

NorGeoSpec 2012 Product Certificate

Quality Product Certification Reinforcement

This product has been found to be fit for use in accordance with NorGeoSpec 2012 System for the above given function.

Certificate no.: NGS-50170

Date: 09.05.2019

Valid until: 08.05.2021

Manufacturer: HUESKER Synthetic GmbH

Product: Fortrac® 35 T

Product Type: GGR

Raw material: PET

Function: Reinforcement

Issued by



Christian Recker, SINTEF project manager

Approved by



Arnstein Watn, Head of the Technical committee



The products are regularly audited and tested to verify that the characteristics fulfil the NorGeoSpec 2012 Rev.: 01/14.12.2016 requirements.
Approved by the NorGeoSpec Technical committee: 09.05.2019

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Characteristic		Standard	Unit	Declared value	Max. tolerance	Certification value
Mass per unit area		EN ISO 9864	g/m ²	185	± 19	167 - 204
Dimension		NorGeoSpec 2012				
Tensile elements	MD	Annex F	Production width ¹	170	± 0	170
	CMD	Annex F	Elements/m	34	± 1.5	32.5 – 35.5
Grid apertures	MD	Annex F	mm	26	± 3.0	23 - 29
	CMD	Annex F	mm	23	± 3.0	20 - 26
Mechanical tests						
Nominal tensile strength	MD	EN ISO 10319	kN/m	35.00	- 0.00	35.00
	CMD	EN ISO 10319	kN/m			
Tensile strain at nominal strength	MD	EN ISO 10319	%	8.3	± 1.7	6.6 – 10
	CMD	EN ISO 10319	%			
Tensile stiffness at 2% tensile strain	MD	EN ISO 10319	kN/m	385	- 0	385
	CMD	EN ISO 10319	kN/m			
Tensile stiffness at 5% tensile strain	MD	EN ISO 10319	kN/m	340	- 0	340
	CMD	EN ISO 10319	kN/m			
Tensile stiffness at 10% tensile strain	MD	EN ISO 10319	kN/m			
	CMD	EN ISO 10319	kN/m			
Static puncture test		EN ISO 12236	KN			
Dynamic perforation resistance		EN ISO 13433	mm			
Durability (Declared value)						
Service life			years	<input type="checkbox"/> 25	<input type="checkbox"/> 50	<input checked="" type="checkbox"/> 100

Information about reduction factors are given on page 3 of this certificate.

¹ Production width – 5m

Declared values

Reinforcement

Declared values						
Reduction factor for creep rupture ^{1) 2)}	RF _{CR}	1.52	BBA assessment - HAPAS Certificate 13/H197, Product sheet 3; for 120 years and application temperature of 20 °C			
Reduction factor for environmental effects	RF _{CH}		Remarks:			
Chemical		-	Application in natural soils with 4 < pH < 9 and soil temperature < 25 °C			
Oxidation		n.r.				
Hydrolysis		1.03	Test report No. 160501 – ISO/TR 20432 120 years, 4 < pH < 9 and soil temperature of 20 °C			
Reduction factor for weathering	RF _W		Remarks:			
Or max. exposure time						
1 month						
2 weeks		x				
1 day						
Reduction factor for installation damage	RF _{ID,fine}		RF _{ID,medium}	1.15	RF _{ID,coarse}	1.20
Used test method	BBA Assessment					
Compaction	Compacted soil thickness: 200 mm, weight of vibrating roll: 4550 kg Particle size distributions are shown in Figure 5 of BBA Certificate					
Particle size	RF _{ID,coarse} = coarse gravel with D ₉₀ ≤ 35mm; RF _{ID,medium} = sandy gravel with D ₉₀ ≤ 10mm					