

System 400

NEWTON 410 GEODRAIN

Externally Applied Drainage Membrane

Rev 2.4 - 10 December 2019

PRODUCT CODE - M18

INTRODUCTION

Newton 410 GeoDrain is a two-core drainage sheet consisting of a non-woven geotextile filter layer thermally welded to a water impermeable HDPE (High Density Polyethylene) drainage membrane.

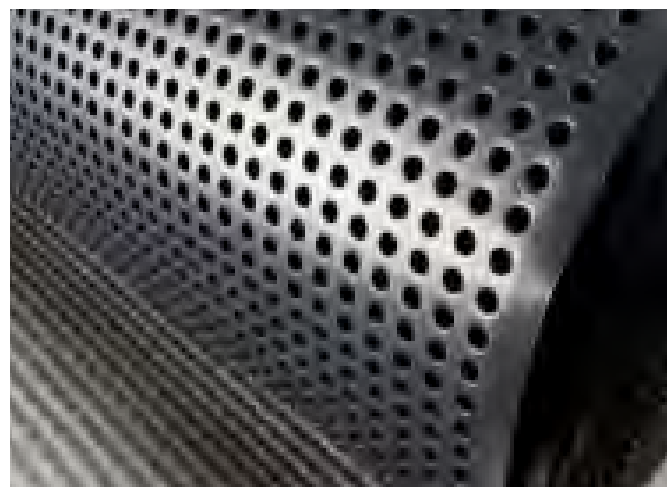
Newton 410 GeoDrain provides drainage and protection to the outside face of basement walls to sloping sites, preventing the build-up of water pressure and protecting the structure from aggressive water, chemicals and toxins, and provides mechanical protection only when used against the 'Type A' waterproofing where the site is not sloping and so where ground water removal is not viable or recommended.

KEY BENEFITS

- Assists in moving water around and downhill of the structure to sloping sites to prevent water pressure from bearing against the structure
- Resistant to all chemicals normally found in the ground
- Withstands stresses and movement acting as a slip membrane as the backfill settles
- Allows for backfilling with excavated earth
- Extremely strong material, minimising the risk of damage when backfilling even when no protection board is used
- Very high compressive strength
- Suspended soil particles (fines) are filtered out by the geotextile layer
- Quick and easy to install with a range of ancillary fixing and installation products

TYPICAL APPLICATIONS

- To prevent water bearing against the structure of an externally applied waterproofing system to sloping sites when used in conjunction with sheet applied or liquid applied external tanking membrane to BS 8102:2009
- Protection of the structure from aggressive chemicals in the ground water to sloping sites
- Protection of the waterproofing membrane



NEW-BUILD WATERPROOFING DESIGN

- Build new structures to the requirements of BS 8102:2009. Further guidance is available in CIRIA Report 139 - Water Resisting Basements
- Use the [Newton HydroTank System](#) at construction joints as part of an effective multi-staged approach to the waterproofing
- Carry out a geotechnical survey to evaluate soil characteristics and groundwater conditions in accordance with BS 8004. Great care should be taken when considering waterproofing that requires the permanent removal of the ground water to be effective. See BS 8102:2009 Section 5 for further guidance
- When used as a drainage membrane, Newton 410 GeoDrain should only be used to sloping sites where ground water is diverted around and drained away safely downhill of the structure
- The land drain or perforated pipe to the base of an externally applied drainage membrane should be maintainable and graded to an open outlet below the level of the lowest slab so that surcharge cannot occur.
- Land drains or perforated pipes should be maintainable. Include accessible jetting ports at regular intervals with at least one jetting port to each elevation

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TECHNICAL DATA

Features – Studded core	Result	Units	
Material	HDPE		
Colour	Black		
Density	740	g/m ²	
Stud depth	9.6	mm	
Height	10.2	mm	
Vicat softening temperature	148	°C	
Features – Geotextile	Result	Units	
Material	Polypropylene		
Colour	White		
Density/Specific gravity	1.36		
Thickness	1.1	mm	
Features – 410 GeoDrain	Result	Units	
Width	2.0	m	
Length	12.5	m	
Area	25	m ²	
Density	610	g/m ²	
Packaged weight	20.0	kg	
Service temperature	-40 to +80	°C	
Installed Performance	Result	Units	Test Method
Thickness at 2kPa	11.3	mm	EN ISO 9863-1
Water flow (in plane)	3.50	l/m ² /s	EN ISO 12958
Water flow through Geotextile	350	l/m ² /s	BS 6906-3
Compressive strength – Temporary loading	420	kPa	EN ISO 25619-2
Water vapour diffusion resistance – Sd value	>604	m	BS EN 1931
Water vapour diffusion resistance – μ value	>1208000	μ	Calculated from SD value
Water vapour diffusion resistance	>3020	MNs/g	Calculated from SD value
Tensile strength (Machine direction)	15.4	kN/m ²	EN ISO 10319
Tensile strength (Cross direction)	16.8	kN/m ²	EN ISO 10319
Chemical resistance – Excellent	100	%	EN14030
Oxidation resistance – Excellent	100	%	EN ISO 13438

NOTES: Newton 410 GeoDrain is resistant to a wide range of chemicals, impervious to root penetration, rot-proof and unaffected by soil, bacteria and fungi. Newton Waterproofing Systems premium-quality products conform to applicable EN and national standards.

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PRIMARY WATERPROOFING MEMBRANE

Newton 410 GeoDrain is a drainage membrane, not a waterproofing membrane. Primary waterproofing of the structure should be achieved with one of the following products:

- [Newton 403 HydroBond](#) is a very high performance composite sheet membrane
- A suitable [Newton System 100](#) liquid applied waterproofing membrane

PACKAGING

Newton 410 GeoDrain is supplied in wrapped and labelled 12.5m long x 2.0m wide rolls.

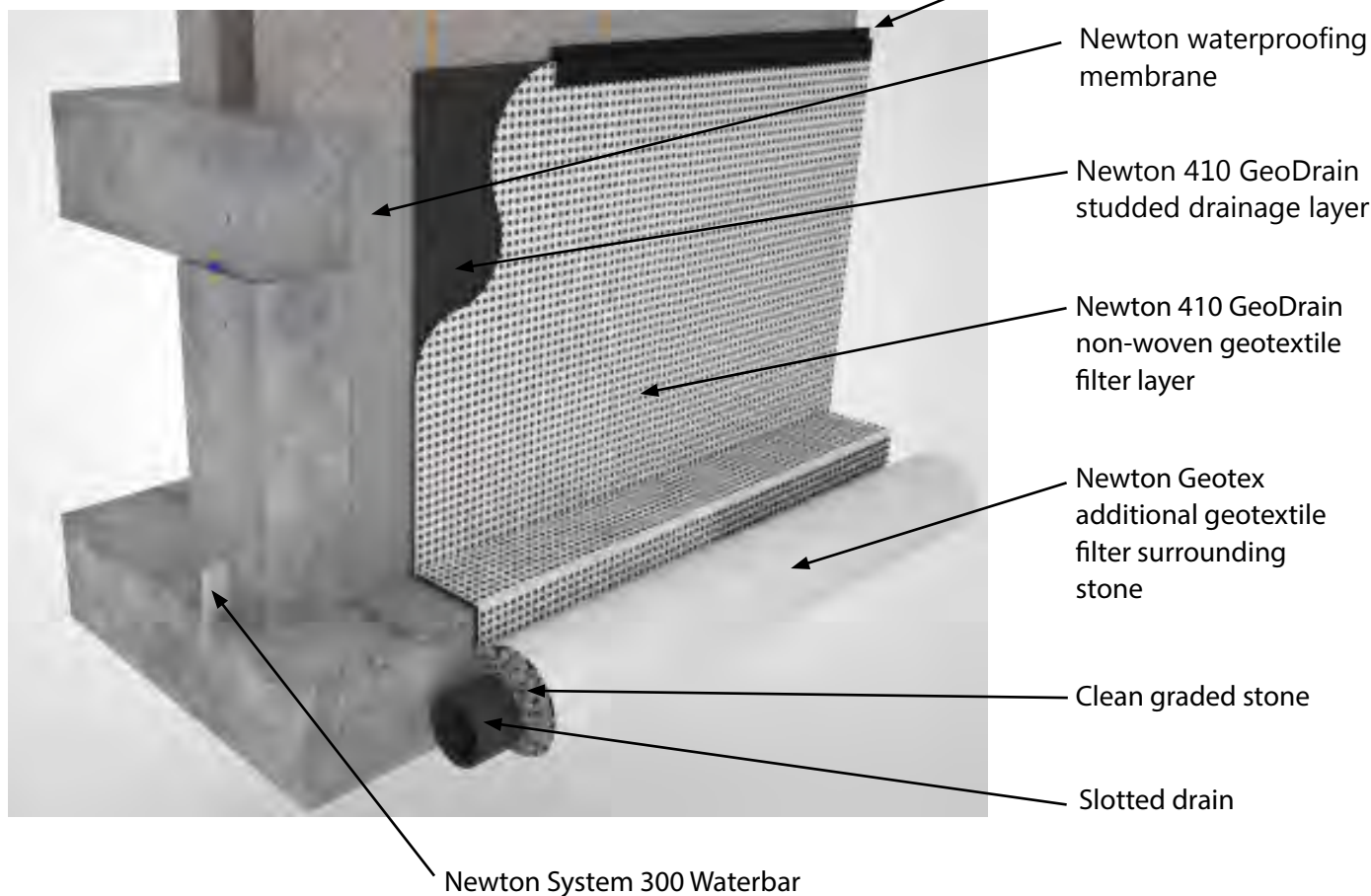
LIMITATIONS

- Should not be used to de-water permanently high water levels. See BS 8102:2009 Section 5 for further guidance
- Should not be used as standalone product if water or damp and vapour control is required by the specification. Use in conjunction with a suitable Newton waterproofing membrane
- Backfill should be compacted every 600mm to prevent linear shear of the filter fabric from the drainage core if no protection board is used
- Do not fix through the waterproofing membrane to affix the drainage membrane



ANCILLARY PRODUCTS

- Newton GeoProfile - Purchase Code A15
- Newton Geotex - Purchase Code A14
- Newton [MultiPlug](#) - Purchase Code A1



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INSTALLATION - VERTICAL SURFACES

- Apply a Newton waterproofing membrane to walls in accordance with the product data sheets.
- Apply the 410 GeoDrain horizontally by unrolling the roll left to right or right to left. The membrane is held to the wall by the back-fill. Do not use Newton MultiPlug fixings through the drainage layer as this will also perforate the waterproofing membrane. Use the MultiPlugs as a final fix to the top of the installation ensuring that this is above external ground level
- At internal changes of direction, simply fold and crease the membrane
- At external changes of direction, the geotextile will not allow the membrane to be folded. Cut the geotextile at the fold point and then fold and crease the membrane.
- Using temporary means to hold the membrane in place whilst backfilling, overlap subsequent sheets of Newton 410 GeoDrain, ensuring that the filter fabric of the next sheet overlaps the previous studded core - a section of filter fabric is separated from the drainage core for this purpose
- To sloping sites, place a slotted drain to the base of the foundation so that the top of the drain is below the top of the internal slab level. Place the drain within a bed of clean graded 20mm stone surrounded by a sheet of Newton Geotex filter fabric ensuring that enough Geotex is available to lap to the Newton 410 GeoDrain to give continuity of the filter fabric. NOTE: If Newton 410 is used below the raft also, the slotted pipe will need to be lowered so it is below the horizontal membrane
- Ensure the slotted pipe drains freely to a safe collection point that is downhill of the structure
- Place the Newton Geotex filter fabric to the face of the Newton 410 so that it is held in place by the back-fill
- Use Newton GeoProfile to the top edge of the membrane to prevent debris and back-fill from entering the cavity between the drainage core and the filter fabric
- Carefully back-fill the excavation. If graded stone is used, a protection board is not required but the stone should be placed in controlled layers of no more than 600mm so as to prevent slump to the membrane. If the removed soil is re-used, ensure that it does not contain sharp stones and ensure that the soil is compacted every 600mm. If sharp stones exist within the re-used soil a protection board will be required



STORAGE

Newton 410 GeoDrain should be stored away from direct sunlight. Rolls should be stored in the upright position.

SPECIFICATION

Newton Waterproofing Systems are in partnership with RIBA NBS who publish details of our products and systems within their specification clause library to allow Architects ease of specification through their NBS Plus interface. NBS clauses can be accessed via the technical resources area of the web site where a live NBS Feed is available at [NBS Plus Live Feed](#)

Our website has a wide choice of downloadable [Technical Drawings](#), and a large selection are also available either via [FastrackCAD](#), or as BIM objects on the [National BIM Library](#)

HEALTH & SAFETY

Newton 410 GeoDrain should only be used as directed within this Data Sheet. There is no legal requirement for a Material Safety Data Sheet (MSDS) for this product. PPE should be worn at all times when working on building sites including eye protection when drilling or fixing. Safety procedures should be adhered to when working at height and working within excavations for your personal protection.

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M18
EN 13252:2016
1213
Geocomposite for applications in the drainage sector S + F + D

	Essential Characteristics	Declared Performance		Test Standard	Harmonised Technical Standard
		Mean value	Tolerance		
Geotextile (textile layer)	Tensile strength - MD	9.0 kN/m	- 1.2 kN/m	EN 10319	EN 13252:2016
	Tensile strength - CDM	9.0 kN/m	- 1.2 kN/m		
	Dynamic perforation	29 mm	+ 5.8 mm	EN 13433	
	Puncture	1,250 kN	- 0.125 kN	EN 12236	
	Opening size	120 µm	± 36 µm	EN 12956	
	Permeability	50 x 10 ⁻³ m/s	- 15 x 10 ⁻³ m/s	EN 11058	
	Durability	To be covered within 2 weeks after installation. Durable for at least 100 years in each natural soil (ph-value between 4 and 9; ground temperature ≤ 25°C)			
Geocomposite (membrane + textile)	Permeability - MD	3.3 l/ms	± 0.5 l/ms	EN 12958	
	Permeability - CMD	3.4 l/ms	± 0.5 l/ms		
	Tensile strength - MD	15 kN/m	± 1 kN/m	EN 10319	
	Tensile strength - CMD	15 kN/m	± 1 kN/m		
	Durability	To be covered within 2 weeks after installation. Durable for at least 5 years in each natural soil (ph-value between 4 and 9; ground temperature ≤ 25°C)			
	Hazardous substances	Less than limited by national regulations.		National regulations valid in the EU member states.	

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