



## Fortrac® 3D Geogrid

High-Tensile Anti-Slip Reinforcement with Soil Retention Function

# Slope Stabilisation Made Easy

Given the global increase in heavy-rain events, the construction of slopes with guaranteed long term stability poses a major challenge, particularly when built with steep inclinations. HUESKER's Fortrac 3D range offers a stabilisation solution that resists the downward forces of the soil mass and achieves a strong bond with soil particles and plant roots.

Fortrac 3D, a refinement of the familiar Fortrac geogrid, is a flexible, three-dimensional reinforcement grid made from high-tensile, low-creep multifilament synthetic yarns with integral soil erosion prevention. Two crucial functions are therefore combined in a single product: **anti-slip reinforcement and erosion control**.

Fortrac 3D thereby allows the safe construction of steep slopes and their subsequent planting for applications such as embankments, dikes, landfills, landscape structures, reservoirs etc.

## Product selection

Fortrac 3D	30	40	60	90	120
Longitudinal tensile strength [kN/m]	30	40	60	90	120
Long strain at nominal force [%]	12.5	12.5	12.5	12.5	12.5
Thickness [mm]	10	10	10	10	10
Weight [g/m <sup>2</sup> ]	280	330	370	500	550

## Properties

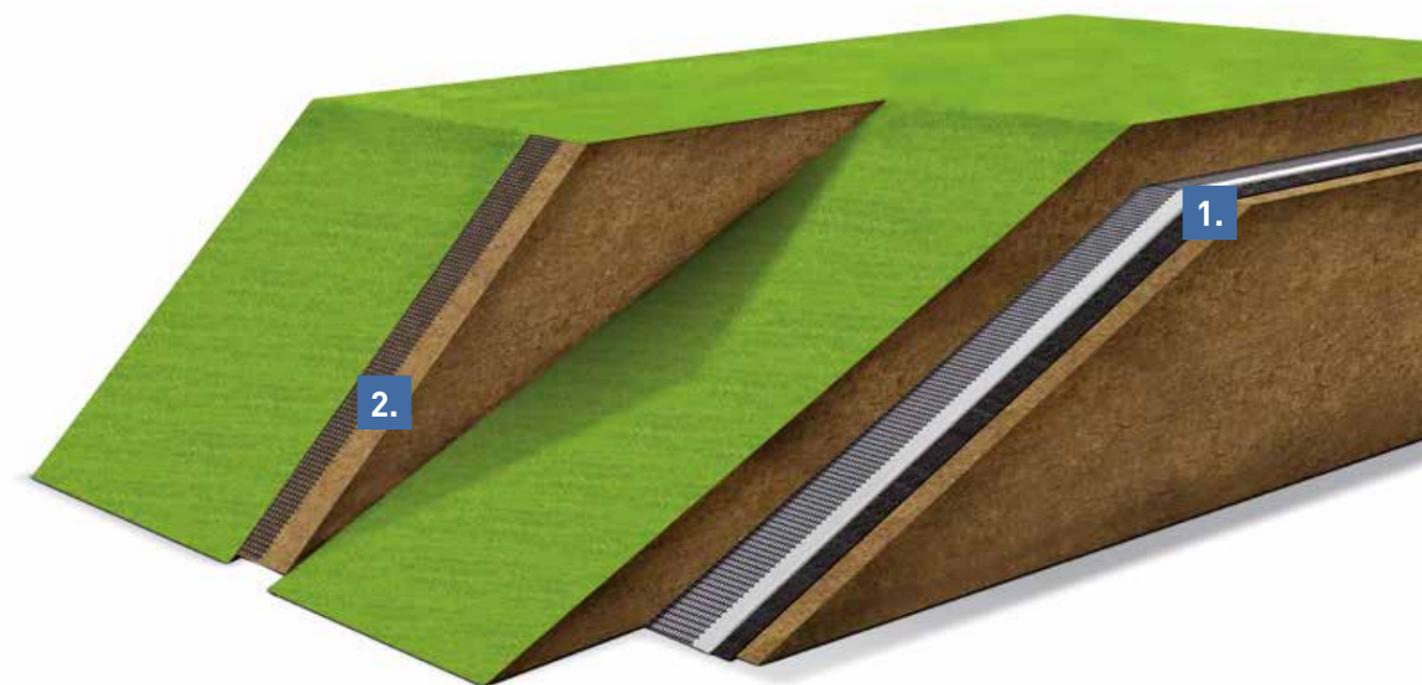
Function	Anti-slip reinforcement with soil retention function
Material	PET or PVA
Tensile strength	20 – 300 kN/m possible
Standard roll size	4.5 m x 100 m
Coating	Polymer

## 1. Anti-slip reinforcement

- High-tensile, high-modulus, low-creep geogrid
- Optimum interaction between geosynthetic product and soil
- High resistance, even in alkaline environments
- Wide range of tensile strengths

## 2. Soil retention/erosion control function

- Three-dimensionally orientated transverse strands for efficient soil retention and prevention of surface erosion
- Root-penetrable aperture sizes for high vegetation stability
- Integral structural continuity between three-dimensional transverse strands and reinforcement grid



# Fortrac 3D Plus Points

## 2 in 1

### Flexible geogrid with 3D mesh structure

Flexible, high-tensile geogrid with additional spatial mesh structure. Providing anti-slip reinforcement and long term protection against surface erosion.

### Stability for critical slip surfaces

Driving forces are accommodated and diverted, thereby preventing slope veneer soil slippage.

### Durable vegetation for long term stability

The mesh structure ensures good soil retention and promotes plant growth on slopes by offering strong and permanent support for roots.

### High stability even under heavy-rain events

Soil loss reduced by approximately 80% on unplanted slopes exposed to heavy-rain events of 50 mm/h/m<sup>2</sup>. Planted slopes reinforced with Fortrac 3D are capable of withstanding short term overflow velocities of up to 7.3 m/s.

### Possibility of constructing steeper slopes

For slope heights of 30 m, an increase in slope inclination from 1:3 to 1:2 may, e.g. for landfills, translate into approx. 450 m<sup>3</sup> extra cubage per metre landfill length.

### Erosion-resistant turf for dikes

Even if the grass cover is damaged or imperfect, or where dikes are subject to wave overtopping or overflow, the typical effects of regressive erosion (piping) can be prevented.



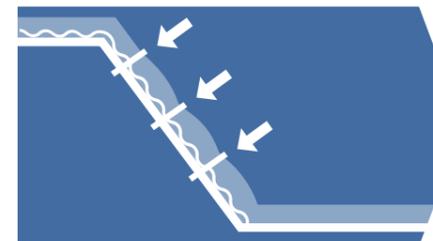
### Reliable protection against external actions

High UV resistance and protection against mechanical damage thanks to special polymer coating and product flexibility.



### Fast and straightforward installation

The robust, yet pliable material can be readily cut to size with a utility knife and exhibits no memory effect (i.e. it does not roll back up after laying), making it easy to install.



### Installation as system component

Use in tandem with soil nails as part of an integral stabilisation system: soil compaction by compression, reinforcement and erosion control.



### Long lasting rehabilitation

Fortrac 3D can also be used for the fast repair and long term stabilisation of previously damaged and unreinforced slopes.



### Wide ranging applications

Fortrac 3D can be used in conjunction with a wide variety of geometries, slopes, soils and sealing systems.



### Customised configuration

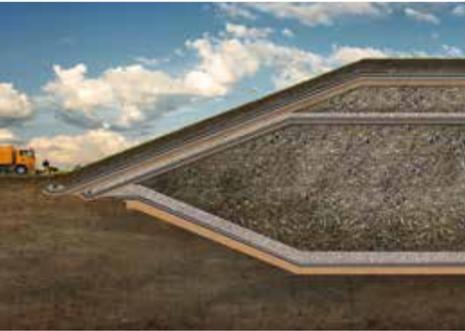
In addition to the standard models, HUESKER also offers custom-fabrication to meet project-specific requirements. All design solutions developed by our engineers are based on state-of-the-art practice and comply with the relevant standards and guidelines.

# Application Benefits



## Dams and dikes

- Permanent strengthening of grass cover
- Reinforcement of overflow sections
- Protection against wave overtopping
- No risk of progressive failure, even in case of defective turfing



## Landfill construction

- Higher cubage thanks to steeper slopes
- Prevention of soil slippage
- Erosion control immediately after topsoil placement
- Use in conjunction with intermediate seals and cover linings



## Landscape construction

- Long-term protection, e.g. for noise barrier slopes
- Integral stabilisation system in combination with soil nails
- Compacted system surface layer provides reinforcement and prevents erosion
- Promotion of natural vegetation cover



## Reservoirs

- Protection against erosion and soil slippage
- Protection against wave run-up and overtopping
- Stabilisation of zone between high and low water marks
- Prevention of slippage, even for gravel surface layers

# Application Examples



## Landfill capping

**France,** Cover lining system for landfill site at Curgies. Fortrac 3D was installed over a nonwoven, polymer membrane and drainage mat assembly to accommodate high tensile forces and prevent slope slippage.



## Spillway

**Switzerland,** Fully vegetated, landscaped spillway in Stans that allows floodwater to be channelled off at a rate of up to 15 m<sup>3</sup>/s. This, in turn, averts the risk of severe, wide-area erosion and consequent natural catastrophes.



## Roadside slopes

**Macedonia,** Erosion control for steep slopes along European route 75. Here, Fortrac 3D was installed over a herringbone subsoil drainage system in conjunction with suitable vegetation to ensure maximum stability, even in case of heavy-rain events.



## Water reservoirs

**Italy,** Snow making reservoir in the mountains around the Arabba ski resort. Fortrac 3D was installed on a slope with an inclination of 33° over a polymer membrane and drainage mat assembly to prevent slippage of the gravel surface layer.

Fortrac® is a registered trademark of HUESKER Synthetic GmbH.  
HUESKER Synthetic is certified to ISO 9001, ISO 14001 and ISO 50001.



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