

Hydroduct® Vertical Drainage Sheets

Creep resistant geocomposite drainage sheets that provide highly efficient drainage to reduce hydrostatic pressure on basement walls

Description

Hydroduct® drainage sheets are pre-fabricated geocomposites comprising studded polystyrene drainage cores covered with polypropylene filter fabric. They provide efficient, cost effective alternatives to traditional aggregate drainage.

Hydroduct drainage sheets must link with either Hydroduct Coil 150 or perforated sub-soil drains at the bottom of the basement wall, and carry to the site drainage system. This ensures water is drained away from the basement structure.

Product Range

Hydroduct® 200

Polypropylene non-woven filter fabric on one face of a 12 mm studded drainage core. Applied to walls of basements that have been waterproofed with Bituthene membranes and Servipak protection boards.

Hydroduct® 220

Polypropylene non-woven filter fabric on one face of a 12 mm studded drainage core with a pressure dissipation plastic film bonded to the other face. Applied to walls of basements that have been waterproofed with Bituthene membranes. Also applied to existing basement walls and permanent shuttering prior to the application of Preprufe membranes.

Hydroduct® Coil 150

Polypropylene non-woven filter fabric encapsulating a 26 mm studded drainage core. Installed at the bottom of basement walls and linked to the Hydroduct sheet (as shown on drawing) an alternative to NBS Plus a perforated sub soil drainage pipe. Connectors must be used to join Hydroduct Coil 150 to sub-soil drains (see drawing).

Applications

- As an alternative to traditional 'French' drains around the perimeter of basement structures
- With waterproofing membranes on walls of basement structures

Advantages

- **Polystyrene resists creep under long term loading** - drainage capacity maintained
- **High flow capacity** - can drain 5.29 litres/sec/m when backfilled to a depth of 5 m
- **Geotextile filter fabric prevents soil particles entering drainage core** - minimises risk of clogging
- **Rot proof** - unaffected by immersion in water and resistant to dilute concentrations of chemicals
- **No drainage aggregates needed** - excavated soil re-used as backfill.



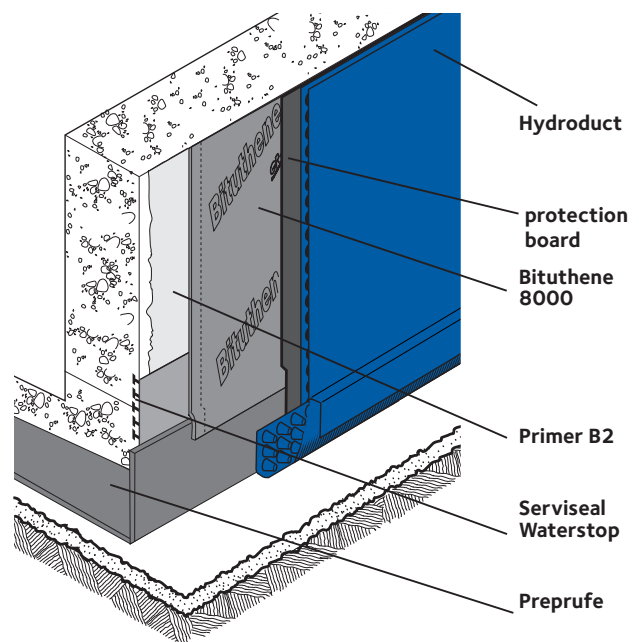
Design

Designers are strongly advised to refer to British Standard 8102:2009, Protection of structures against water from the ground. Further guidance is available in CIRIA Report 139 'Water - resisting basements'. As almost all basement structures are likely to be subjected to water pressure at some stage BS 8102 encourages designers to consider the consequences of any leakage. Designers should therefore assess the risk of less than adequate workmanship when considering Type A (tanked) protection, especially where tanking is applied to masonry walls. The risk may be reduced by incorporating; subsoil drainage (where appropriate), into the design. to suit application.

Limitations

- Not suitable where 'Water table is anticipated to be permanently above the level of the sub - soil drain.
- Not recommended for masonry walls of basements in impermeable soils.
- When backfilling, compaction of backfill must be controlled to prevent displacement of Hydroduct sheets.
- At temperatures below 0°C, additional fixings are necessary to secure the geotextile to the drainage core. Contact GCP for further details.

 0799	Grace Construction Products Ltd Ipswich Road, Slough, Berkshire SL1 4EQ United Kingdom 12 CPD-44
	EN 13252:2000 + A1:2005 Hydroduct® 200 & Hydroduct® 220 Geotextile for filtration, separation and drainage (F+S+D) in drainage systems, Type F+S+D



Details shown are typical illustrations only and not working drawings. For assistance with working drawings and additional technical advice please contact GCP Technical Services.

Supply

Hydroduct 200/220	1.25 m x 32 m long roll x 12 mm thick (40 sq m) weight approx. 40 kg
Cut Fasteners	Strip 8 x 4 dimples, 5 supplied per roll
Hydroduct Coil 150	150 mm deep x 26 mm thick x 30 m coils
Ancillary Materials	Bitustik 4000 - 150 mm x 12 m rolls Hydroduct Strip - 150 mm x 20 m rolls

For Fixing Directly to Substrate: Hammer drill with 6 mm diameter masonry drill. Hilti DX 36M cartridge gun and cartridge 6.8/1 IM calibre, Aerosmith pneumatic nailer, refer to manufacturer for type of fixing appropriate to substrate.

Core Properties 200/220

Core	Black moulded polystyrene
Compressive Strength	700 kN/m ²
Flow Capacity	5.29 litre/sec/m (i = 1 at 20 kPa)

Installation

Storage: Store under cover in original UV resistant polyethylene bags. If storage is to be for extended periods, store internally or in the shade.

Application against Protection Boards: Hydroduct 200 is recommended for this application. Fix horizontal strips of Bitustik 4000 to the protection boards at approx. 600 mm centres. At temperatures below 10°C, warm the Bitustik gently with a hot air gun before application to improve the adhesion. Alternatively use adhesive 'spike' fixings that can be bonded to the protection board without penetrating the waterproofing membrane. Apply the Hydroduct 200, geotextile facing outwards and bond to the Bitustik. Where possible, secure the Hydroduct in place at the top of the wall, but do not penetrate the waterproofing membrane with any fixings.

The filter fabric is bonded to the core with pressure sensitive glue which permits the fabric to be peeled back to form overlaps etc. The glue can be softened if required using a hot air gun. Do not use an open flame since this will damage the fabric. The geotextile filter fabric is always laid towards the water face to allow water entry. The sheets can be joined horizontally and vertically by overlapping the geotextile fabric 100 mm and butt jointing the studded cores. Cut Fasteners are then used to form a connector at centres to suit application by interlocking a minimum of two dimples by eight dimples long on each sheet and reinstating the fabric to form a weathered lap.

Corners: Hydroduct 200 can be bent on site to form internal corners. External corners are formed by cutting the geotextile and providing an additional 100 mm wide strip of geotextile to wrap around corner to prevent infiltration of soil at the overlap joint.

Installation with Hydroduct coil: Peel back geotextile fabric from studded core. Place Hydroduct Coil 150 against core, wrap with filter fabric and tuck behind core. Place a small amount of aggregate on fabric to hold in place prior to backfilling.

Sealing edges: All exposed edges of Hydroduct should have filter fabric tucked behind core to seal leading edge to prevent soil from entering the core.

Weep holes: If weep holes are required in retaining walls 12-15 mm diameter holes should be carefully cut through studded sheet opposite holes leaving the geotextile fabric intact.

On high walls it may be necessary to decrease the fixing centres or lay Hydroduct sheets horizontally in stages and backfill progressively to prevent slumping.

Declared Values according to EN 13252:2000 + A1:2005

Property	Hydroduct 200/220 Typical Value
Resistance to static puncture (CBR test) (kN)	≥ 1.26
Tensile strength (kN/m)	MD: ≥ 7 CMD: ≥ 7
Dynamic perforation resistance (cone drop test) (mm)	≥ 26
Characteristic open size (µm)	100 ± 30
Water permeability normal to the plane (ms)	≥ 0.063
Water flow capacity in the plane (m ² /s)	≥ 3.5 x 10 ⁻³
Durability	To be covered within 30 days. Predicted to be durable for a minimum of 25 years in natural soils with 4 < pH > 9 and soils temperatures < 25 °C
Dangerous substances	NPD

Footnotes: MD: machine direction, CMD: cross machine direction, NPD: No Performance determined

Application directly against Bituthene Membranes:

Hydroduct 220 is recommended for this application. The black plastic film should be applied against the membrane with the geotextile fabric facing outwards. Install as per application against Servipak Protection Boards.

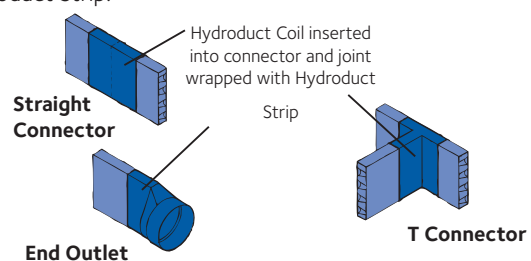
Application directly to adjacent basement walls or

permanent shuttering: Fix directly to the substrate using masonry nails, shot fired or pneumatic fixings at centres sufficient to retain the drainage sheet securely in place.

Basement Drainage Collector: Hydroduct Coil 150 should be used around the perimeter base of tanked basement retaining walls, contiguous and piled walls including landscape walling to collect and control ground water. It is a cost effective method of providing site drainage in confined spaces which can be linked to the overall drainage system. It should be used in conjunction with Hydroduct sheets placed against waterproof membrane systems to form an integrated drainage system. Hydroduct Coil 150 should be placed at the bottom of the basement wall and joined with the site drainage system using the preformed connectors.

Corners: Hydroduct Coil can be bent or cut to form a mitre and covered with GCP Hydroduct Strip to prevent fines and silt from entering the core.

Connectors: The Hydroduct Coil is cut to length using a Stanley knife and inserted into the connector and held in place with GCP Hydroduct Strip.



Health and Safety

There is no legal requirement for a Safety Data Sheet for the Hydroduct range of products. For health and safety questions on these products please contact GCP Applied Technologies.

gcpat.com | Customer Service: Tel +44 (0)1753 490000 | Fax +44 (0)1753 490001

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GCP Applied Technologies Inc., 62 Whittemore Avenue, Cambridge, MA 02140 USA

In the UK, Ipswich Road, Slough, Berkshire, SL1 4EQ, UK

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