

CE



LOTTRAK[®]

GEOTEXTILES



stronger by design

the UK's **no.1** woven manufacturer

Don & Low are market leaders in the manufacture of a wide range of industrial textile products. Our international success has been developed over the last two centuries based on an outstanding reputation for advancing standards and developing technology.

Under the brand name Lotrak®, Don & Low has been at the forefront of geotextile application and design since the mid 1970's. We have developed a comprehensive range of geotextiles with excellent mechanical and hydraulic properties suited to a wide range of construction and civil engineering applications.

Lotrak® geotextiles - one product/5 functions

Today's range of Lotrak® geotextiles are the product of 25 years experience responding to the requirements of engineers around the world. Separation, reinforcement, filtration, erosion protection and drainage are all areas where Lotrak® geotextiles excel.

Recognised mechanical and hydraulic excellence

Mechanical properties to withstand the harsh and damaging loadings imposed during installation. Hydraulic properties manufactured to factory controlled accuracy to ensure the controlled filtration of soils for years ahead.

Over 90% of the damage on a geotextile usually occurs during installation. Lotrak® has a high CBR puncture resistance and low cone drop penetration which ensures that this damage is limited and the strength is retained.

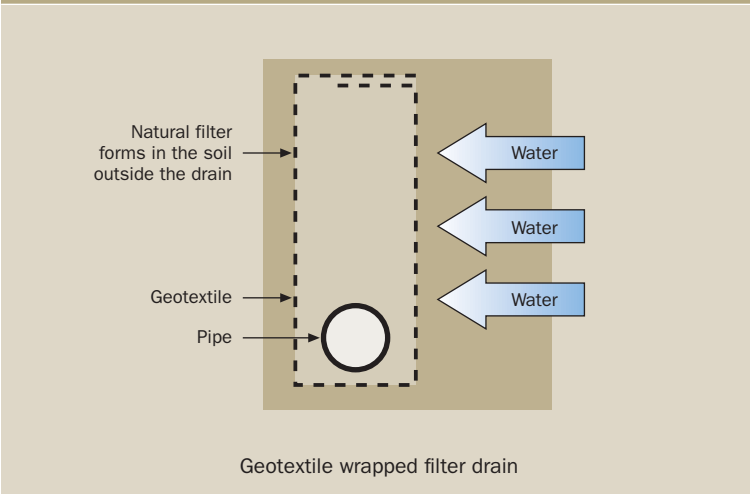
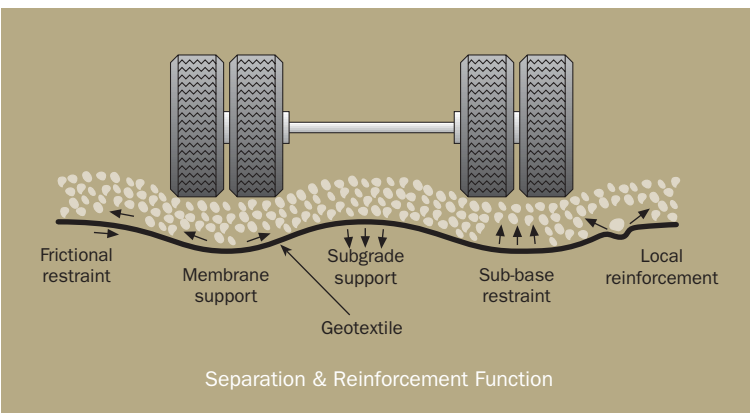
Drainage systems that facilitate natural filtration

The most efficient filtration results are achieved from the formation of a natural soil filter. The variety of pore size distributions available in the Lotrak® range make them ideally suited to initiate the natural filtration process to take place.



Our new purpose built Wovens and Group Management facility, at over 23,000m², is the most advanced weaving facility in Europe. This represents the culmination of over £7m investment.

stronger by design



testing

CE Marking

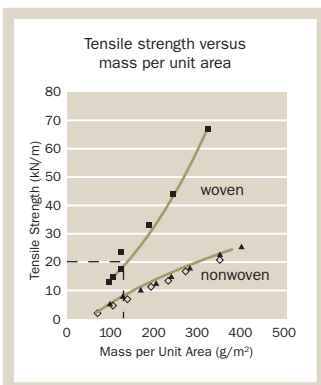
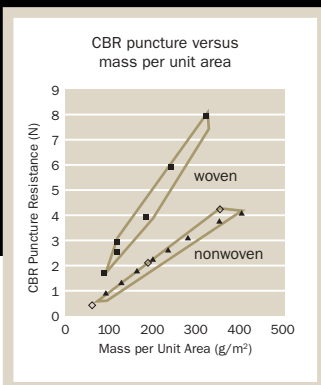
CE marking demonstrates conformity to The Construction Products Directive (CPD 89/106/EEC). A CE mark lays down compliance testing to a new range of harmonised European geotextile standards along with stringent certification of Factory Production Control (FPC). In October 2002 CE marking for geotextiles became mandatory in the majority of European countries.

Lotrak® is manufactured, tested and CE marked in accordance with the EN standards, complying fully with the CPD. Lotrak® geotextiles used in each application have varying characteristics that are key to their success. In order to summarise these characteristics, the European Standards Committee (CEN) has documented the required characteristics for geotextiles for each specific end use.

A separate European standard covers each application and stipulates the different functions, characteristics and test methods to be used. One standard, EN:13249, lists the mechanical and hydraulic properties important to the functions of Filtration, Separation and Reinforcement when used in the construction of roads and other trafficked areas.

Characteristic	Test Method	Function		
		Filtration	Separation	Reinforcement
Tensile strength	EN 10319	H	H	H
Elongation at max load	EN 10319	A	A	H
Static puncture (CBR)	EN 12236	S	H	H
Dynamic perforation	EN 918	H	A	H
Characteristic opening size	EN 12956	H	A	-
Durability		H	H	H

Relevancy
H : required for harmonisation
A : relevant to all conditions of use
S : relevant to specific conditions of use



NB: The above figures represent typical values for woven & nonwoven geotextiles extracted from a selection of manufacturers data sheets

installation damage resistance

dynamic perforation, CBR test & tensile strength

Geotextiles of all types can be damaged during installation. The placement of aggregate upon a fabric can cause damage but this can be minimised by good installation practices. Various tests have been developed which seek to model installation damage in the laboratory.

The CBR puncture test gives an indication of the ability of the geotextile to withstand slow puncture initiation. It enables the selection of a geotextile with sufficient robustness to minimise installation damage and ensure the required properties are maintained for the service life of a product.

The Dynamic Performance test indicates the likely performance of a geotextile when submitted to installation stresses. It provides evidence of the suitability of the geotextile to withstand possible damage in separation and filtration functions, especially when the aggregate placed onto the geotextile is sharp or angular in shape.

Woven geotextiles perform better than non-wovens in these tests, (see graphs opposite).

Lotrak® geotextiles:

manufactured, tested and marked in accordance with the EN standards, complying fully with the Construction Product Directive. (CPD 89/106/EEC)

(CE marking is mandatory as from 1st October 2002 in most European countries)





Lotrak® geotextiles - 5 functions

<p>1</p> <p>separation</p>	<p>With Lotrak® geotextile</p>	<ul style="list-style-type: none">● separating the sub base and the sub grade● prevents intermixing of construction layers and maintains construction thicknesses● keeping expensive aggregates apart from soft ground
<p>2</p> <p>reinforcement</p>		<ul style="list-style-type: none">● reinforcing over weak sub grades● absorbing stresses that occur when heavy loads pass over the road
<p>3</p> <p>filtration</p>		<ul style="list-style-type: none">● small enough to control soil particle movement● large enough to avoid clogging and maintain waterflow● creates bridging zone to promote natural soil filtration
<p>4</p> <p>erosion protection</p>		<ul style="list-style-type: none">● high resistance to static and dynamic puncture when placed in coastal erosion protection works● effective anchorage in the construction attained through frictional interlock
<p>5</p> <p>drainage</p>		<ul style="list-style-type: none">● allows water to pass through into a filter drain without carrying fine soil particles with it● HF grades offer very high waterflows with relatively large pore size distribution

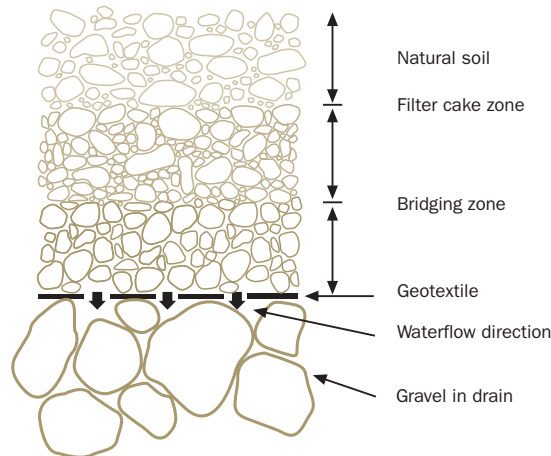
woven geotextiles

stronger by design

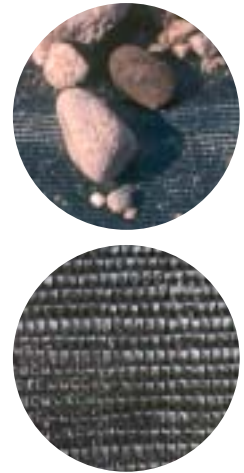
Soil particle size and distribution will differ on each site and for the geotextile to function correctly, the pore size distribution of the geotextile must be carefully matched to the soil conditions. If the pore size is too large all the soil particles will pass through the geotextile; if it is too small, the surface of the geotextile will quickly become clogged and nothing will pass through.

The main purpose of the geotextile is to foster the creation of a stable, natural soil filter in the soil itself. The geotextile must hold back the larger particles in the soil, which in turn will hold back smaller particles.

In this type of system where the soil is able to create its' own natural filter, water can flow through the geotextiles with a minimum degree of clogging of the geotextile pores. If a geotextile with too small a pore size is used the openings may be blocked even by small soil particles and significant areas of the geotextile will be unable to allow water to pass through. This problem is often more severe when the geotextile has a thick three-dimensional structure and soil particles can become trapped within the geotextile itself. These properties are characteristic of nonwoven geotextiles, particularly needle punched products and thus it is recommended in design that the



Geotextiles encourage the build up of a natural soil filter



Strength from tapes aligned

coefficient of permeability for such fabrics should be as much as 100 times that of the soil.

In a woven geotextile which is less prone to clogging, the design coefficient need only be 5 to 10 times that of the soil to achieve the same long-term permeability performance. For this reason it is clear that the required minimum permeability value normal to the plane of the geotextile will often be different for woven and nonwoven products.

The apparent opening size of Lotrak® woven geotextiles (150µm to 500µm) has been designed to retain larger particles in the filter zone. The pore size of a nonwoven geotextile is generally smaller (40µm to 150µm). As the most efficient filtration results from the formation of a natural soil filter, the spread of pore size distribution available in the Lotrak® range makes them ideally suited to initiate the natural filtration process.

recommended applications by grade

Lotrak® Grades	Typical Uses
1800	Basic Separation/Filtration
2300	Filtration
2800	Filtration
4000	Coastal protection
25R	Basic reinforcement
50R	Reinforcement on soft ground
70R	Reinforcement on very soft ground
HF400	High water application
HF550	High water application

All Lotrak® grades will separate

Other specialized grades available

Lotrak® 400	Heavyweight
Pavelay	Composite
Trammel II	

strength in tapes

- higher tensile strength
- better CBR resistance
- lighter in weight
- more physically robust

To request product data sheets
or samples, please contact:
+44(0)1307 452416

stronger by design

**design thickness savings
using Lotrak® Geotextiles**

Based on 1,000 standard axles and acceptable rut depth of 75mm

CBR	Design thickness without Geotextile (mm)	Design thickness with Lotrak® Geotextile (mm)	Thickness savings (mm)
1%	615	486	129
1½%	476	371	105
2%	397	306	91
2½%	345	264	81
3%	308	234	74

The appropriate grade of Lotrak® will be determined by a number of factors, please call our technical helpline to determine the correct grade.

Calculator and Design Guide can be requested by visiting
our website www.lotrak.com

Technical helpline:
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Lotrak® geotextiles are available from



Assured quality & service All Lotrak geotextiles are manufactured under a quality management system in accordance with the provisions of BS/EN ISO 9001:2000, and are independently tested in accordance with the relevant BS EN Methods of Test for Geotextiles by a NAMAS (National Measurement Accreditation Service) Laboratory. Our technical services team is available for advice at all stages of a project, whether at initial design, choice of materials and techniques, or installation of the geotextiles on site.

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