



ASK FOR MORE ENERGY

DuPont™ Typar® SF
GEOTEXTILE



Typar.



Luxembourg site

Company profile

For almost two centuries now, DuPont inventions have been leading industry forward with innovative and pioneering high performance materials such as Teflon®, Kevlar®, Corian® and Tyvek®.

Engineering excellence and quality standards which are second to none: these are just two of the reasons why DuPont™ Typar® Geosynthetics provide reliable long-term performance for civil engineering and construction projects. Commitment to quality and service, coupled with a wealth of experience in the realm of geosynthetics, make DuPont™ Geosynthetics Team the recognised global solution provider for today's civil engineering and construction challenges. Thus with over 25 years of experience in that particular field, DuPont is a major supplier of geosynthetics, offering DuPont™ Typar® SF a unique nonwoven fabric manufactured from 100% polypropylene with thermally bonded continuous filaments.

The use of geosynthetics in construction applications has long been recognised as a cost-saving and performance-enhancing solution versus classical construction techniques.

Damage resistance during installation

The primary challenge facing any geotextile is to survive the harsh installation conditions, and to remain undamaged. 95% of all damage to a geotextile typically occurs during installation. Only those that survive the severe initial installation stresses will live on to perform the functions for which they have been designed.



Damage testing

Functions of DuPont™ Typar® SF geotextiles

- **Separation**

- **Stabilisation**

- **Filtration**

- **Drainage**

- **Protection**

Functions of DuPont™ Typar® SF

Separation

By using DuPont™ Typar® SF you can benefit from:

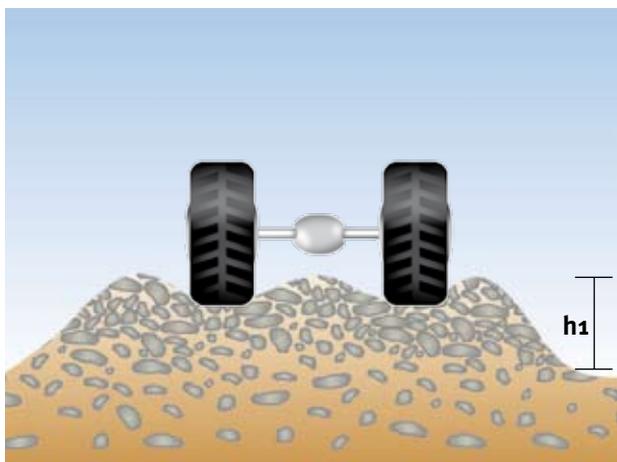
- **Aggregate savings**
- **Increased compaction**
 - Enhanced load-bearing
 - Improved rutting resistance
- **Improved frost resistance in the aggregate base**

Stabilisation

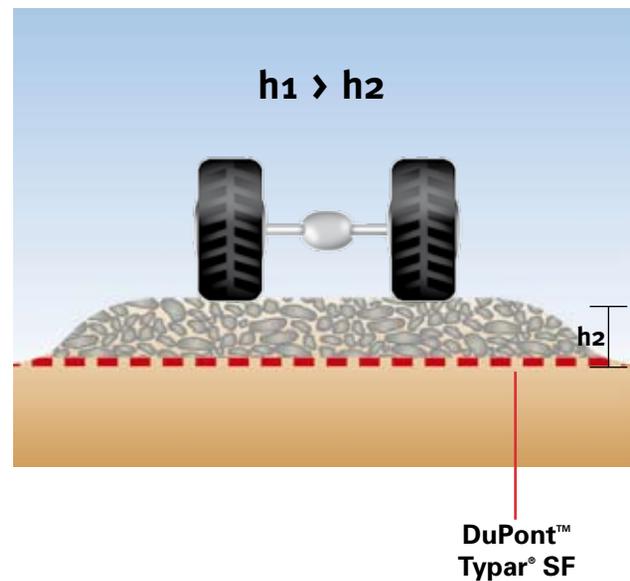
DuPont™ Typar® SF improves the overall stability of your construction by:

- **Increasing the bearing capacity of the soil**
- **Ameliorating rutting resistance**
- **Reducing differential settlements**

Without DuPont™ Typar® SF



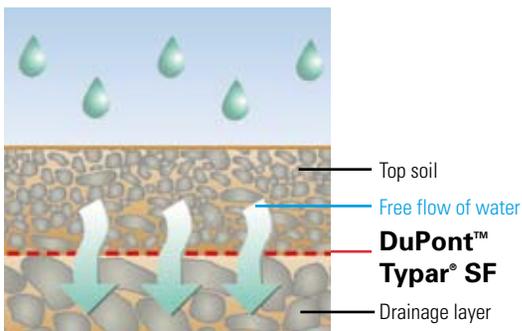
With DuPont™ Typar® SF



Filtration

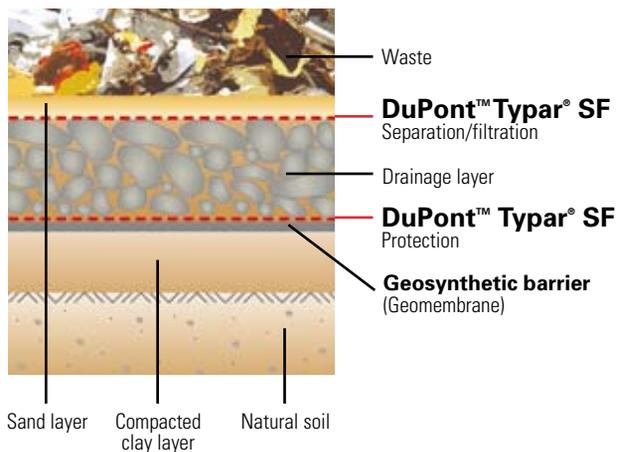
DuPont™ Typar® SF ensures:

- Fines do not migrate into the drainage system or aggregate layers
- Permeability is not affected, even under soil pressure
- Erosion is prevented
- Long-term filtration



Protection

DuPont™ Typar® SF ensures the protection of geomembranes and geosynthetic systems.

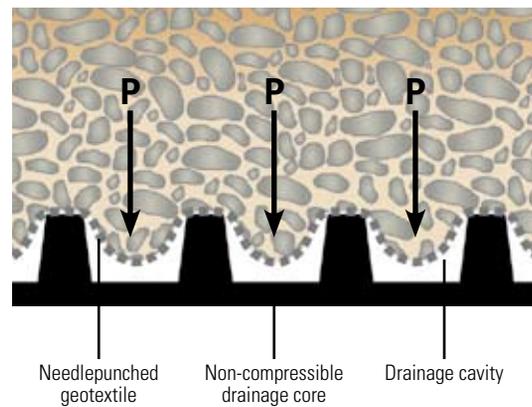


Drainage

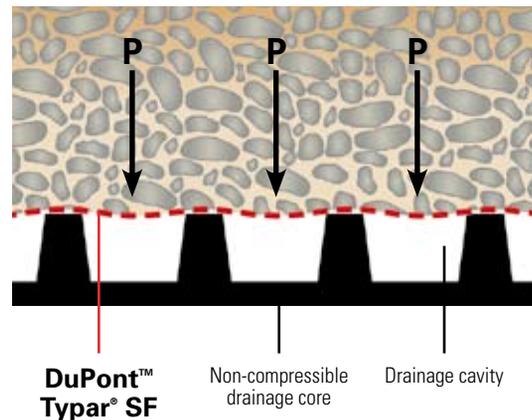
• Evacuation of water or leachate

A geotextile alone cannot provide adequate drainage capacity. For efficient drainage, a combined system comprising a non-compressible core (or a drainage layer) and a stiff, robust geotextile filter, like DuPont™ Typar® SF is required.

With needlepunched geotextile



With DuPont™ Typar® SF



DuPont™ Typar® SF: the ultimate choice

DuPont has engineered DuPont™ Typar® SF especially to offer the ultimate combination of properties ensuring superior geotextile performance:



→ High energy absorption

→ High initial modulus

→ High elongation (typically > 50%)

→ Long-term filtration

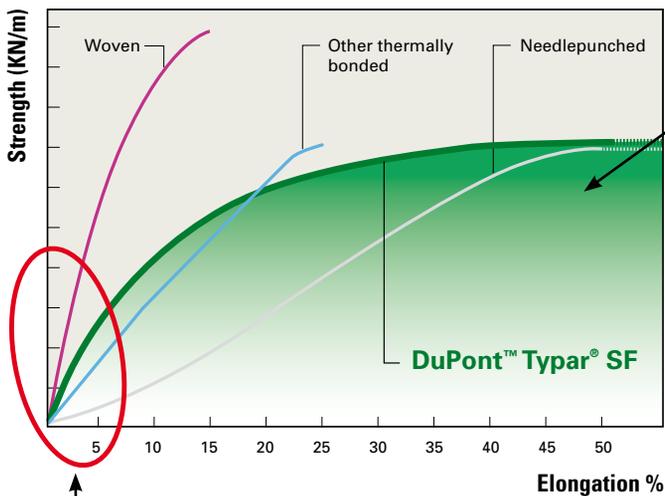
→ Outstanding uniformity

Ask for more... Energy

The optimal balance of properties results from the unique shape of the materials' characteristic stress-strain curve which explains the superb all-round performance of DuPont™ Typar® SF in all functions expected of a geotextile.

The secret is in the curve.

Every type of geotextile exhibits a characteristic stress-strain curve that describes their mechanical properties and behaviour (EN ISO 10319). The graph below shows the typical stress-strain curves for different geotextile types.



Energy

A combination of initial modulus and elongation → **high resistance to damage during installation.**

Concept of energy absorption

Energy absorption is represented by the area below the curve. The larger this area, the more successfully the product resists damage during installation. These are findings from independent studies. For this reason, the concept of energy absorption is one of the most important subjects under discussion for European classifications.

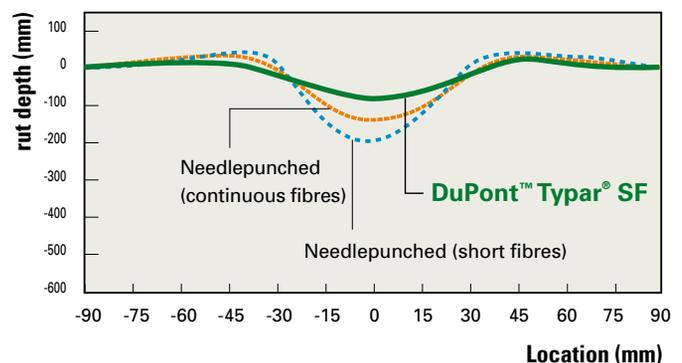
High initial modulus

Low deformation at typical service life stresses → **low rutting**

Stabilisation allows rutting to be reduced

Rutting occurs as a result of the regular passage of transport over the structure. This stress causes in-plane tensile stresses and activates related membrane and restraint mechanisms. A high degree of stiffness (the initial modulus of the material) at the typical stress levels that are experienced during the service life of the geotextile is vital in making any significant reduction in rutting and deformation.

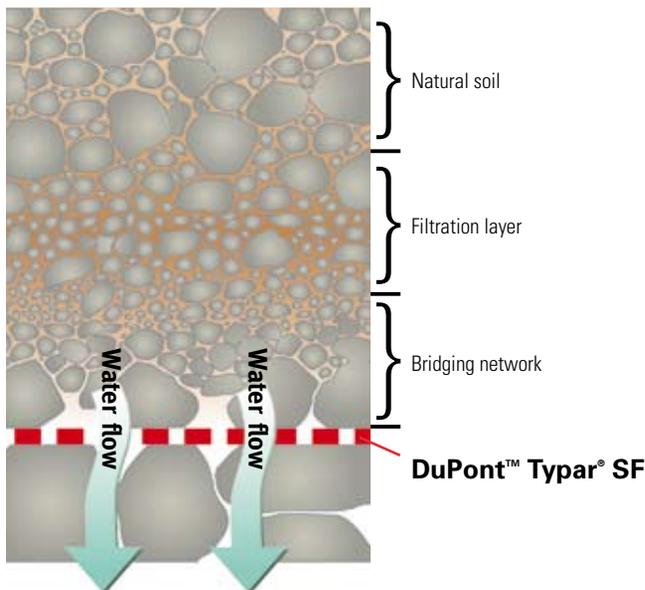
The results of an independent laboratory test simulating traffic indicate a clear relationship between initial modulus and deformation (rutting). Needle-punched products with a low initial modulus exhibit larger deformations (ruts) than DuPont™ Typar® SF.



DuPont™ Typar® SF offers an exceptionally high energy absorption potential combined with a high initial modulus

Filtration

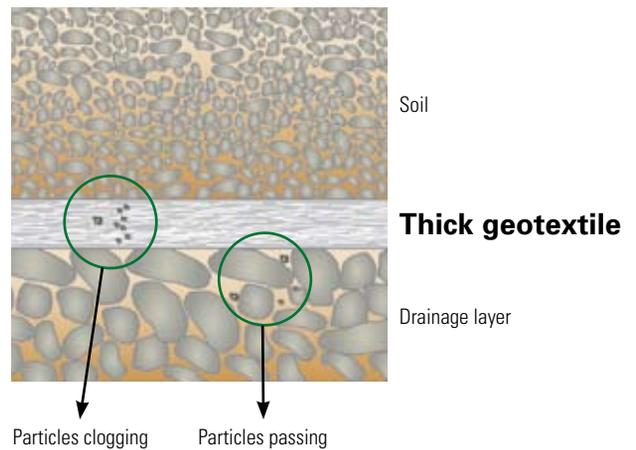
DuPont™ Typar® SF ensures an effective filtration system by creating a natural soil filter. As water passes from the soil through **DuPont™ Typar® SF** and into the drain, it initially washes out fine particles. This causes a bridging network of larger particles to be built up adjacent to the **DuPont™ Typar® SF** forming a natural soil filter. This combination of geotextile and natural soil filter immediately stops piping and gives stable filter conditions over time.



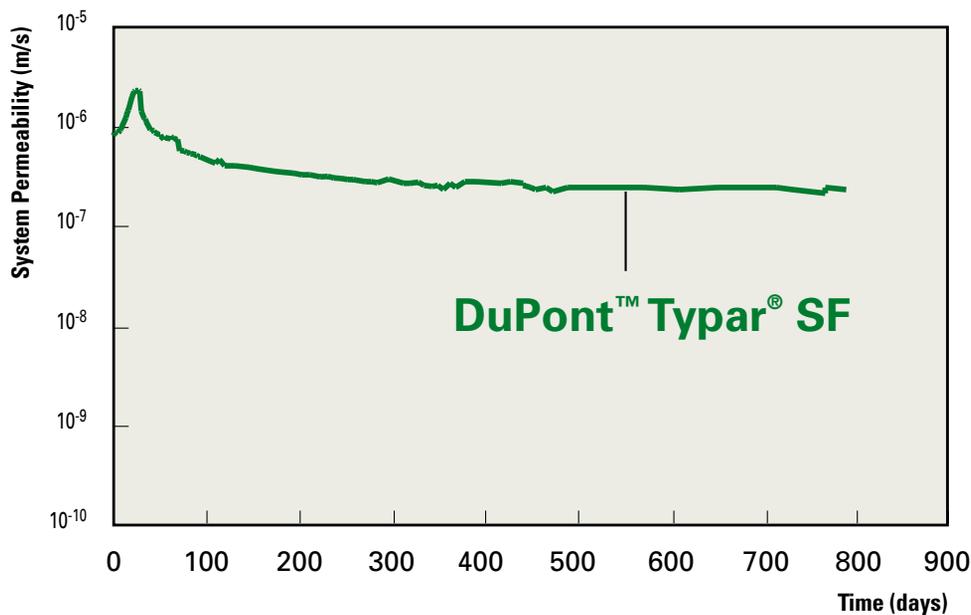
...long-lasting filtration: no clogging

DuPont™ Typar® does not clog:

DuPont™ Typar® is pre-compressed and thus soil fines and particles are not retained within its thin structure.



Permeability of the System DuPont™ Typar® Loess (critical soil), $i = 3$



Demonstrated long-term filtration performance of DuPont™ Typar® SF.

For further details, see the DuPont™ Typar® SF Technical handbook.

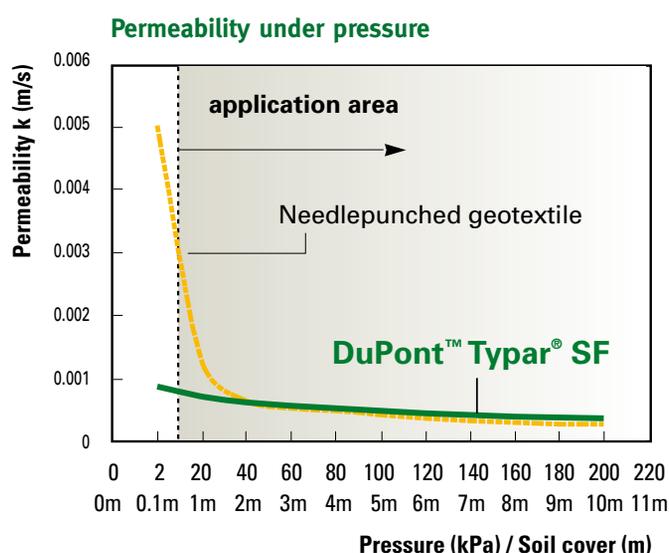
Permeability

The permeability of a soil-geotextile system is dictated by the permeability of the soil itself. DuPont™ Typar® SF is generally more permeable than the soil*, therefore it suits perfectly for filtration.

... even under loads

Unlike some other geotextiles, DuPont™ Typar® SF retains its permeability under in-use loads.

* Exception: coarse sand and gravel



... and pore size remains unchanged under tensile stress.

Being a pre-compressed filter with thermally-bonded fibres, the pore size of DuPont™ Typar® SF is neither reduced under high loads nor enlarged under stress, ensuring a consistent pore size and thus filtration efficiency throughout its service life.

Low blocking & low blinding

The large number of pores and random pore size distribution make the DuPont™ Typar® SF structure similar to a natural soil structure. This ensures that DuPont™ Typar® SF cannot be completely blocked or blinded.

Outstanding performance

In all directions, in any location!

DuPont™ Typar® SF is a nonwoven geotextile which provides superb performance in all directions, mirroring in-use loads.

DuPont quality manufacturing and DuPont™ Typar® SF process control ensure excellent product uniformity, thereby guaranteeing consistent performance over the entire geotextile roll.

Practical advantages

→ Easy to handle

A roll of DuPont™ Typar® SF can easily be carried by two people. Cutting the material is very simple.

→ Easy to install...

It is very easy to unroll DuPont™ Typar® SF. As it is pre-compressed, it does not soak up water, does not become heavy and can easily be installed in muddy conditions.

→ ... even in winter conditions

Because it doesn't soak up water, it cannot freeze, and is therefore easy to install in winter conditions.

→ Simplified logistics

As DuPont™ Typar® SF is pre-compressed, it takes up little space, hence low storage space is required and transport is facilitated.

→ Large choice of dimensions

For further details on this subject, please refer to the DuPont™ Typar® SF datasheet.



Municipal Theatre Place in Luxembourg City

Applications

- Blanket drains in roads and sports fields
- Road and civil engineering drainage, side drains
- Wall drainage
- Waterworks, erosion control of earthdam slopes, river and lake embankments
- Erosion control of sea embankments, ocean and bay shores
- Breakwater and jetties on soft soil sea bed
- Land reclamation with hydraulic fill
- Sports fields
- Gabions



Luxembourg Airport



Road construction, Malaysia



Building construction, Turkey



Forest road, Czech Republic

Applications

- Temporary roads, access roads, forest roads
- Permanent roads, airport runways and taxiways, motorways
- Car parks, storage yards
- Railways, new tracks and tracks renewals
- Trench drains
- Vertical drains
- Agricultural and pipe drains



Highway A2 – Berlin to Moscow



Railway track renewal between Moscow and St Petersburg, Russia

For an indication of which style to use, please refer to the document “Recommended DuPont™ Typar® SF styles”.

DuPont™ Typar® European Geosynthetics Technical Centre

With a staff of civil engineers specialising in geosynthetics, DuPont European Geosynthetics Technical Centre ensures first class technical support. From installation advice, filter recommendations to reinforcement design assistance, the DuPont Geosynthetics Technical Service Team is always available to lend a helping hand.



Ask for more... quality guarantees

The name DuPont stands for innovation and quality and represents a leading geotextile manufacturer with 1 billion m² sold worldwide over a period of more than 25 years.

DuPont™ Typar® is manufactured in accordance with:

- The quality control standards ISO 9001
- The environmental control standards ISO 14001
- The Eco-Management and Audit Scheme (EMAS)



Certification and external audit

DuPont™ Typar® SF geotextiles are submitted to several voluntary certification systems such as the French ASQUAL and the German external audit system "Fremdüberwachung DIN 18200". DuPont™ Typar® SF has the CE marking in accordance with the European Construction Products Directive.

DuPont™ Typar® SF geotextiles are also certified and used by many Public Works Administrations and Ministries around the globe.

Ask for more... products

In addition to the DuPont™ Typar® SF geotextiles range for separation and filtration applications, DuPont offers other DuPont™ Typar® products:

- DuPont™ Typar® HR, a reinforcement geocomposite
- Specially engineered DuPont™ Typar® styles for high-performance composite drainage filters
- Specially engineered DuPont™ Typar® styles for high-performance filters in vertical drains
- DuPont™ Typar® Sport for use in synthetic grass installation projects



DuPont™ Typar® Geosynthetics

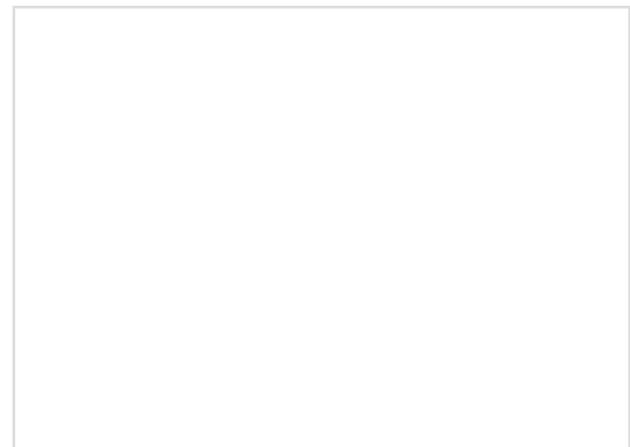
Other publications



Other publications from DuPont™ Typar® Geosynthetics

- **DuPont™ Typar® SF technical handbook**
- **Recommended
DuPont™ Typar® SF styles**
- **DuPont™ Typar® data sheets**
- **DuPont™ Typar® case studies**

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