

## System 400

## NEWTON 410 GEODRAIN

## Externally Applied Drainage Membrane

Rev 2.1 - 8 March 2017

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 outstanding 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.

## KEY BENEFITS

- Prevents 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

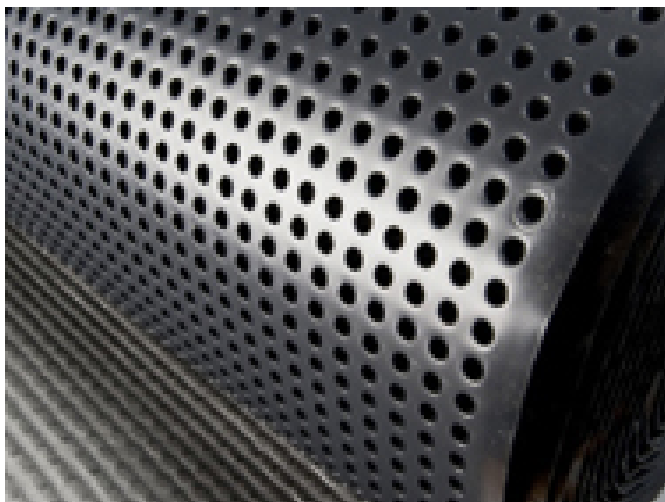
## TYPICAL APPLICATIONS

- As the drainage layer 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 prevent the build up of ground water to retaining walls



## 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 [Newton System 300](#) waterbars 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. If risk of surcharge exists a Newton pumped back flow protection device should be used. See BS 8102:2009 Section 6.4 for further information
- 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 <sup>2</sup>	
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		
Stud depth – Double cusped	4.8	mm	
Thickness	1.1	mm	
Features – 410 GeoDrain	Result	Units	
Width	2.0	m	
Length	12.5	m	
Area	25	m <sup>2</sup>	
Density	610	g/m <sup>2</sup>	
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 <sup>2</sup> /s	EN ISO 12958
Water flow through Geotextile	350	l/m <sup>2</sup> /s	BS 6906-3
Compressive strength – Temporary loading	420	kPa	EN ISO 25619-2
Compressive strength – Permanent loading	100	kPa	EN ISO 25619-1
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 <sup>2</sup>	EN ISO 10319
Tensile strength (Cross direction)	16.8	kN/m <sup>2</sup>	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.

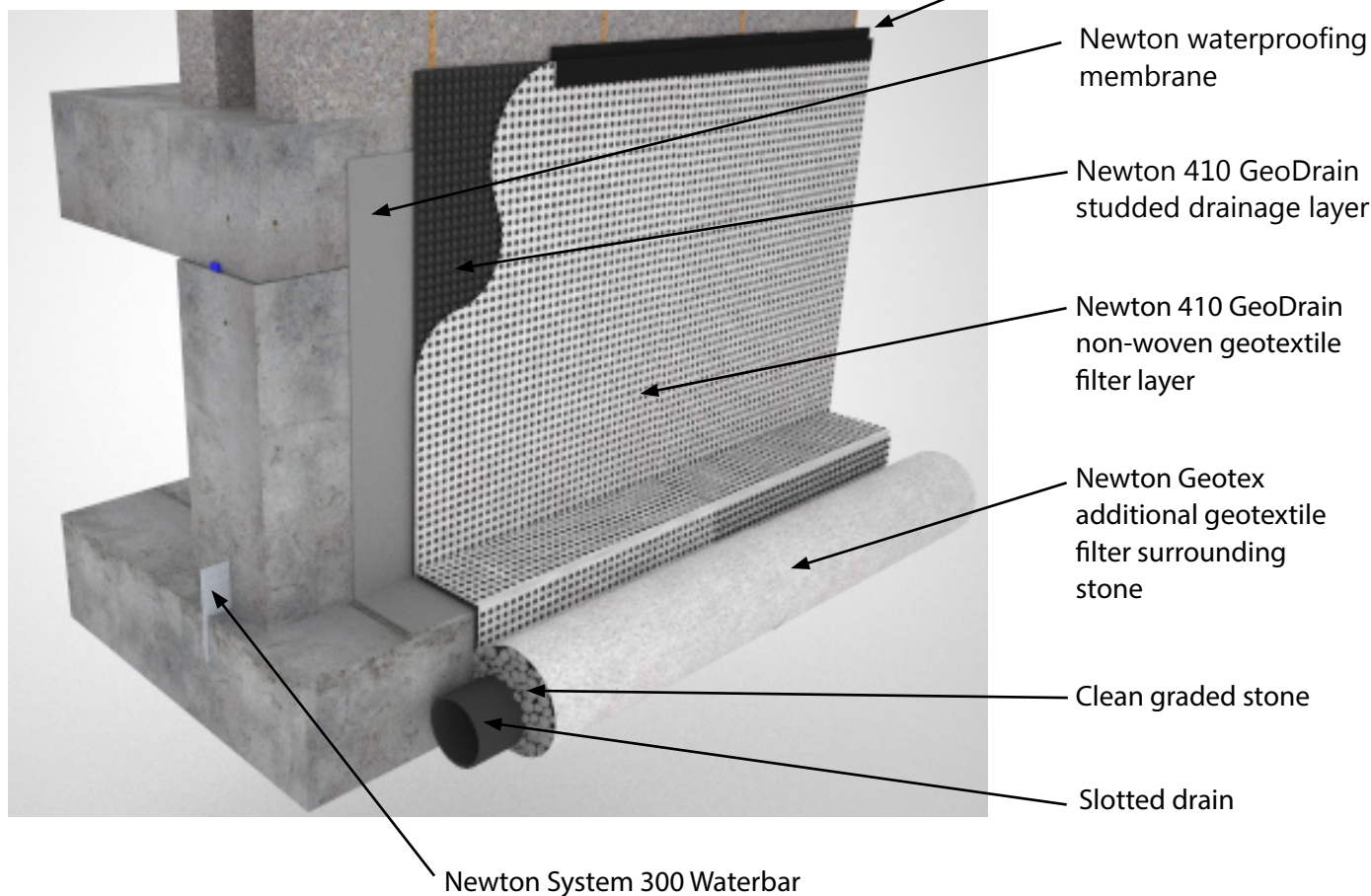
### LIMITATIONS

- 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 stand-alone 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 [Waterseal Tape](#) - Purchase Code A5, A5W
- Newton [MultiPlug](#) - Purchase Code A1
- Newton [904-RT](#) - Purchase Code 904-RT



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### INSTALLATION - VERTICAL SURFACES

- Apply a Newton waterproofing membrane to walls in accordance with the product data sheets. If Newton 403 HydroBond has been applied below the raft, link the raft and wall membrane to provide continuous waterproofing
- Apply the 410 Geodrain horizontally. 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
- 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
- Seal the edges of sheets using the 60mm flange at the edge of each sheet using Newton Waterseal Tape
- 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

### INSTALLATION - UNDER THE CONCRETE RAFT

- Lay Newton 410 Geodrain in adjoining strips above the hard-core. Sand blinding is not required. Extend Newton 410 past the footprint of the raft by 500mm and continue to the slotted drain surrounded in clean graded stone. Overlap and tape sheets with Newton Waterseal Tape
- Newton 403 HydroBond should be laid above the Newton 410 Geodrain as the primary waterproofing membrane, prior to the placing of the concrete raft

### STORAGE

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

### 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.