



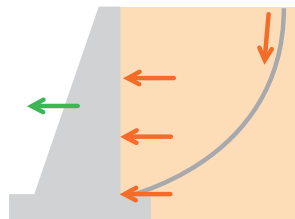
Advantages of bontec® force geotextiles

Woven polyester or polypropylene reinforcing sheets with a high modulus of deformation are efficient and economical soil reinforcement solutions.

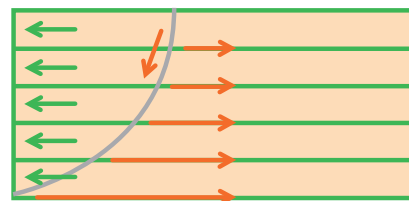
They allow the construction of soil-geotextile sandwiches, to execute retaining structures, reinforced fills and stiffened embankments.

Moreover, they are very easy and quick to transport and install.

Due to their tensile-elongation mechanical properties (stiffness modulus) and their capacity for friction with the soil, **bontec®** force geotextiles, combined with backfills, constitute a new material: **reinforced earth**.



conventional retaining wall in reinforced concrete



wall in reinforced earth

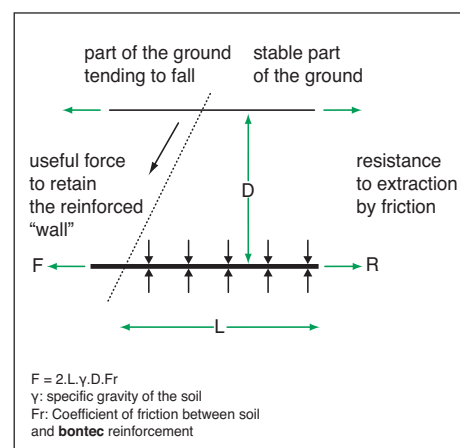


diagram of reinforcement operation in the soil



bontec® force HS

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woven polyester geotextile for backfill reinforcement

bontec® force HS is used

in reinforced earth structures as an alternative to concrete or rockfill solutions, in geotextile/soil-layer sandwiches:

- retaining structures,
- barriers, dykes,
- Backfills, roadbeds.

Advantages

● **bontec® force HS** benefits from a technology optimized for maximum efficiency in the soil in a reinforcing role, thanks to high-modulus polyester threads relatively insensitive to creep, for most reinforced earth applications,

● **bontec® force HS** is light and flexible, and easy to install,

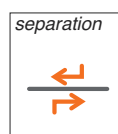
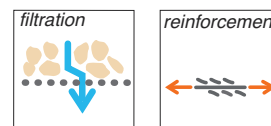
● due to its weaving manufacture and its small pore size, **bontec® force HS** has a good filtration capacity between soil layers, for improved protection against internal erosion,

● **bontec®force HS** due to its high coefficient of friction, is more effective for providing reinforcement between soil layers, with the whole surface of the product contributing, thanks to the geotextile “grip”,

● **bontec® force HS** is compact and can be handled easily, and does not absorb water,

● broad range from 100 to 600 kN/m strength,

● the **teragéos** engineering office is attentive to your needs to pre-design your projects.



In a long-term application, the design working load must not exceed one-third of the product's nominal strength: verify the sizing in accordance with the XP G 38-064 standard.

Installation technique

● plan a layout drawing according to the product's direction of work, to limit cutting out,

● prepare a flat, graded, compacted base, with no projecting elements,

● unroll the product on the ground with a shaft passed through the reel, or by hand, or suspend it from a lifting beam,

● the strips' overlap depends on the supporting soil: on a stable, graded soil 30 cm, on a soft soil 60 cm to 1 m,

● the strips can be stitched together,

● cut out the product using a cutter or scissors, wearing gloves.

Detailed description

The **bontec® force HS** range is in woven polyester, of ultimate tensile strength 100 to 600 kN/m as per NFENISO 10319, 10% elongation at break, and modulus of resistance 1000 to 6000 kN/m. The pore sizes are less than 400 µm.

technical characteristics of the range

Monodirectional strength

reference	kN/m	%	Of
HS 110/50	110	10.5	300
HS 1 65/50	165	10.5	175
HS 220/50	220	10	120
HS 330/50	330	10	100

Bidirectional strength

reference	kN/m	%	Of
HS 110/110	110	11	250
HS 165/165	165	11	190
HS 220/220	220	10	400

Packaging

bontec® force HS is available in rolls 5.25 m wide x 100 m.



bontec® force SG



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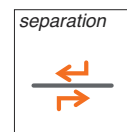
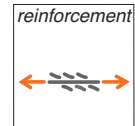
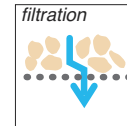
Woven polypropylene geotextile for separation and soil reinforcement

bontec® force SG is used in all structures where what is wanted mainly is strengthening and good resistance to chemical attacks.

- retaining structures,
- barriers, dykes,
- backfills, roadbeds,
- runways,
- geobags, gabions.

Advantages

- **bontec® force SG** is light and flexible, and easy to install; it can be assembled by overlap or stitching,
- due to its weaving manufacture and its small pore size, **bontec® force SG** has a good filtration capacity between soil layers, for improved protection against internal erosion,
- **bontec® force SG** due to its high coefficient of friction, is more effective for providing reinforcement between soil layers, with the whole surface of the product contributing, thanks to the geotextile “grip”,
- **bontec® force SG** is compact and can be handled easily, and does not absorb water,
- broad range from 16 to 300 kN/m strength,
- the **teragéos** engineering office is attentive to your needs to pre-design your projects.



Detailed description

The **bontec® force SG** range is in woven polypropylene, with an ultimate tensile strength of 16 to 340 kN/m as per NFE-NISO 10319, and 8% to 26% elongation at break. The pore sizes are less than 540 µm. In a long-term application, the design working load must not exceed one-sixth of the product's nominal strength: verify the sizing in accordance with the XP G 38-064 standard.

Technical characteristics of the range

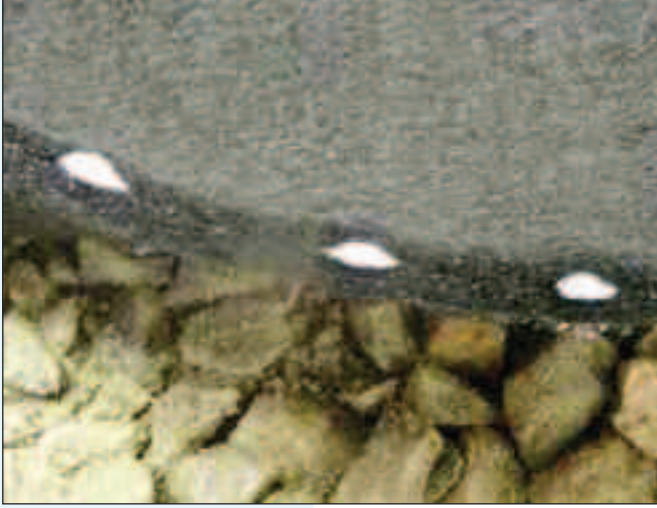
reference	kN/m	%	Of
SG 16/16	17	22	250
SG 20/20	20	22	200
SG 40/40	41	22	230
SG 80/80	82	14	300
SG 110/110	110	12	230
SG 240/50	240	13	450

Installation technique

- plan a layout drawing according to the product's direction of work, to limit cutting out,
- prepare a flat, graded, compacted base, with no projecting elements,
- unroll the product on the ground with a shaft passed through the reel, or by hand, or suspend it from a lifting beam,
- the strips' overlap depends on the supporting soil: on a stable, graded soil 30 cm, on a soft soil 60 cm to 1 m,
- the strips can be stitched together,
- cut out the product using a cutter or scissors, wearing gloves.

Packaging

bontec® force SG is available in rolls 5.25 m wide x 100 m.



composite teraforce®

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nonwoven composite geotextile reinforced with polyester cables for soil reinforcement

teraforce is used

in all structures where what is wanted is efficient reinforcement and protection from puncturing, and a capacity for filtration and drainage of the reinforcement:

- retaining structures,
- barriers, dykes,
- backfills, roadbeds,
- runways,
- reinforcement of geomembrane sealing systems.

Advantages

● due to its nonwoven composite manufacture and reinforcing cables, **teraforce®** has a good filtration capacity between soil layers, for improved protection against internal erosion, and a flow capacity for removing seepage and draining the backfill,

● **teraforce®**, due to its high coefficient of friction, is more effective for providing reinforcement between soil layers, with the whole surface of the product contributing, thanks to the geotextile "grip",

● the **teraforce®** reinforcing cables are protected from damage during compacting by the nonwoven sheets on either side,

● the reinforcing cables have a very high modulus of stiffness,

● **teraforce®** is light and flexible, and easy to install; it can be assembled by overlap, thermal bonding or stitching,

● broad range from 40 to 300 kN/m strength,

● the **teragéos** engineering office is attentive to your needs to pre-design your projects.

Detailed description

teraforce® is a reinforcement geocomposite reinforced with polyester reinforcing cables of high modulus, protected on either side by a nonwoven polypropylene sheet performing the hydraulic filtration functions.

The nonwoven mass is 400 g/m² and the elongation at break is less than 10%.

Installation technique

● plan a layout drawing according to the product's direction of work, to limit cutting out,

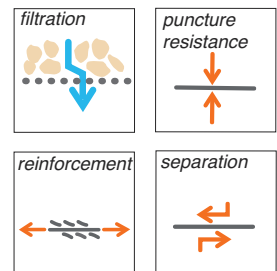
● prepare a flat, graded, compacted base, with no projecting elements,

● unroll the product on the ground with a shaft passed through the reel, or by hand, or suspend it from a lifting beam,

● the strips' overlap depends on the supporting soil: on a stable, graded soil 30 cm, on a soft soil 60 cm to 1 m,

● the strips can be placed on top of one another, thermally bonded, or stitched together,

● cut out the product using a cutter or scissors, wearing gloves.



Packaging

teraforce® is available in rolls 4 m wide x 100 m.