

# 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-50169

Date: 01.08.2019

Valid until: 31.07.2021

Manufacturer: TenCate Geosynthetics


Product: Miragrid GX 110/30

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: 01.08.2019

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Characteristic		Standard	Unit	Declared value	Max. tolerance	Certification value
Mass per unit area		EN ISO 9864	g/m <sup>2</sup>	422	± 42	<b>380 – 464</b>
<b>Dimension</b>		NorGeoSpec 2012				
Tensile elements	MD	Annex F	Production width <sup>1</sup>	210	± 0	<b>210</b>
	CMD	Annex F	Elements/m	35.0	± 2	<b>33 – 37</b>
Grid apertures	MD	Annex F	mm	19	± 2.9	<b>16.1 – 21.9</b>
	CMD	Annex F	mm	25	± 3.8	<b>21.2 – 28.8</b>
<b>Mechanical tests</b>						
Nominal tensile strength	MD	EN ISO 10319	kN/m	110.00	- 0.00	<b>110.00</b>
	CMD	EN ISO 10319	kN/m			
Tensile strain at nominal strength	MD	EN ISO 10319	%	10.1	± 2.0	<b>8.1 – 12.1</b>
	CMD	EN ISO 10319	%			
Tensile stiffness at 2% tensile strain	MD	EN ISO 10319	kN/m	1000	- 200.0	<b>800</b>
	CMD	EN ISO 10319	kN/m			
Tensile stiffness at 5% tensile strain	MD	EN ISO 10319	kN/m	700	- 140.0	<b>560</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 checked="" type="checkbox"/> 100

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

<sup>1</sup> Production width – 5.20 m

## Declared values Reinforcement

Declared values						
Reduction factor for creep rupture <sup>1) 2)</sup>	RF <sub>CR</sub>	1.58	KIWA test report: 1.6/24520/0354.0.1-2019e			
Reduction factor for environmental effects	RF <sub>CH</sub>					
Chemical			Application in natural soils at a pH-value between 4 and 9 and a soil temperature <25°C			
Oxidation		n.r.				
Hydrolysis		1.04	SKZ test report: 89363/09-II			
Reduction factor for weathering	RF <sub>W</sub>					
Or max. exposure time						
1 month		x				
2 weeks						
1 day						
Reduction factor for installation damage	RF <sub>ID,fine</sub>	1.10	RF <sub>ID,medium</sub>	1.14	RF <sub>ID,coarse</sub>	1.11
Used test method	Baugrund Wien 10-2022-01					
Compaction	Min. compaction depth above geogrid 320 mm; Ride-on steel-wheeled roller (12400 kg); Relative density > 95%					
Particle size	RF <sub>ID fine</sub> = slightly plastic clay, slightly sandy with D <sub>90</sub> = 1.5 mm and D <sub>60</sub> = 0.06 mm RF <sub>ID medium</sub> = crushed lime- / dolomite rock with D <sub>90</sub> = 26 mm and D <sub>60</sub> = 11 mm RF <sub>ID coarse</sub> = crushed concrete with D <sub>90</sub> = 63 mm and D <sub>60</sub> = 28 mm					