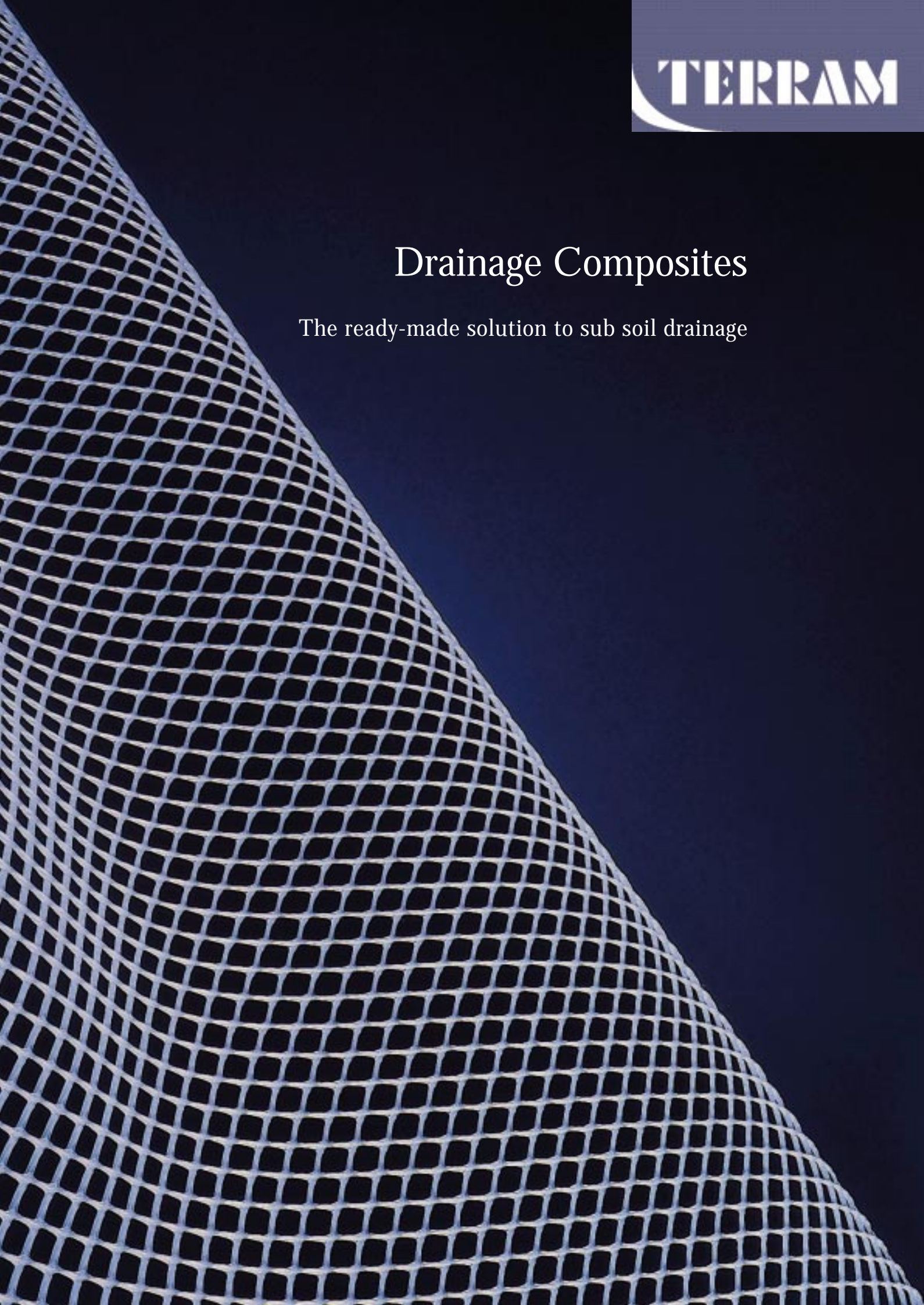


Drainage Composites

The ready-made solution to sub soil drainage



The Ready-Made Solution to Sub Soil Drainage

Drainage Composites are prefabricated subsurface-drainage products which directly replace conventional granular fill. They normally consist of two different components: a three-dimensional polymer core, which acts as the water transport medium, and a geotextile filter. This allows water to pass through into the polymer core but prevents the soil from washing through.



TO BE EFFECTIVE, DRAINAGE COMPOSITES NEED TO MEET THE FOLLOWING CRITERIA:

- They must be robust
- They must survive the design life of the structure
- The geotextile must filter the soil and allow passage of water into the core
- The geotextile must not unduly deform and restrict flow
- They must have a high chemical and bacterial resistance

A TIME-PROVEN RECORD

In use since the 1970's, Terram Drainage Composites have established an impressive record. They have effected savings of up to 50% over conventional systems in both civil engineering and architectural projects.

THE BENEFITS OF SELECTING TERRAM DRAINAGE COMPOSITES

- Provides and maintains high flow paths for water and gases, therefore maintaining soil stability
- Filtration properties are suitable for most soil types
- Robustness prevents puncturing and tearing during installation
- Separates and protects structure from fill material
- Being light and easy to handle, they are quick to install and demonstrate a cost-effective replacement to conventional materials
- Consistency of performance is guaranteed as the composites are manufactured to the highest quality control standards

Guidelines to specifying Terram Drainage Composites

Determine the application and design by function:

HYDRAULIC PROPERTIES

- In plane flow (to meet application requirement)
- Filter flow rate (consider soil permeability and gradient)

FILTER PROPERTIES

- Nonwoven heat bonded
- O_{90} suitable to soil type involved
- Tensile strength with high modulus - (to resist deformation of the filter into the core)
- CBR puncture resistance

POLYMER OF CORE AND FILTER

- Resistance to chemical and bacterial attack
- Resistance to creep
- UV resistance

CORE CRUSH STRENGTH

- Resistance to long term ground pressures
- Depth of installation
- Live loads - (overhead vehicle traffic)

CBR PUNCTURE RESISTANCE

- Construction installation - (high exposure to damage)

TENSILE STRENGTH

- Construction installation - (high exposure to damage)
- Predicted settlements - (deformation in waste tip applications)

BOND OF FILTER TO CORE

- In plane shear - (when used on inclined slopes)

LAPPING

- Minimum lap (as per suppliers' instructions)
- Method (as per suppliers' instructions)

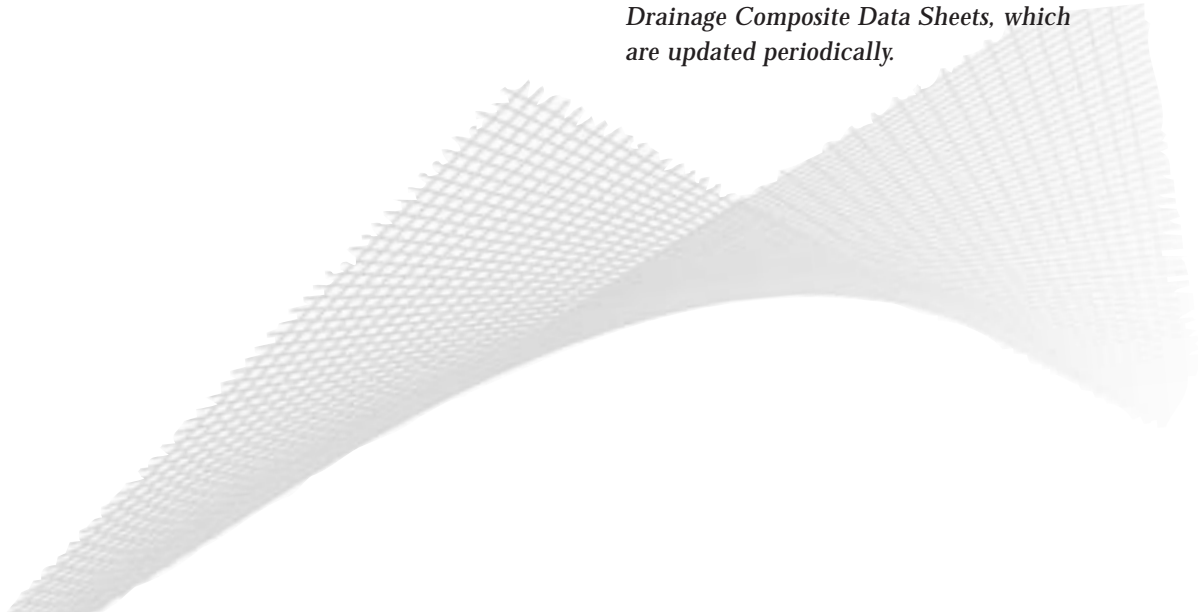
ROLL SIZE

- Minimum width (to avoid excessive jointing)
- Minimum length (to avoid excessive jointing)

ROLL WEIGHT

- Handling safety (One or two persons per roll)

Full technical details and installation instructions are published on Terram's Drainage Composite Data Sheets, which are updated periodically.



Product range

FILTRAM 1A1



Suitable for vertical applications such as in basements and domestic retaining walls.

Filtram 1A1 consists of a clear polymer extruded grid core covered on both sides with Terram nonwoven filter by full thermal bonding.*

FILTRAM B1



Suitable for vertical structure applications where waterproofing protection is not a requirement.

Filtram B1 consists of a black polymer extruded grid core covered on one side only with Terram nonwoven filter by full thermal bonding.*

FILTRAM 1B1



Suitable for vertical or inclined structure and ground drains and plays an important role in protecting structure water proofing.

Filtram 1B1 consists of a black polymer extruded grid core covered on both sides with Terram nonwoven filter by full thermal bonding.*

** Variations of filter and core combinations are available in special cases.*

FILTRAM 1BZ



Suitable for vertical or inclined structure and ground drains Filtram 1BZ has an impermeable surface making it ideal for cut-off drains and methane gas control in waste management.

Filtram 1BZ consists of a black polymer extruded grid core with Terram nonwoven filter on one side and an LDPE film on the other, both fully thermally bonded.*

TERRAM DC-1C and TERRAM DC-1D



These are all round high performance drainage composites offering a high flow rate, excellent compressive strength, creep and chemical resistance on account of the polymer combination used.

Mostly suited to horizontal structure or ground drains, Terram DC-1C and 1D consist of a resilient polymer core with Terram nonwoven filter bonded to one side.*

TERRAM DC-1E



Attributes for Terram DC-1E are similar to Terram DC-1C and DC-1D but has a much higher flow capacity.*

Applications

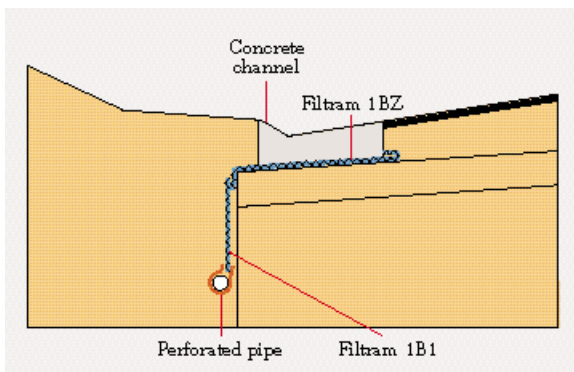
ROADS

Vertical edge drains running parallel to the roadway are necessary to intercept the lateral flow of ground water. This is necessary in order to maintain the desired moisture content within the base and sub-base layers.

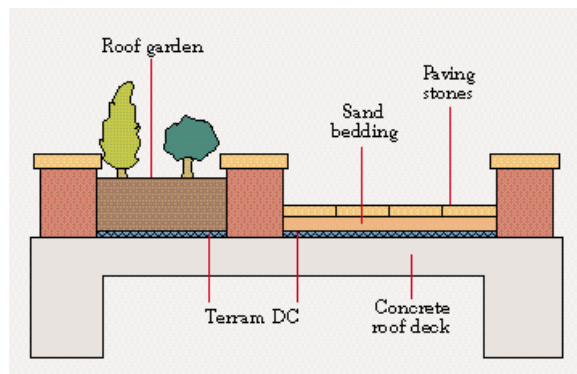
The use of the composite fin drain system in this application provides a fast installation and saves on excavation and backfill. Factory manufactured, the product guarantees peace of mind in its purpose under all construction conditions.



Pavement edge drains, Thetford



Roof landscaping, Columbus, U.S.A.



TOWNSCAPING AND ROOF GARDENS

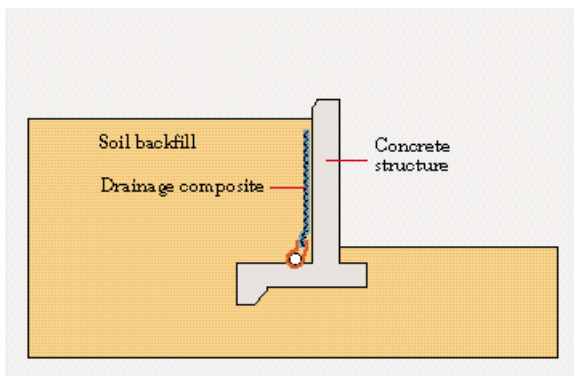
Paved areas, roof gardens and planter boxes require a light and versatile drainage system capable of a high in plane flow rate as most applications are horizontal.

The Terram 'DC' range has a high flow rate, high compressive strength and good resistance to creep. Their use reduces man power and minimises the need for heavy materials making them ideal solutions for these applications.

Applications



Structure drainage, A13 London-Tilbury



RETAINING WALLS AND BRIDGE ABUTMENTS

To maintain the stability of a retaining structure it is important to provide an efficient drainage system behind it.

Terram Drainage Composites reduce pore water pressures. This enables threatening saturated ground conditions to be avoided. Simple and fast to install, this system cuts the cost of conventional drainage systems and gives superior performance.

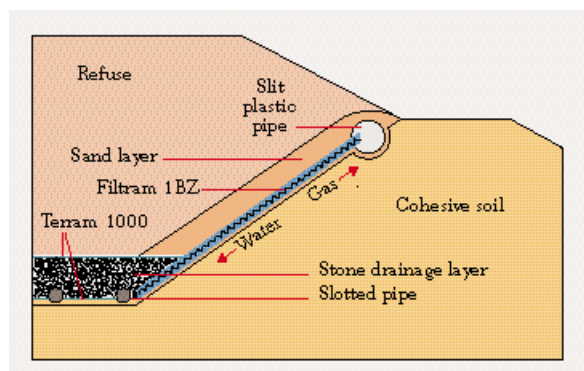
WASTE MANAGEMENT

Besides the standard drainage requirements in this application, the drainage system must be capable of draining aggressive liquids and venting volatile gases. Polymer resistance to chemical and bacterial attack is a vital requirement.

Drainage composites applied to slopes and loaded above with fill material are subjected to in-plane shear forces, therefore the method of bonding of core to geotextile is also an important consideration.

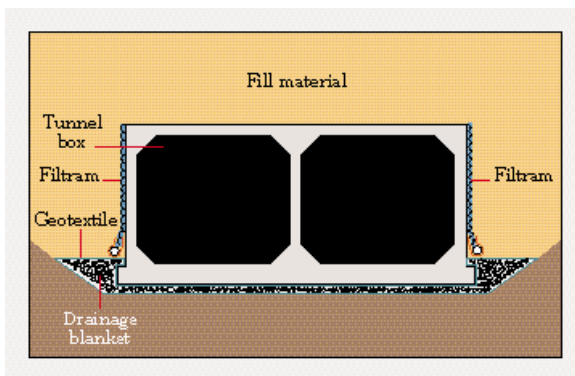


Waste disposal tip, Main-Taunus, Germany





London Airport, Stansted



BURIED STRUCTURES AND BASEMENTS

Designed especially to cope with these demanding horizontal or vertical applications, Terram drainage composites have a time proven record on projects undertaken by major organisations.

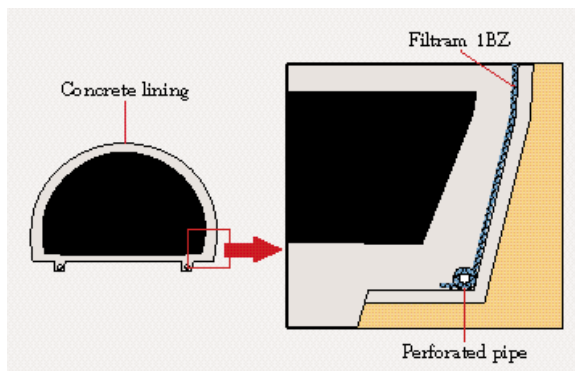
Quick, easy to handle, efficient and cost effective drainage systems are necessary in areas of construction such as basements, culverts, car parks, reservoirs and many other subsurface applications.

TUNNELS

Efficient and robust drainage systems capable of high in-plane flow rates are necessary to overcome the water seepage problems encountered in tunnels.

The drainage composite intercepts ground water seepage between the rock face and the concrete tunnel lining which is then transported away in a drainage pipe.

Markstein tunnel, Stuttgart, Germany



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