 mm holes, drilled centrally through the domes. 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.

18.4 Spacing between fixings will depend on the method of dry lining to be applied. When using preservative-treated timber battens, the Newton MultiPlug fixings should be spaced at 600 mm centres vertically and at 400 mm centres horizontally. Free-standing timber and metal frames do not require specific fixing centres, and sufficient fixings should be used to ensure that the membrane is reasonably tight to the wall, especially at corners. Where lateral support is needed for independent framework, bracing can be applied into the plug heads for stability. Where an independent blockwork is used in front of Newton 508 or Newton 508R, the Certificate holder provides a range of wall ties which can be inserted into the plug heads to give the blockwork lateral support.

18.5 Any item screwed into the MultiPlug fixing hole should have a maximum screwing-in depth of 25 mm.

18.6 On difficult substrates, the translucence of the membranes allows the contractor to view the substrate through the membrane and choose the optimum site for each fixing.

Walls

18.7 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 fixings along batten runs. For joints where the flanged edge is not used, the two membrane sheets are overlapped by a minimum of three studs (see section 18.2 of this Certificate), and for horizontal joints the lower sheet is always positioned in front of the upper sheet.

18.8 The membrane is installed over windows and cut away to expose them, with proprietary liquid or physical DPM used to the damp-proof membrane reveals. The joints between the wall membrane and the reveals are sealed with Waterseal Rope and Overtape.

18.9 In most cases, the techniques described in section 18.8 of this Certificate also apply for external door reveals. Where there is risk of water ingress or dampness to the head of the door other techniques will need to be employed and the Certificate holder should be contacted.

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

18.11 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 possibility (such as in proximity to food preparation areas). The advice of the Certificate holder should be sought in these situations.

Ceilings

18.12 Ceilings to be covered must always have a fall, as per vaulted cellar constructions, to ensure that water does not lie against the membrane or a joint. In addition to the requirements given in section 18.7 of this certificate, on ceilings the vertical drop between the ends of the two membrane sheets for horizontal overlaps should be the width of the flange or three studs as described in 18.2 of this Certificate.

18.13 Newton Nu-Seal Plugs or Newton Multiplugs sealed with Waterseal Rope must be used to fix the membrane to vaulted ceilings⁽¹⁾. Any sagging of the membrane between fixing points on ceilings must not be great enough for ponding to occur.

(1) The suitability of the substrate to accept a mechanical fixing needs to be assessed prior to the installation of the membrane system. If in doubt, the advice of the Newton Specialist Basement Contractor or Newton Technical Department should be sought.

18.14 At the end walls of vaulted constructions, the membrane must be turned down onto the end wall by a minimum 200 mm. The membrane is mitred as necessary to fit the curve of the ceiling, and the joint sealed with Newton Waterseal Rope. The wall membrane should be cut into the curve of the ceiling and fixed in front of the ceiling membrane, and the gap sealed with Newton Waterseal Rope.

Floors

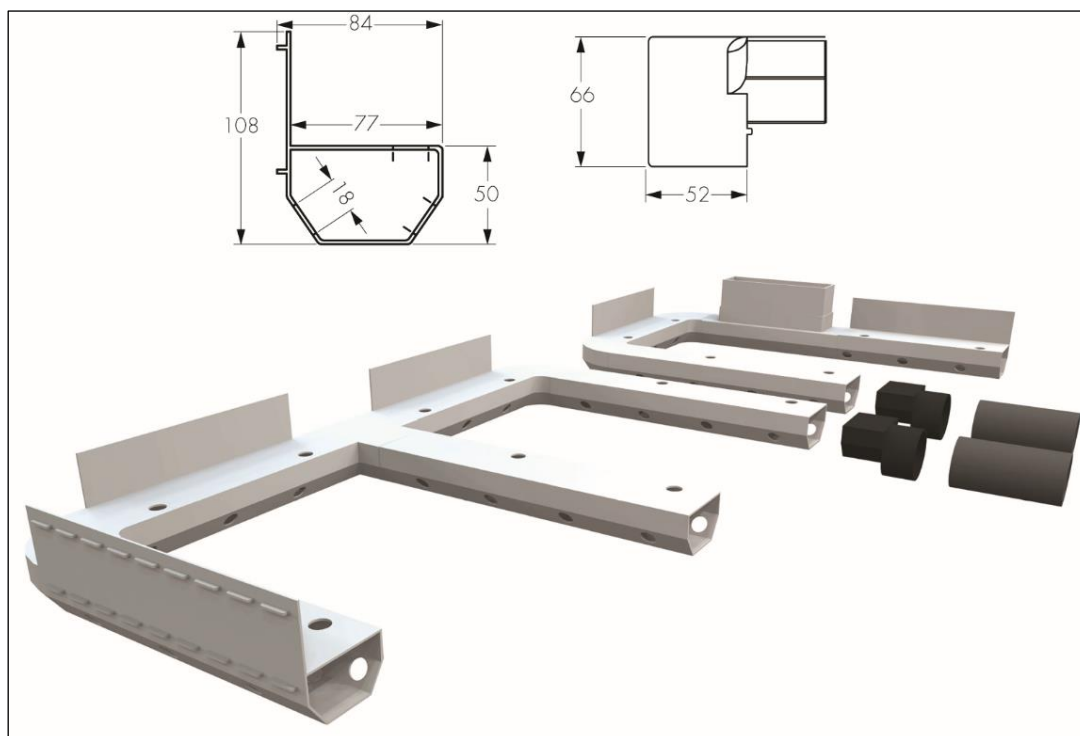
18.15 When used below ground level, Newton 508R should be used as part of Newton CDM System, with provision made for the disposal of any water which may find its way into the structure. This is achieved by the installation of Newton Basedrain around the perimeter of rooms and Floordrain⁽¹⁾ across the room, above the line of the construction joints, and connecting into the perimeter Basedrain. Water ingress is conveyed either to the outside of the structure and discharged via safe natural drainage (drainage that cannot block or generate back-pressure), or to a Newton sump and subsequently pumped out of the structure.

(1) Prior to the installation of the Newton Floordrain membrane, Newton Lime Inhibitor should be applied in accordance with the recommendations of BS 8102 : 2009.

18.16 Newton Basedrain (see Figure 1) is installed at wall/floor junctions around the perimeter of walls to convey ingressing water to a collection point (sump). The Newton Basedrain can be cut on site using a handsaw to form mitred

joints around corners, or preformed angled pieces can be used. In either case, sections of Basedrain are joined together using a tape supplied by the Certificate holder. Newton Floordrain should be used across construction joints in the slab.

Figure 1 Newton Basedrain (all dimensions in mm)



18.17 Newton Basedrain is either sunk into formed channels in the floor slab adjacent to the wall, or placed on the existing floor with insulation tested for this use and suitably butted up to it (see Figures 2 and 3). The Certificate holder can advise on suitable materials for this purpose⁽¹⁾. In the latter case, the insulation may be subjected to some level of water exposure; therefore, water-resistant grade tested for suitability by the Certificate holder must be used. The membrane should be laid directly on top of the insulation and a 65 mm thick screed tested for suitability by the Certificate holder or C4 T&G chipboard flooring used over the top. If T&G chipboard is used, the boards require to be fixed to the concrete floor with a minimum of five fixings. The certificate holder can advise on this.

(1) Outside of the scope of the Certificate.

18.18 The membrane is rolled out 'studs down' over the floor, and consecutive membrane widths are laid so the flanged edge overlaps the first sheet by the width of the 70 mm flange. The joints are sealed in accordance with section 18.2.

18.19 The membrane is cut within 5 mm of any pipes and services in the floor, and the gap filled with Newton Waterseal Rope. A patch of membrane is overlaid and sealed to the services with Newton Waterseal Rope, and its circumference sealed with Newton Waterseal Tape. Alternatively, pre-formed pipe-seals are available from the certificate holder.

18.20 Penetrations through the floor membrane should be sealed with Newton Waterseal Tape or Waterseal Rope or Newton Overtape or by use of pre-formed pipe seals. The penetrating item may require application of a primer to ensure adhesion of the Newton products. Advice should be sought on this from the Certificate holder.

Figure 2 Installation detail – channel over slab

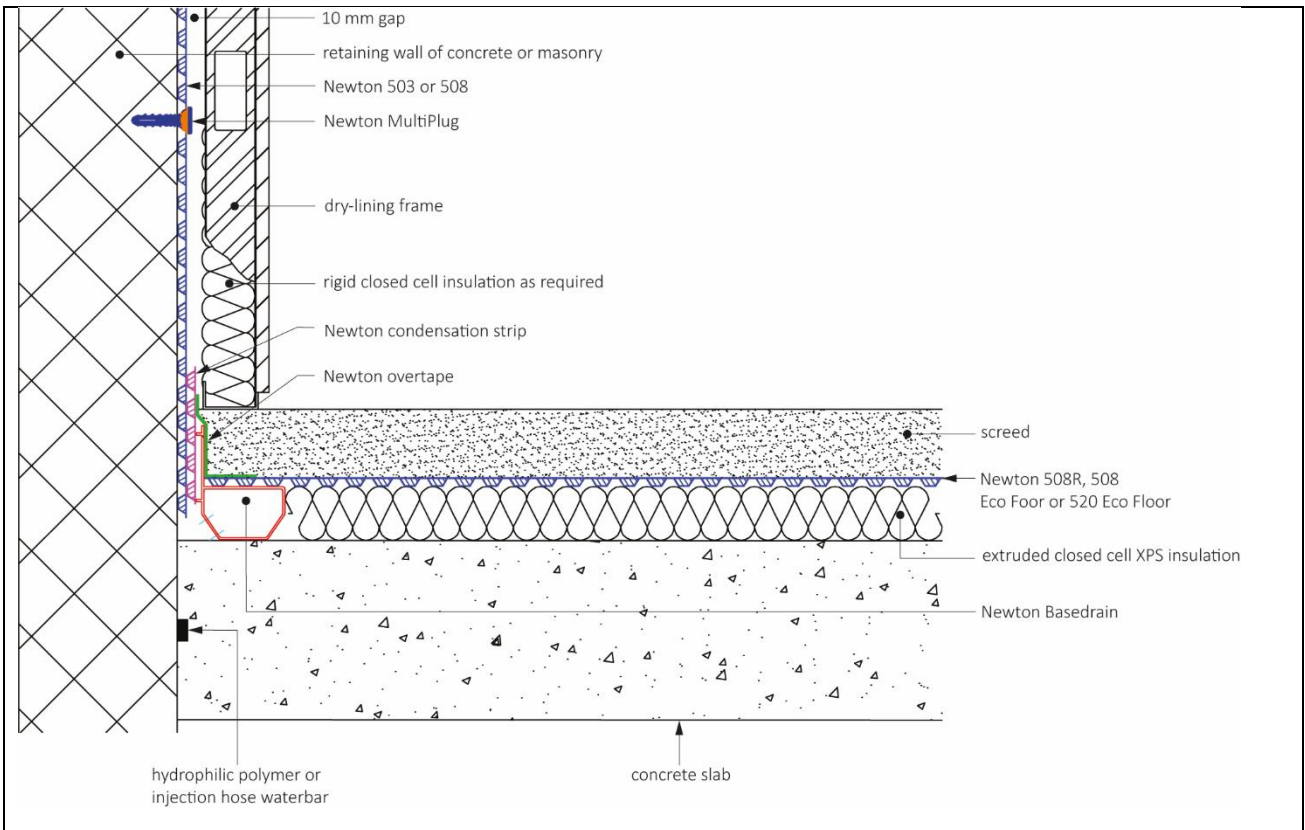
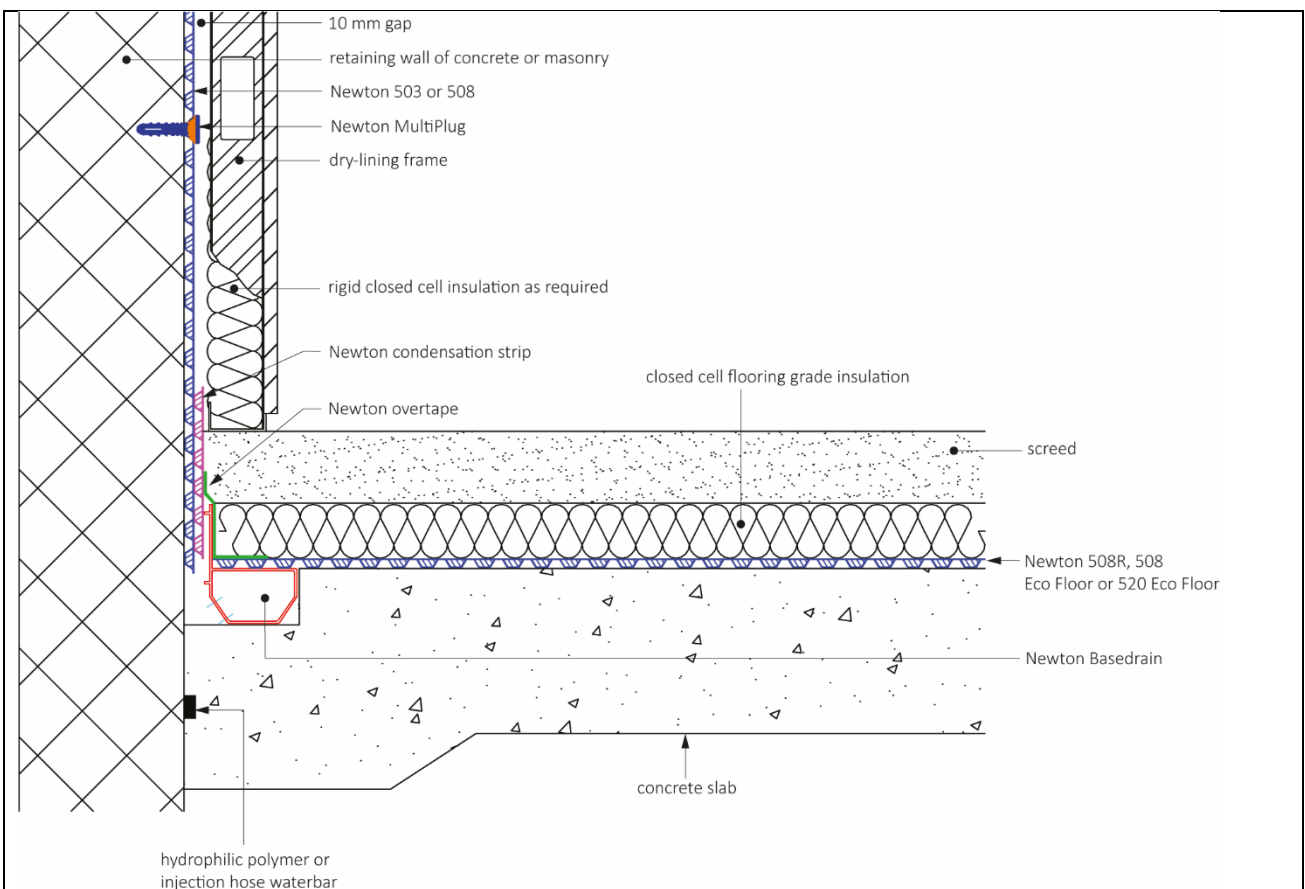


Figure 3 Installation detail – preformed recess



19 Dry lining of walls

19.1 Gypsum plasterboard to BS EN 520 : 2004, or similar dry lining boards which are the subject of a current BBA Certificate, are fixed to the battens or independent timber or metal frameworks with galvanized screws or nails, positioned a minimum of 12 mm from the edge of the board. Care should be taken to ensure that penetration of the plasterboard by screws or nails is less than batten depth, to avoid puncturing the membrane.

19.2 When a plaster finish is required, Newton 508 or Newton 508R on walls may be substituted by any of the Newton meshed membrane products which are the subject of other Product Sheets of this Certificate. However, the fixings designed for below-ground use (MultiPlugs and Nu-Seal Plugs) must be used.

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 waterproofers) are not necessary for use with this system.

21 Floor membrane coverings

21.1 If required, extruded closed-cell polystyrene insulation boards, minimum density $30 \text{ kg}\cdot\text{m}^{-3}$, may be laid over the membrane.

21.2 Suitable tongue-and-groove flooring board panels should be selected in accordance with BS EN 12871 : 2013, and loose-laid over the membrane to within 10 mm of the walls. The panels are staggered and the joints sealed with a thermoplastic wood adhesive to BS EN 204 : 2016.

21.3 Alternatively, the membrane is covered by concrete or screed a minimum of 65 mm thick in accordance with BS 8204-1 : 2003. Care should be taken to ensure the membrane is not displaced when placing the concrete or screed.

21.4 Proprietary screeds may also be considered, which can generally be laid at thicknesses less than 65 mm, but the use of these products with the membrane has not been assessed by the BBA and is outside the scope of this Certificate.

Technical Investigations

22 Tests

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

- resistance of the sealed membranes' joints to water penetration
- resistance to loading and impact
- water vapour permeability
- weight per unit area
- thickness
- resistance to nail tear
- resistance to long-term loading.

22.2 Independent test reports were assessed relating to:

- thickness
- tensile strength
- elongation at break
- resistance to compression
- water vapour resistance
- resistance to alkali
- resistance to UV radiation (Newton 508)
- radon permeability and transmission.

23 Investigations

23.1 A user survey of treated installations and contractors was conducted to establish the products' performance in use.

23.2 Visits were made to sites in progress to assess the practicability of installation in respect of sealing lap joints and corners, dry lining and flooring finishing works.

23.3 An assessment was made of the scope of use and durability of the system in relation to the generic properties of the membrane.

23.4 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

BRE Report BR 211 : 2015 *Radon: Guidance on protective measures for new buildings*

BS 5250 : 2011 + A1 : 2016 *Code of practice for control of condensation in buildings*

BS 6576 : 2005 + A1 : 2012 *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 8204-1 : 2003 + A1 : 2009 *Screeds, bases and in-situ floorings — Concrete bases and cement sand levelling screeds to receive floorings — Code of practice*

BS 8485 : 2015 + A1 : 2019 *Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings*

BS EN 204 : 2016 *Classification of thermoplastic wood adhesives for non-structural applications*

BS EN 520: 2004 + A1 : 2009 *Gypsum plasterboards — Definitions, requirements and test methods*

BS EN 1991-1-1 : 2002 *Eurocode 1. Actions on structures. General actions. Densities, self-weight, imposed loads for buildings*

NA to BS EN 1991-1-1 : 2002 *UK National Annex to Eurocode 1 : Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*

BS EN 1992-3 : 2006 *Eurocode 2 : Design of concrete structures — Liquid retaining and containing structures*

NA to BS EN 1992-3 : 2006 *UK National Annex to Eurocode 2. Design of concrete structures. Liquid retaining and containment structures*

BS EN 12871 : 2013 *Wood-based panels. Determination of performance characteristics for load bearing panels for use in floors, roofs and walls*

BS EN 13501-1 : 2018 *Fire classification of construction products and building elements — Classification using data from reaction to fire tests*

BS EN 13967 : 2012 + A1 : 2017 *Flexible sheets for waterproofing — Plastic and rubber damp proof sheets including plastic and rubber basement tanking sheet — Definitions and characteristics*

BS EN ISO 9001 : 2015 *Quality management systems — Requirements*

BS EN ISO 25619-2 : 2015 *Geosynthetics. Determination of compression behaviour. Determination of short-term compression behaviour*

Property Care Association COP02 *Code of Practice for Installation of Remedial Damp-proof Courses in Masonry Walls*

24 Conditions

24.1 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.

24.2 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.

24.3 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.

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

24.5 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.

24.6 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.