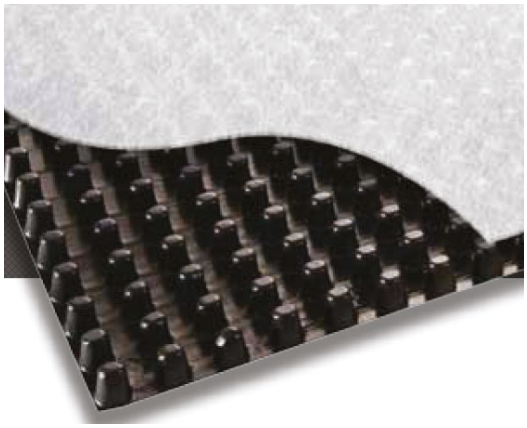
Product Data Sheet

HYDRODRAIN D200, D400, D500

Roof Finishes

Hydrodrain D200, D400 and D500 are high strength, robust layers designed to provide structural drainage for podia and mixed deck amenity areas.

The Hydrodrain D range can also be used to provide a capillary break layer between slabs, to relieve external water pressure from buried structures and to provide draining under block paving, behind retaining walls, potable water reservoir roofs and walls, tunnels and intensive roof gardens.



Due to its high puncture resistance it also provides protection and prolongs the life of the waterproofing.

The Hydrodrain D drainage layers can be applied horizontally on roofs and below base slabs or vertically against walls.

Key benefits

- Robust, efficient, easy to install.
- Long life performance and high flow capacity.
- Compatible with most waterproofing systems.
- Provides protection to waterproofing system.
- High impact and crush strength.
- Reduced excavation and backfill.

Description and performance

Hydrodrain D consists of a medium-weight non-woven geotextile filter thermally bonded on one side of a single cuspated HDPE core. Providing a drainage layer with clear void to allow flow in all directions. The geotextile filter has a flap extending beyond the core on one edge and filters a wide range of materials, allowing water to perculate into the core and be efficiently transported away to be discharged into outlets. The geotextile is bonded to the core to ensure that it does not deform into the drainage passages under the load of the backfill material allowing continuity of the drainage void.

The compressive strength and creep resistance properties of Hydrodrain D ensure that the core maintains its drainage capacity even when subjected to compressive loads.

Hydrodrain D is durable and sufficiently robust to resist the mechanical stresses imposed during installation and throughout the design life. It also eliminates the need for further protection of the waterproofing. Being much thinner than aggregate drainage layers, Hydrodrain D achieves superior flow characteristics, helps reduces dead loads and may reduce the required thickness of the roof slab construction.

Hydrodrain D enhances structural waterproofing performance by providing an additional barrier that prevents most water reaching the liner. The high puncture resistance of Hydrodrain D provides protection to and prolongs the life of the waterproofing.

Hydrodrain D properties

Product dimensions

	Hydrodrain D200	Hydrodrain D400	Hydrodrain D500
Standard roll dimensions	0.915m x 25m	0.915m x 50m	1.1m x 50m

Geocomposite properties

		Hydrodrain D200	Hydrodrain D400	Hydrodrain D500		
Thickness at 2 kPa	mm	52	26.9	12	±10%	EN ISO 9863-1
Tensile strength (MD/CD)	kN/m	28/28	20/20	20/20	-10% (D200 & D500) -13% (D400)	EN ISO 10319
Elongation at peak (MD/CD)	%	25/25	45/55	45/45	nominal	EN ISO 10319
Mass per unit area	g/m^2	2300	2500	1370	approx	EN ISO 9864
CBR puncture resistance	N	4800	5600	2750	-20%	EN ISO 12236
Perpendicular Water Inflow	(dimple side only)					
Water flow at 50mm head	l/m^2.sec	72	75	103	±30%	EN ISO 11058

		Hydrodrain D200				Hydrodrain D400				Hydrodrain D500					
At 2kPa permeability (coefficient)	m/s	2.8 x 10^{-3}				2.8 x 10^{-3}				2.5 x 10^{-3}				±30%	EN ISO 11058
Breakthrough head	mm	0				0				0				nominal	
In-plane water flow MD & CMD*		HG = 1.0		HG = 0.1		HG = 1.0		HG = 0.1		HG = 1.0		HG = 0.1			Hydraulic gradient
at 20 kPa confining pressure	l/m².sec	95	estimated	29	estimated	11.75	-20%	4.05	-20%	3.70	±20%	1.10	±20%		EN ISO 12958
at 50 kPa confining pressure	l/m².sec	90	estimated	27.5	estimated										EN ISO 12958
at 100 kPa confining pressure	l/m².sec					9.15	-20%	2.85	-20%	2.90	±20%	0.90	±20%		EN ISO 12958
at 200 kPa confining pressure	l/m².sec					7.95	-20%	2.35	-20%	2.35	±20%	0.70	±20%		
*D200: estimated water flow values based on computational fluid dynamics modelling, see Note 5. D400: with **soft foam** contact surfaces to simulate textile intrusion into the core due to soil pressure. The confining pressures of the flow rates shown above are all equal to or less than the long-term compressive strength of the product. D500: with **soft foam** contact surfaces to simulate textile intrusion into the core due to soil pressure.															
Resistance to weathering		The geotextile has high UV stabilisation which may allow exposure up to 12 months depending on location				The geotextile has high UV stabilisation which may allow exposure up to 12 months depending on location				To be covered in 28 days					EN 12224
Resistance to chemicals		Excellent													EN 14030
Design life		120 years (manufacturer's declaration)													
Thickness at 2kPa	mm	1.75				1.75				1.2				±20%	EN ISO 9863-1
Tensile strength MD/CMD	kN/m	20/20				20/20				9.5/9.5				-13%	EN ISO 10319
Pore size O_{90}	µm	70				70				120				±30%	EN ISO 12956
CBR puncture resistance	N	3400				3400				1600				-20%	EN ISO 12236
Dynamic perforation cone drop	mm	17				17				32				+20%	EN ISO 13433
Type & material		Non-woven needle-punched and heat-treated long staple fibre polypropylene													
Average corrected compressive stress	kPa	500 - 100				500				750					
Creep limited compressive stress (<25% ccs at 114 yrs)		50				250				300					

1. The values given in the tables above are indicative and correspond to nominal results obtained in laboratory test conditions; figures above have been derived from statistical interpretation of test results. In line with our policy of continuous improvement, we reserve the right to make changes without notice.
2. The tolerance on roll length is +1.5% and on roll width Is +1.0%.
3. Guidance on interface shear strength, creep and certain other parameters is available. Site specific tests are strongly recommended.
4. Final determination of the suitability of any information is the sole responsibility of the user.
   Please contact Axter for further discussion regarding the use of these or other products, however responsibility for selection of a material and its application in any specific project remains with the end user.
5. Hydrodrain D200 is a product principally developed for the gas venting market and therefore has not been tested in accordance with water flow codes. The estimated water flow codes shown are based on CFS simulation.

Hydrodrain D200, D400 and D500 installation

Hydrodrain D is supplied in rolls, packed in opaque plastic bags for protection against UV light. The bags should not be removed until the product is to be used. The rolls are easily manhandled.

Hydrodrain D can be supplied in a variety of roll sizes offering a range of flow capacities and thicknesses, depending on the site requirements.

For efficient storage and handling, the product is normally rolled “dimples inward” and will usually require to be turned over during installation.

Hydrodrain D is laid with the flat side of the drainage core against the structure and the geotextile filter on the facing the soil backfill. Hydrodrain D is applied to buried vertical walls or horizontal slabs to form a drainage and protection layer. It forms a void to collect and transmit excess rainwater into adjacent drainage outlets or collector pipes and also provides protection to the waterproofing membrane.

Hydrdrain D must be covered. It can be applied directly to concrete, brick, rock, or similar structural surfaces. It may also be applied against waterproof membranes of all types. Its major applications are drainage behind retaining walls, bridge abutments, basements, tunnels, service reservoirs and roof gardens where Hydrodrain D provides a lightweight drainage layer.

Hydrodrain D should be ballasted during installation to prevent wind uplift (don’t lay more than can be covered at any one time). Collect offcuts to be disposed of in accordance with the site waste disposal rules.

Instructions

1. Carry or roll the Hydrodrain D from the storage area to the place of work. DO NOT DRAG the rolls as this will damage the product. If mechanical plant is used to carry the rolls ensure that the Hydrodrain D rolls are not damaged by bucket teeth, etc. The rolls weigh approx 40 - 75kg and are approx 0.6 - 1.3 metre dia.
2. Hydrodrain D is designed to be laid with the geotextile on the dimpled side facing the direction of water inflow (usually from the backfill). Note that there is a geotextile flap on one edge of the roll.
3. Rolls can be cut to length with a sharp knife. The flap can be held in position with mastic or jointing tape.
4. The next roll should be placed in a similar way to the first and such that the dimpled plastic cores butt together. The geotextile extends beyond the width of the dimpled HDPE core at one side to create an overlap flap.
5. Unroll the first roll of Hydrodrain D into position such that the geotextile flap laps up onto a side wall.
6. Continue laying further rolls in a similar manner to create a continuous blanket. It is advisable to consider loading the rolls with sandbags or other ballast if working on an exposed site as wind can easily lift the lightweight rolls of Hydrodrain D.
7. At the far wall a 500mm wide geotextile strip is used to form the flap from the geotextile to the wall.

8. Hydrodrain D can be cut and sealed around columns, pipes and other penetrations.
9. When installing Hydrodrain D over drainage outlets, cut a section to the width of the drain and place it upside down over the cover. Butt up to adjacent cores and overlap with geotextile and seal using jointing tape.
10. For reservoir roof corner edge details, cut the Hydrodrain D to finish level with the edge of the horizontal slab and at the top of the wall. Vertical sections are secured using stick pins or by temporarily holding in place using timber supports. To prevent any gaps and soil ingress from blocking the Hydrodrain D, use an additional geotextile strip to cover the corner join using jointing tape to seal in place.
11. The collected water is usually discharged from Hydrodrain D into adjacent drainage outlets in the roof slab, downpipes or to collector pipes as shown on the site drawings.
12. Before backfilling, inspect the installation to make sure that there are no gaps in the geotextile where soil can enter the core. Ensure that water can exit freely from the Hydrodrain D.
13. Backfill material is usually good quality topsoil of minimal thickness.
14. Non-load bearing walls and planters can be built onto Hydrodrain D if a suitable concrete footing is cast.
15. At least 150mm of backfill material should be maintained over the Hydrodrain D where mechanical plant is working. Temporary access routes for mechanical plant should be protected with boards. In the unlikely event that the Hydrodrain D geotextile cover is damaged either before or after installation small areas can be repaired using a patch of similar textile at least 300mm larger than the damaged area. If the cuspated drainage core has been damaged, then this should be cut out carefully so as not to damage the underlying liner and a new piece of Hydrodrain D inserted.
16. Standard Hydrodrain D contains a UV stabiliser which means that it can be exposed to sunlight for up to 14 days in temperate climates. In climates with extreme sun then exposure should be limited to 3 days. Prolonged exposure will cause some loss of strength. Please contact our technical department for more specific advice and details of special enhanced UV resistance.
17. There are no known COSHH hazards associated with the installation of Hydrodrain D.

Ancillaries:

Sharp knife; narrow roll of textile 500mm wide for edge detail; Sandbags for temporary ballast of overlaps; Adhesive for special joint details as required; Jointing tape to hold the geotextile in position.