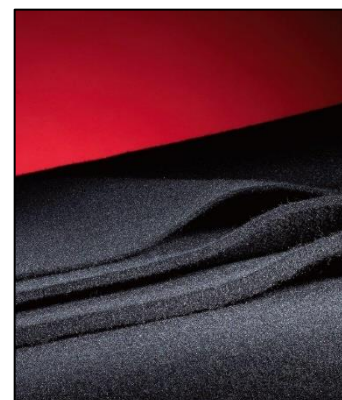


HPS 4 Needleponched Nonwoven

- 1. DESCRIPTION** Thick needleponched nonwoven geotextile manufactured from 100% virgin polypropylene high tenacity fibres containing 1% active carbon black.
- 2. APPLICATIONS** Typical applications for GEOfabrics' HPS Geotextiles include, but are not limited to:
 - Membrane protection in landfill cells and cover systems
 - Soil filtration and separation beneath rock armour in coastal defence
 - Soil filtration within landfill cells
 - Heavy duty soil filters in civil applications
- 3. FEATURES**
 - Optimised for maximum strength and performance – not mass
 - Available in wide widths to allow for minimal construction costs – up to 6m
 - Manufactured from a unique blend of high tenacity fibres providing class leading durability
 - 100% virgin polypropylene fibres for guaranteed durability
 - Carbon black for UV stability



	Test	Unit	MEAN VALUES
4. MECHANICAL PROPERTIES			
Static puncture (CBR)		kN	4
Push through displacement	EN ISO 12236	mm	65
Tensile strength (MD/CMD)		kN/m	25
Tensile elongation (MD/CMD)	EN ISO 10319	%	80
Cone drop	EN ISO 13433	mm	5
Protection efficiency	EN ISO 13719	kN/m ²	-
5. FILTER PROPERTIES			
Apparent opening size	EN ISO 12956	µm	100
Water permeability v _{H50}	EN ISO 11058	l/(m ² ·s)	75
Coefficient of permeability		m/s 10 ⁻³	6.6
6. PHYSICAL PROPERTIES			
Thickness @ 2kPa (Nominal)	EN ISO 9863-1	mm	4.4
Carbon black content			1% active carbon black
Standard colour			Black
Polymer			100% virgin polypropylene

Notes:

- a) Mean values indicate the arithmetic mean derived from the samples taken for any one test as defined in the standard – usually an overall mean of five samples. Mean values are subject to tolerances based on 95% confidence limits as published on the product CE declaration of performance.
- b) Nominal Value (indicates an average manufacturing norm and not a controlled performance parameter).
- c) MD: Machine Direction (longitudinal to the roll).
- d) CMD: Cross Machine Direction (across the roll).
- e) Tensile testing is performed using extensometers.

	Test	VALUES
7. DURABILITY		
Weathering 50 MJ/m ² (1 month)	EN ISO 12224	>90% Retained Strength
Microbiological resistance	EN ISO 12225	No loss in strength
Resistance to acids & alkalis	EN ISO 14030	No loss in strength
Oxidation at 112 days (100 years)	EN ISO 13438	>90% Retained Strength

HPS 4 Needlepunched Nonwoven

- 8. NEEDLE DETECTION** During manufacture, the protection geotextile passes close to three sets of magnets which remove metal particles up to 12g and >2mm. Just before the roll up, the geotextile passes through an electronic metal detection field. Audio and visual alarms indicate if metal particles are detected. Rolls are sent to stock if they pass through the field without an alarm event or, in the case of an alarm event, the operator inspects the suspect area, locates any metal particles and removes them. If unsuccessful, or if any doubt remains as to the presence of metal particles, then the roll goes to the re-inspection facility.
- 9. TESTING** All materials are tested every 6000m² in an UKAS accredited ISO 17025 laboratory to all mechanical properties prior to release.
- 10. STORAGE** The geotextiles are supplied in packaging designed to protect the product from damage during handling, storage and degradation as a result of UV exposure. The product should be kept in appropriate packaging until such time that it is required for installation. The product is clearly and indelibly marked with the product name along the edge of the roll at regular intervals no greater than 5m. The packaging is labelled clearly to identify the product supplied in accordance with EN ISO 10320: Geotextile and Geotextile related products – Identification on site. Use slings where provided. Product weights are given on roll tickets. Use equipment appropriate to weight and dimension. Store and handle in accordance with good occupational hygiene and safety practice.

	Unit	VALUES
11. DIMENSIONS		
Standard roll length	m	150
Standard roll width	m	6
Approximate roll weight	kg	400