

# Fibre-reinforced Geosynthetic Clay Liner (GBR-C)

## Bentofix® X5F NSP 4900



NAUE GmbH & Co. KG  
Gewerbestr. 2  
32339 Espelkamp-Fiestel  
Germany

Phone: +49 5743 41-0 Fax: +49 5743 41-240  
E-Mail: info@naue.com Internet: www.naue.com

**Bentofix® X5F NSP 4900** is a shear strength transmitting geosynthetic clay barrier (GBR-C), continuously needle-punched through all components. A GBR-C is also known as geosynthetic clay liner (GCL) or bentonite mat. Following its needling process a structured polyethylene layer is coated to the entire surface of the woven side. The 300 mm length longitudinal overlapping areas are marked on the coating side.

Property	Test method*	Unit	Values
<b>Geotextile layers:</b>			
<b>Polypropylene nonwoven:</b>			
Mass per unit area	EN ISO 9864	g/m <sup>2</sup>	220
<b>Polypropylene woven:</b>			
Mass per unit area	EN ISO 9864	g/m <sup>2</sup>	110
<b>Bentonite layer</b> (sodium bentonite powder):			
Mass per unit area	EN 14196 ( $\rho_{CLAY}$ )	g/m <sup>2</sup>	4,670
Swell index	ASTM D5890	ml/2g	24
Fluid Loss	ASTM D5891	ml	≤ 18
Water content	DIN 18121 / ISO 11465 (5hrs, 105 °C)	%	approx. 10
<b>Polyethylene coating</b> (structured):			
Mass per unit area	EN ISO 9864	g/m <sup>2</sup>	≥ 500
<b>Bentofix X5F NSP 4900:</b>			
Mass per unit area	EN 14196 ( $\rho_{GBR-C}$ )	g/m <sup>2</sup>	approx. 5,550
Thickness	EN ISO 9863-1	mm	6.3
Max. tensile strength, md/cmd**	EN ISO 10319 / ASTM D6768	kN/m	12.0 / 12.0
Elongation at break, md/cmd**	EN ISO 10319 / ASTM D6768	%	10.0 / 6.0
Peel strength (nonwoven vs. woven/coating)	ASTM D6496	N/10 cm***	≥ 60
		N/m	≥ 360
Shear strength of the structured upper surface vs. Geotextile (300 g/m <sup>2</sup> )	ASTM D6243 at a load of 20 kPa, average value of several samples taken over the roll width	kPa	≥ 9
Static puncture strength	EN ISO 12236 / ASTM D6241	N	2,000
Permeability	EN 14150 (10 m water head, coating only)	m <sup>3</sup> /m <sup>2</sup> /day	3 x 10 <sup>-6</sup>
Permeability / Hydraulic Conductivity (calculated by testing according to EN 14150)	EN 14150 (10 m water head, coating only)	m/s	≤ 10 <sup>-14</sup>
Index Flux (q <sub>10</sub> )	EN 16416 / ASTM D5887 (GBR-C only)	(m <sup>3</sup> /m <sup>2</sup> )/s	4 x 10 <sup>-9</sup>
<b>Roll dimensions:</b>			
width x length, / diameter (e.g.)	-	m x m / m	4.85 x 35 / Ø 0.60

\* = based on; \*\*md = machine direction, cmd = cross machine direction; \*\*\*max. peak

The listed technical values are guiding values, achieved in our laboratories and/or independent testing institutes. Our products are subject to changes without prior notice.