

# 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-50085

Date: 09.05.2017

Valid until: 08.05.2019

Manufacturer: HUESKER Synthetic GmbH

Product: Fortrac R800/100-30T

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: 09.05.2017

NorGeoSpec Certification body: SINTEF Building and Infrastructure · Forskningsveien 3B · 0373 Oslo

SINTEF is appointed Notified Body by the Norwegian Building Authority, related to Regulation (EU) No. 305/2011 – Construction Products.  
Notified Body No. 1071.

## Quality Product Certification Reinforcement

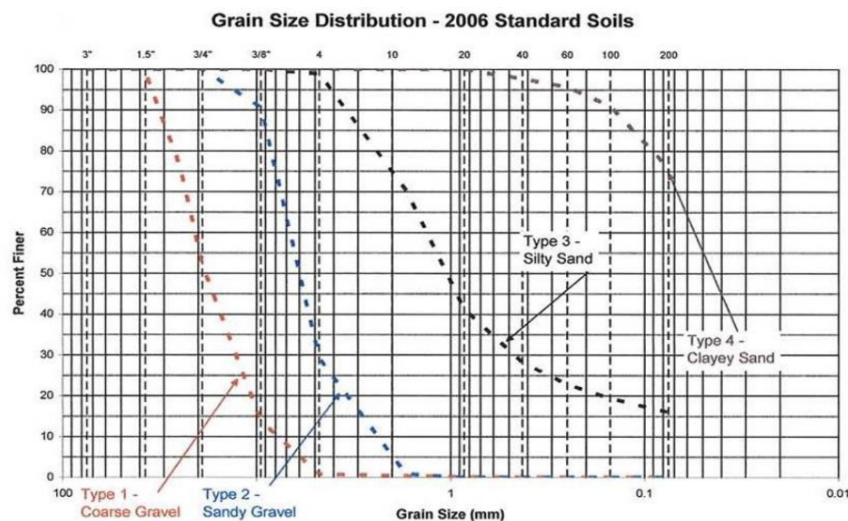
Characteristic		Standard	Unit	Declared value	Max. tolerance	Certification value
Mass per unit area		EN ISO 9864	g/m <sup>2</sup>	2200	± 220.0	<b>1980 – 2420</b>
<b>Dimension</b>		NorGeoSpec 2012				
Tensile elements	MD	Annex F		100	± 0	<b>100</b>
	CMD	Annex F				
Grid apertures	MD	Annex F	mm	25	± 3.8	<b>21.2 – 28.8</b>
	CMD	Annex F	mm	30	± 4.5	<b>25.5 – 34.5</b>
<b>Mechanical tests</b>						
Nominal tensile strength	MD	EN ISO 10319	kN/m	800.00	0.00	<b>800.00</b>
	CMD	EN ISO 10319	kN/m			
Tensile strain at nominal strength	MD	EN ISO 10319	%	8.0	± 1.6	<b>6.4 – 9.6</b>
	CMD	EN ISO 10319	%			
Tensile stiffness at 2% tensile strain	MD	EN ISO 10319	kN/m	7500.00	0.00	<b>7500.00</b>
	CMD	EN ISO 10319	kN/m			
Tensile stiffness at 5% tensile strain	MD	EN ISO 10319	kN/m	7000.00	0.00	<b>7000.00</b>
	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			
<b>Durability (Declared value)</b>						
Service life			years	<input type="checkbox"/> 25	<input type="checkbox"/> 50	<input type="checkbox"/> 100
Information about reduction factors are given on page 3 of this certificate.						

## Declared values Reinforcement

Declared values						
Reduction factor for creep rupture <sup>1) 2)</sup>	RF <sub>CR</sub>	1.52	Remarks: 120 years, BBA Certificate 13/H197 Product sheet 3			
Reduction factor for environmental effects	RF <sub>CH</sub>		Remarks:			
Chemical		-	Application in natural soils at a pH-value between 4 and 9 and a soil temperature of <25°C			
Oxidation		n.r.				
Hydrolysis		1.03	Expertise Dr. Retzlaff; GSY001-14g01 120 years, pH-value 4<pH<9 and a soil temperature of 20°C			
Reduction factor for weathering	RF <sub>W</sub>		Remarks:			
Or max. exposure time						
1 month		x				
2 weeks						
1 day						
Reduction factor for installation damage	RF <sub>ID,fine</sub>	1.06 (Type 3)	RF <sub>ID,medium</sub>	1.03 (Type 2)	RF <sub>ID,coarse</sub>	1.03 (Type 1)
Used test method	Procedure for installation damage test for BBA Assessments modified to conform with ASTM D5818 requirements					

**Compaction:** Ride-on steel-wheeled roller (4550 kg) + vibratory capability, 4 passes soil type 1+2 and 6 passes soil type 3, 1st soil layer 20 cm-geosynthetic-2nd soil layer 20 cm; compaction rd.90% modified proctor (not performed on type 1 and 2)

Particle size distribution:



<sup>1)</sup> product range

<sup>2)</sup> not required if used as base course layers

n.r. = not required

n/a = not applicable