



# Typar<sup>®</sup> SF Geotextile









The DuPont site in Luxembourg

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

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 the DuPont Geosynthetics Team the recognised global solution provider for today's civil engineering and construction challenges.

Thus with over 40 years of experience in that particular field, DuPont is a major supplier of geosynthetics, offering with 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.

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.

# Functions of Typar® SF geotextiles

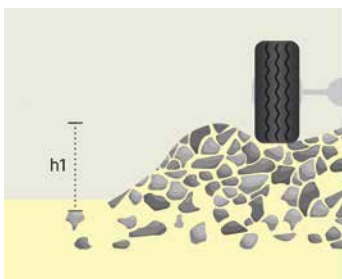
## Separation

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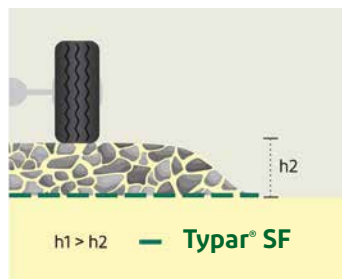
By using Typar® SF you can benefit from:

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

Without Typar® SF



With Typar® SF



## Stabilisation

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Typar® SF:

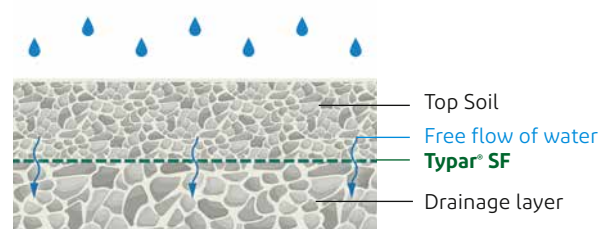
- Increases the bearing capacity of the soil and reduces differential settlements

## Filtration

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With Typar® SF:

- 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 is assured



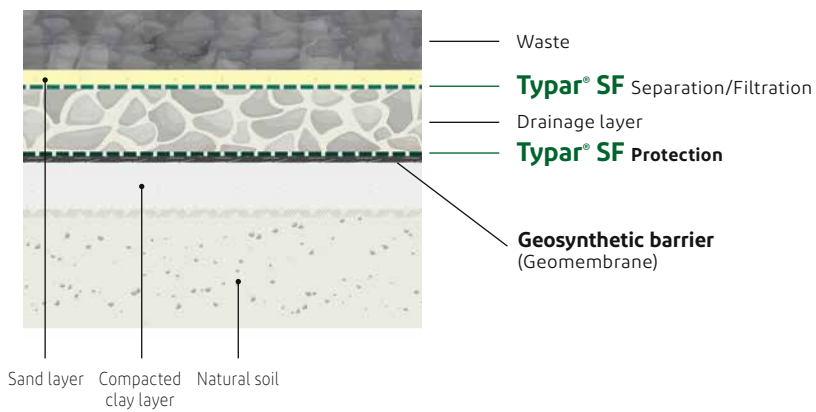




## Protection

### Typar® SF:

- Ensures the protection of geomembranes and geosynthetic systems.



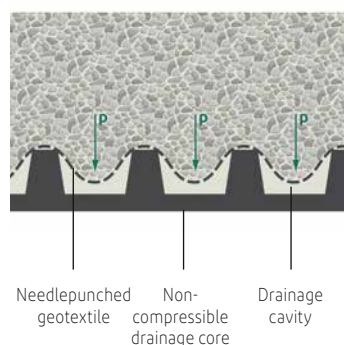
## Drainage

### With Typar® SF:

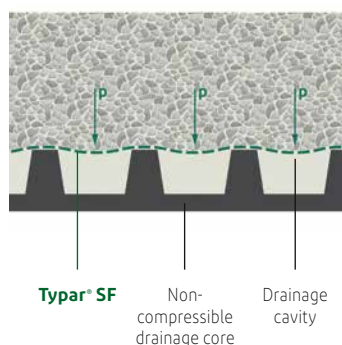
- Evacuation of water or leachate

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

### With needlepunched geotextile



### With Typar® SF





# Typar® SF: the ultimate choice

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

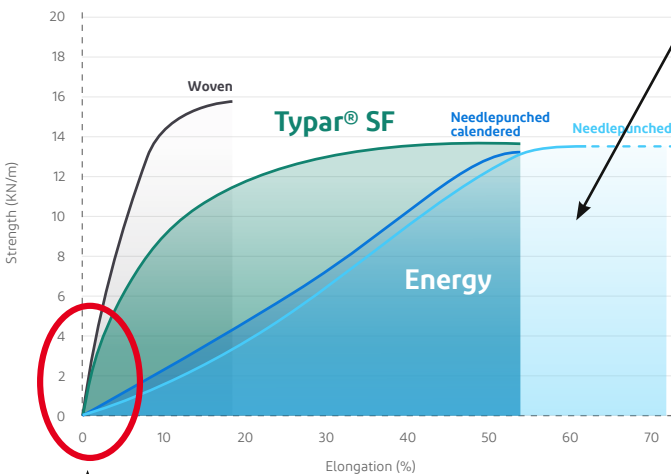
- High energy absorption
- High initial modulus
- High elongation
- Long-term filtration
- Outstanding uniformity



# Mechanical properties

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 Typar® SF in all functions expected of a geotextile.

Every type of geotextile exhibits a characteristic stress-strain curve that describes their mechanical properties and behaviour.



## 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.

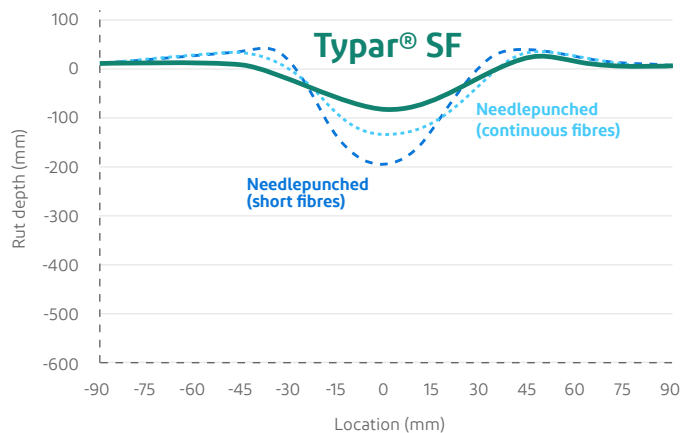
## Energy

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. That is why the notion of energy absorption continues to be one of the most important topics of discussion for European classifications.

The results of an independent laboratory test simulating traffic indicate a clear relationship between initial modulus and deformation (rutting).

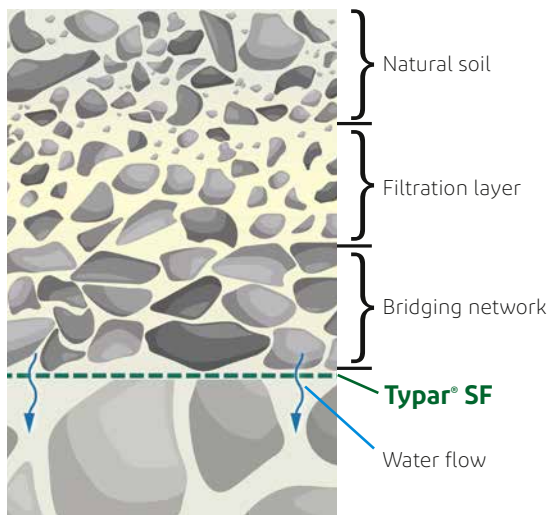


Typar® SF offers an exceptionally high energy absorption potential combined with a high initial modulus.

# Hydraulic properties

## Filtration

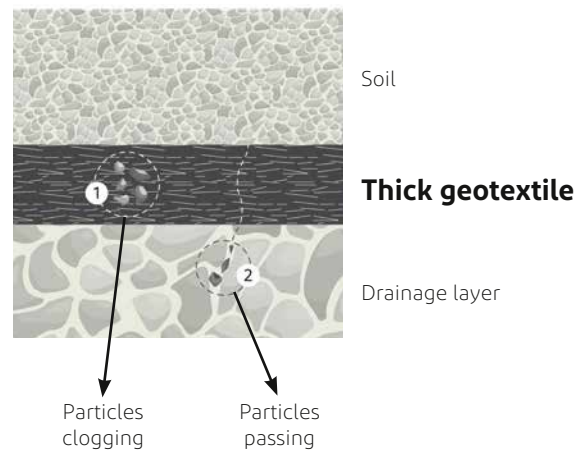
Typar® SF ensures an effective filtration system by creating a natural soil filter. As water passes from the soil through Typar® SF and into the drain, it initially washes out fine particles. This causes a bridging network of larger particles to be built up adjacent to the Typar® SF forming a natural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



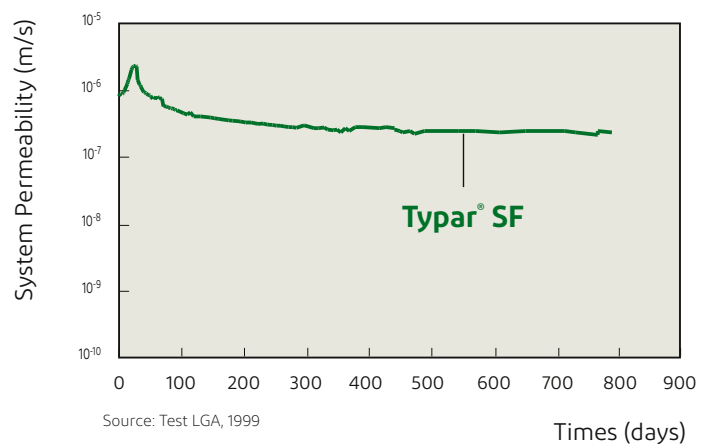
### Long-lasting filtration: no clogging

Typar® does not clog:

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



### Permeability of the System Typar® Loess (critical soil)



Source: Test LGA, 1999





## Permeability

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

- **Even under loads**

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

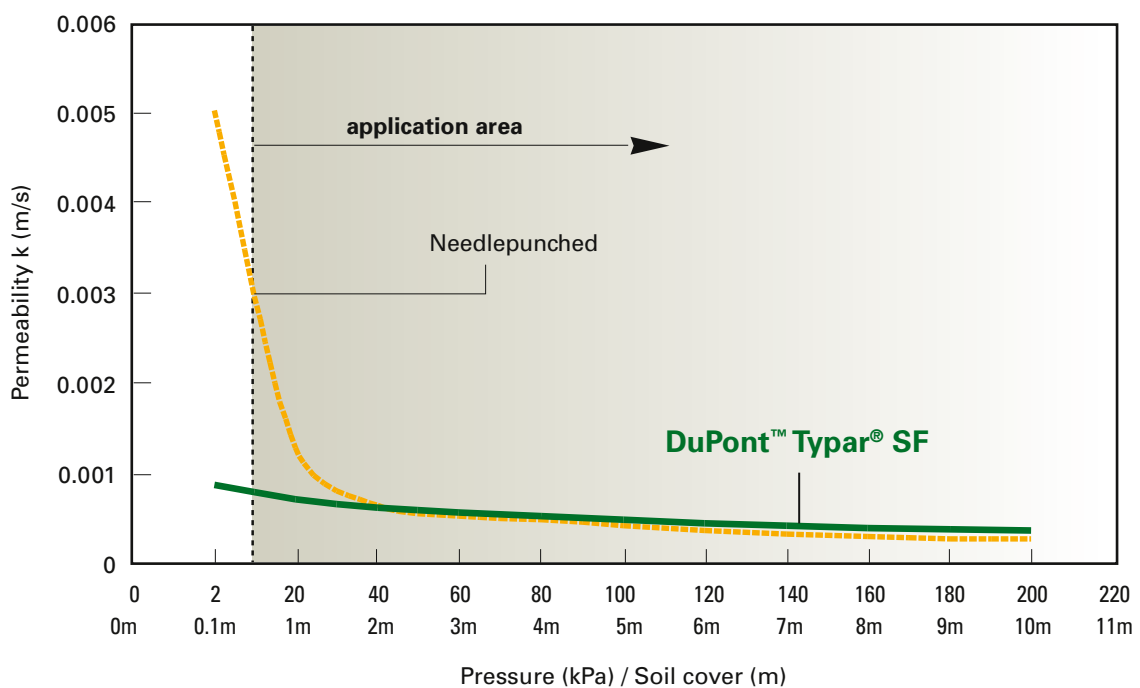
- **Pore size remains unchanged under tensile stress**

Being a pre-compressed filter with thermally bonded fibres, the pore size of 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 Typar® SF structure similar to a natural soil structure. This ensures that Typar® SF cannot be completely blocked or blinded.

### Permeability under pressure



## Outstanding performance

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### In all directions, in any location!

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

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

## Practical advantages

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- **Easy to handle**

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

- **Easy to install...**

It is very easy to unroll 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 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 Typar® SF datasheet.







# Applications

- Blanket drains in roads and sports fields
- Filter for road and civil engineering drainage, side drains
- Filter for 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







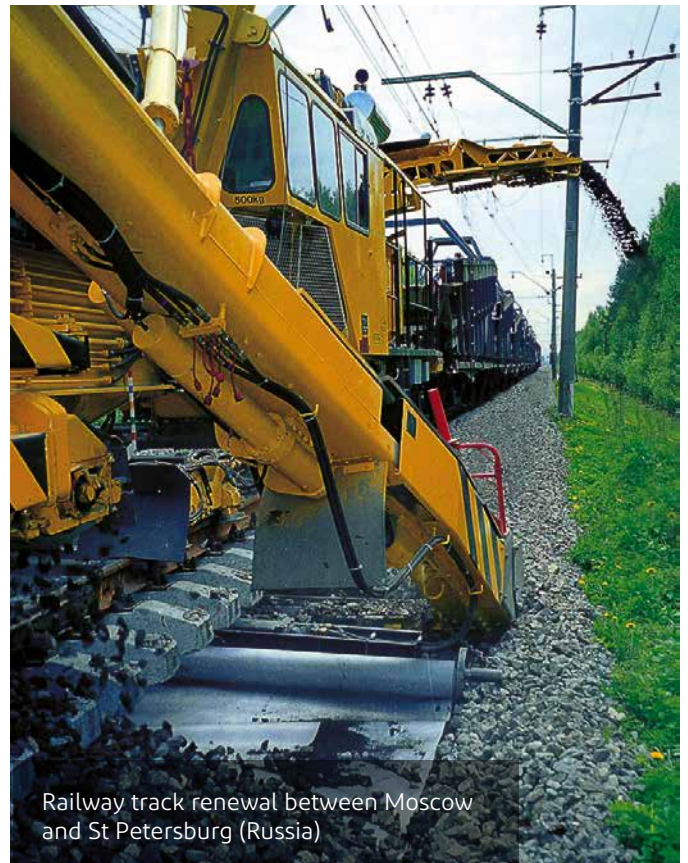
Municipal Theatre Place (Luxembourg-City)

- Sports fields and gabions
- Temporary roads, access roads, forest roads
- Permanent roads, airport runways and taxiways, motorways
- Car parks, storage yards
- Railways, new tracks and tracks renewals
- Filter for trench and vertical drains
- Filter for agricultural and pipe drains

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

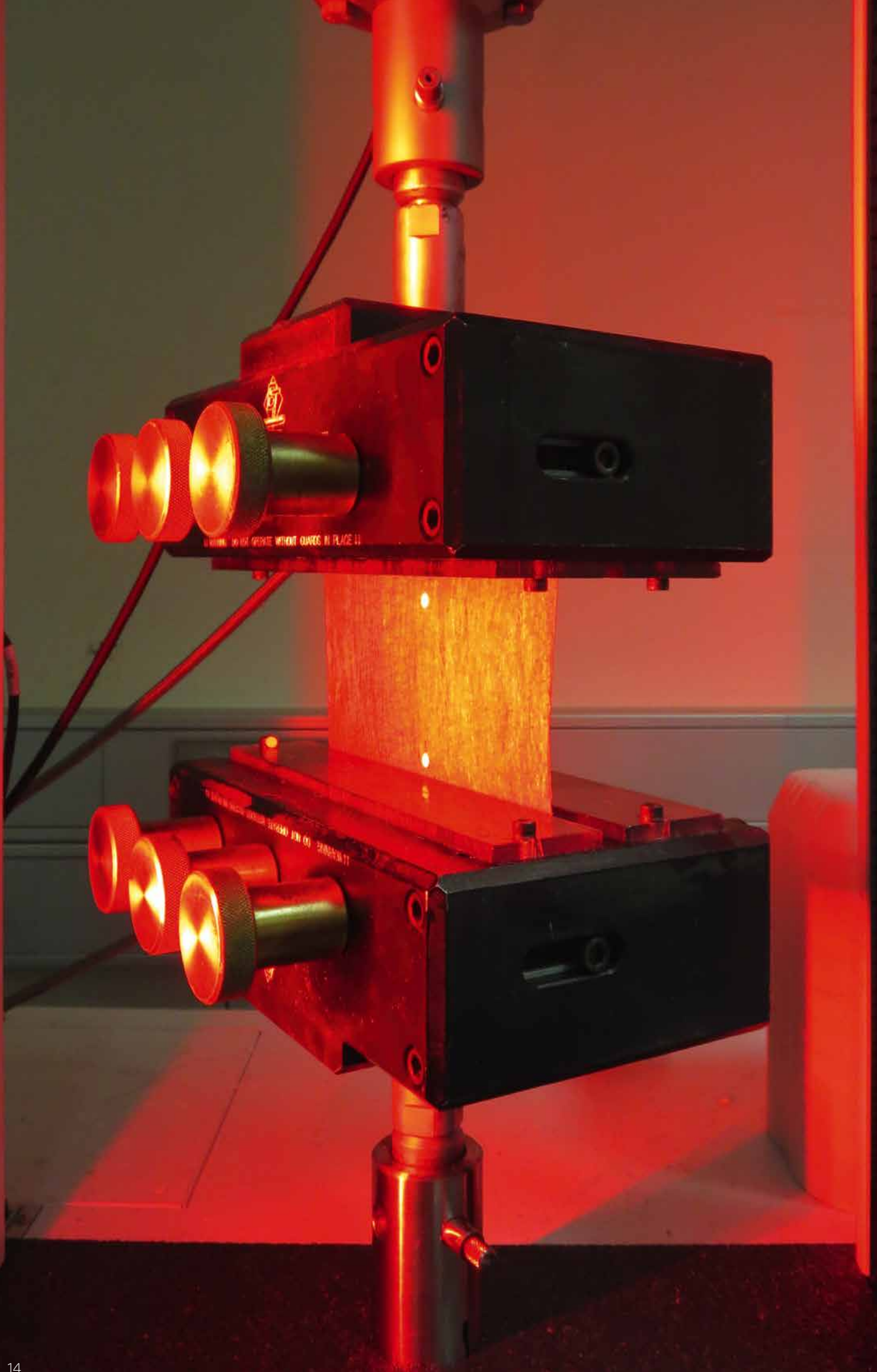


Highway A2 (Berlin to Moscow)



Railway track renewal between Moscow and St Petersburg (Russia)







# The DuPont European geosynthetics technical centre

With a staff of civil engineers specialising in geosynthetics, the 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.



The name DuPont stands for innovation and quality and represents a leading geotextile manufacturer over a period of more than 40 years.

## Typar® is manufactured in accordance with:

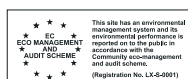
- The quality control standards ISO 9001
- The environmental control standards ISO 14001

**Typar® SF geotextiles** are submitted to several voluntary certification systems such as the French ASQUAL and the nordic system NorGeoSpec.

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

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

- Specially engineered Typar® styles for high-performance composite drainage filters
- Specially engineered Typar® styles for high-performance filters in vertical drains
- Typar® Sport for use in synthetic grass installation projects





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