

# How reliable is your weed Control fabric?



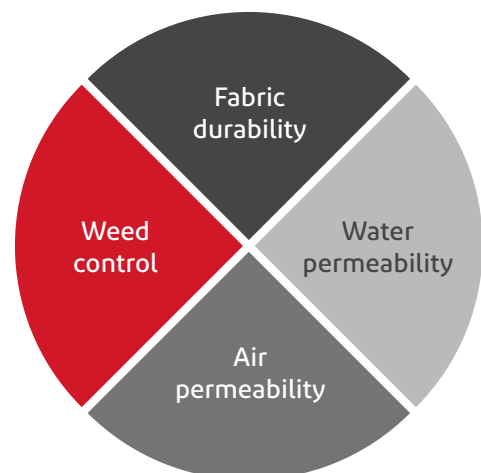
When you consider that weed control fabrics typically represent less than 1% of the overall cost of a landscaping project – choosing which fabric to apply based on price and weight might not be the wisest decision. Selecting an inferior product could result in both costly maintenance issues and unsatisfactory aesthetics. On the other hand, the carefully considered selection of a dependable landscape fabric, offering proven performance, will pay dividends with a more professional aesthetic finish, minimal weed management once installed and healthy, sustainable plant cultivation.

There are many different manufacturing technologies used to create the various weed control products on the market. These include; thermally bonded polypropylene (DuPont™ Plantex®), Woven tape, Spunbonded polypropylene, perforated stretch film and needlefelt calandered. In the absence of a standardized weed control property norm, each landscape fabric can vary significantly in performance.

## The ideal landscape fabric offers a combination of 4 key properties

- **Exceptional weed control:** the landscape fabric forms a reliably effective barrier to weeds, and stands the test of time
- **Superior air permeability:** the fabric allows the soil beneath to breathe, resulting in healthier plant life and keeps bio diversity within the soil
- **Advanced water permeability and drainage:** the fabric ensures sufficient hydration and allows nutrients and fertilisers to nourish the roots of the plants, while also minimising the risk of soil run-off during heavy rain
- **Robust durability:** A high quality fabric with excellent tensile strength, ensuring tear and puncture resistance that will go the distance

The ideal landscape fabric offers a balance of excellent weed control, superior water and air permeability, and high-quality fabric durability.



# The Test

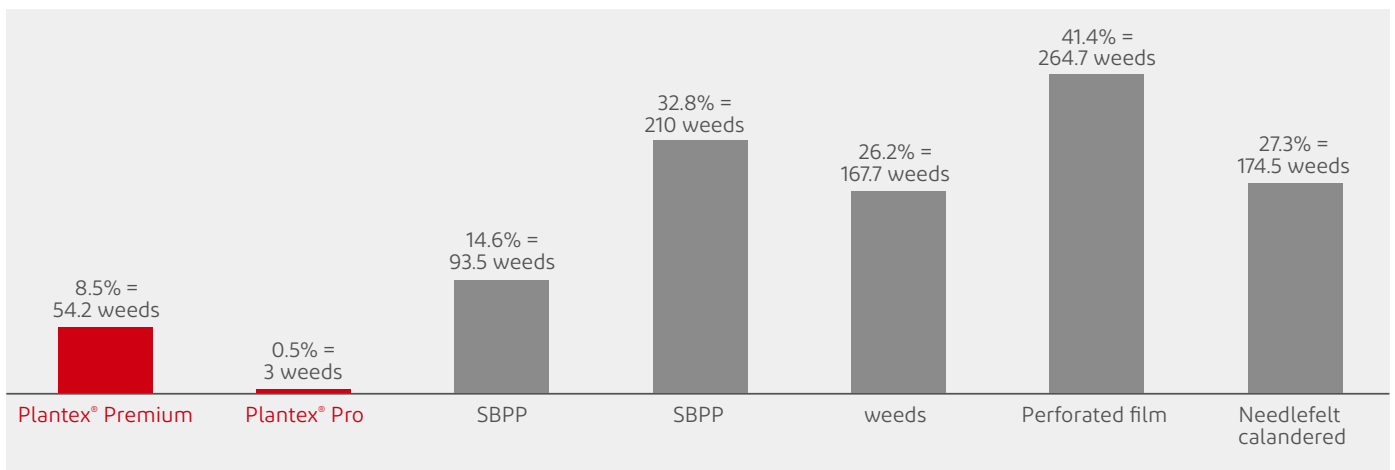
In 2012, DuPont undertook rigorous testing of its Plantex® weed control fabrics, together with other comparable products on the market. The programme took place in a real plantation test field, using Alopecurus myosuroides (Engl. Blackgrass or Slender Foxtail) to evaluate the fabric's performance in application. In the absence of an existing weed control property norm, DuPont developed an application testing methodology at its experimental farm station in Nambenheim, France.

## Tested performance 1: Weed control

The weed control performance of a fabric is determined by its combination of the following properties:

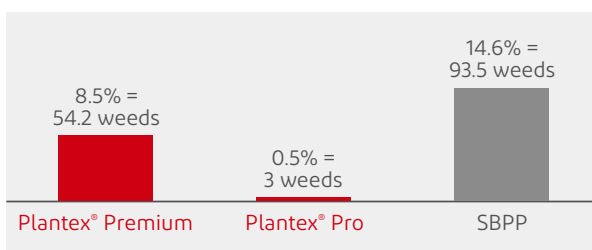
- **Uniformity:** The more uniform the fabric, the less vulnerable it is to tears or forming significant openings. This means greater resistance to opportunistic weed penetration.
- **Material bonding technology:** Nonwoven based materials, such as DuPont™ Plantex®, have demonstrated excellent performance by the benefit of the thermal bonding technology that fixes fibres together firmly, preventing weeds from finding their way through the fabric
- **Opacity/Colour:** This property determines the level of light that can pass through the fabric, which could then encourage weed growth. It is well established that black fabrics are the most efficient at blocking light from reaching the soil after planting.

The test program measured the growth of seeds below/underneath various landscape fabrics, with a reference control specimen that used no fabric. For each specimen three replicates were tested. The seed growth of each test replicate was counted independently by two laboratory employees. The average performance (the count of seeds that had grown through the fabric) of the test specimen is expressed as % weed growth in the reference specimen (average count of 640 weeds). This test can be performed both with and without a mulch layer according to the manufacturer's recommendations in this aspect. In these tests, the weed's "bottom-up" growth through the fabrics was determined after a period of 8 weeks. All fabrics were tested under the same conditions.



Performance expressed in % of weed growth vs. reference specimen. - Reference specimen - average count of 640 weeds

Result: Weed growth through fabric with mulch



Performance expressed in % of weed growth vs. reference specimen. - Reference specimen - average count of 640 weeds

Result: Weed growth through fabric without mulch



At test start.



After 3 weeks.

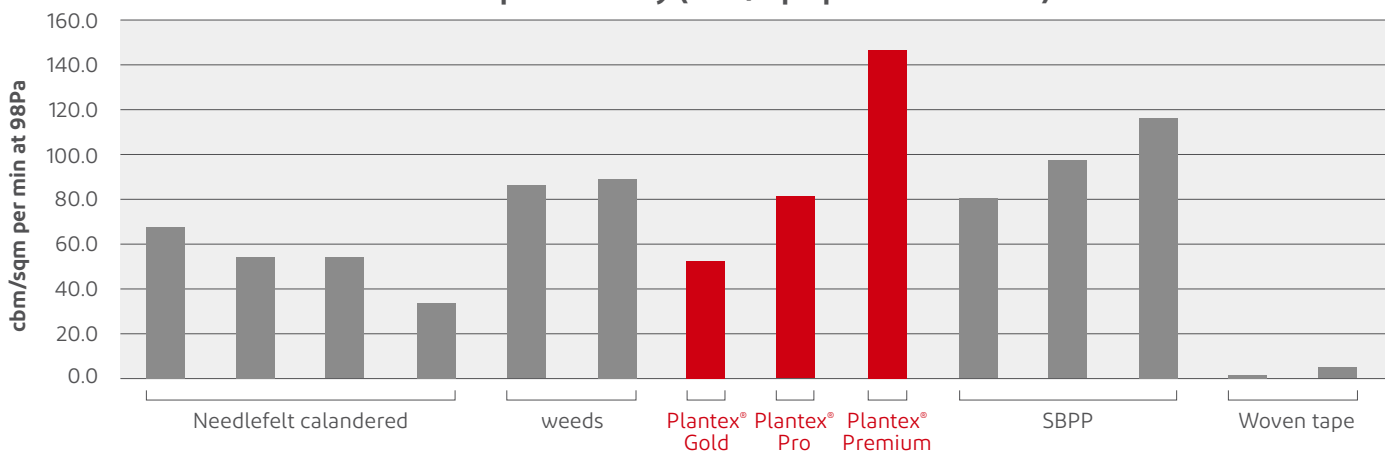


After 8 weeks.

## Tested performance 2: Air permeability

Air permeability is a crucial property of landscape fabrics as it allows the soil beneath the fabric to breathe, so resulting in healthier plants as it maintains the bio diversity within the soil. Insufficient air permeability can lead to poor plant growth or even plant disease, as organisms within the soil play an important role in supporting cultivation. Furthermore, aeration is crucial to the uptake of nutrients through the roots. All fabrics were tested on a specimen area of 20 cm<sup>2</sup> under a pressure of 98 Pa according to EN ISO 9237 at DuPont laboratories.

Air permeability (cbm/sqm per min at 98 Pa)

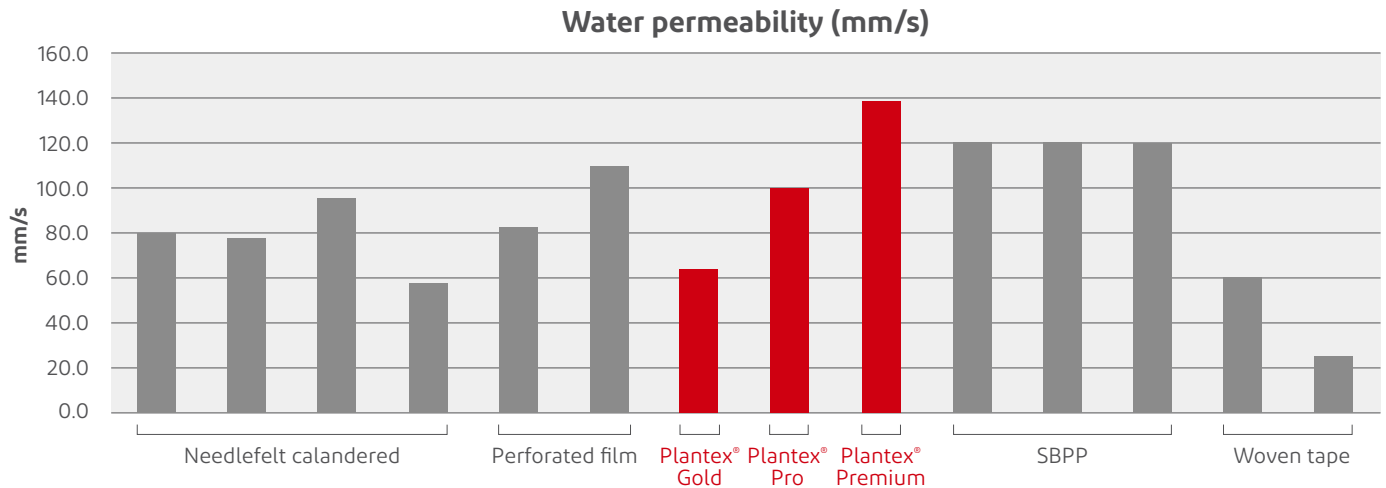


Result: The higher the value, the greater the air permeability and the better the performance in practice.

## Tested performance 3: Water permeability

Water permeability ensures that sufficient hydration and nutrients or fertilisers are able to pass through the fabric to nourish the roots of the plants. Furthermore, fabrics with good water permeability also minimise the risk of soil run-off and washaway due to heavy rain. Woven tape typically shows lower water permeability than nonwovens, as for example DuPont™ Plantex® or spunbonded polypropylene (SBPP), due to the manufacturing process resulting in smaller pore sizes, makes woven fabric less water permeable.

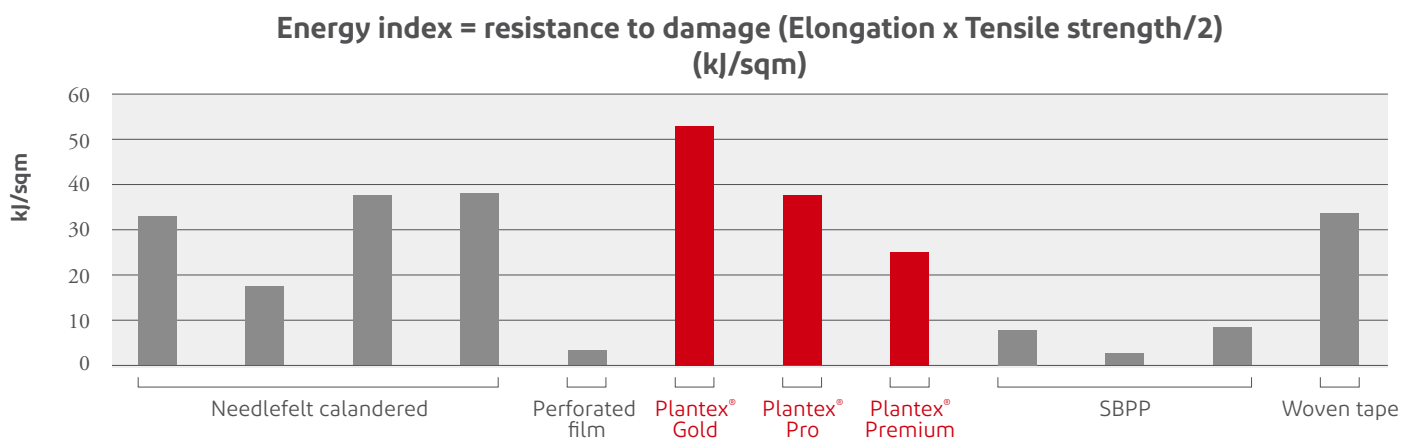
Water permeability normal to the plane is measured on a specimen of 7.5 cm diameter with the “falling head” method according to EN ISO 11058. Results are expressed as the velocity index for a head loss of 50 mm VH50 in mm/s. All stated fabrics have been tested at DuPont laboratories.



Result: The higher the value, the greater the water permeability and the better the performance in actual application.

## Tested performance 4: Fabric durability

To determine a fabric’s durability, DuPont conducted a series of physical property tests including static and dynamic puncture resistance, elongation, tensile strength and trap tear resistance. The Energy Absorption Potential Index (Elongation x Tensile Strength/2) was calculated to estimate the various fabrics’ resistance to mechanical damage (representative as for example for traffic, walking, falling loads, gravel, etc.). Tensile strength and elongation were measured according to EN ISO 10319 on a 20 x 20 cm specimen. The Energy Absorption Potential is a commonly used parameter for material behaviour under stress and expressed in k/sqm.



Result: The higher the value, the greater the fabric durability and the better the performance in practice.

# The Summary

The following table collates and summarizes all the test results from the previous pages.

It is clear that DuPont™ Plantex® weed control products offer the optimum combination of properties and performance.

In the table, points of quality and efficiency are given to the different products based on the results of all performance tests and their ranking in the comparison charts.

Property	Weed control	Water permeability	Air permeability	Fabric durability
<b>Property scale</b>	Unit: % 3: ≤ 1 2: > 1 < 10 1: ≥ 10	Unit: mm/s 3: ≥ 100 2: > 50 < 100 1: ≤ 50	Unit: cbm/sqm per min at 98 Pa 3: ≥ 80 2: > 40 < 80 1: ≤ 40	Unit: kJ/sqm 3: ≥ 50 2: > 25 < 50 1: ≤ 25
Plantex® Premium Thermally bonded polypropylene	●●	●●●	●●●	●●
Plantex® Pro Thermally bonded polypropylene	●●●	●●	●●●	●●
Plantex® Gold Thermally bonded polypropylene	●●●	●●	●●	●●●
SBPP Spunbond polypropylene	●	●●●	●●●	●
Needlefelt calandred	●●	●●	●●	●●
Woven fabrics	●●●	●●	●	●●
Film Perforated	●	●●●	●●●	●

● Reflects variation within product category performance check inside.

## Five reasons to make Plantex® your preferred choice:

- Helps to reduce the use of chemicals in landscaping
- Highly efficient weed and root resistance due to thermal bonding product technology that results into a high resistance against deformation
- Maintains its performance over long life time
- No risk of any substance release from the material
- Quick and easy installation: can be cut to required dimensions by scissors or cutters without risk of fibre release from material over time

# The Plantex® Landscape Solution Offering

Product category	Product brand	Function					Residential / Non-residential														
		Weed control	Root control	Soil erosion	Stabilisation	Filtration	Plant protection	Path	Driveway	Patio	Buried linear networks	Parking lot	Pond surroundings	Paved area	Drainage system	Wall drainage	Park	Timber decking	Slopes	Hedges	Turf area
Weed control solution	Plantex® Premium & Pro	✓					✓		✓					✓		✓	✓		✓	✓	
	Plantex® Gold	✓		✓			✓	✓	✓	✓		✓	✓	✓		✓		✓	✓		
	Plantex® Platinum	✓		✓												✓		✓	✓		
	Plantex® Cocomat	✓		✓			✓									✓		✓	✓		
Root control solution	Plantex® RootBarrier		✓					✓		✓	✓	✓	✓	✓		✓				✓	✓
	Plantex® RootProtector		✓					✓	✓	✓	✓	✓	✓			✓				✓	✓
Surface stabilisation solution	Plantex® Geoproma®				✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓				
	Plantex® GroundGrid®			✓	✓	✓		✓	✓	✓		✓	✓	✓		✓					

✓ = recommended

Avoid any contact with all kind of pesticides, especially herbicides.



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