

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



NAUE GmbH & Co. KG  
 Gewerbestrasse 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® X2 NSP 4900

### Australia / New Zealand

**Bentofix® X2 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 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>	≥ 200
<b>Polypropylene woven:</b>			
Mass per unit area	EN ISO 9864	g/m <sup>2</sup>	≥ 100
<b>Bentonite layer (sodium bentonite powder):</b>			
Mass per unit area	EN 14196 ( $\rho_{\text{CLAY}}$ , 0%)	g/m <sup>2</sup>	≥ 3,700
Swell index	ASTM D5890	ml/2g	≥ 24
Fluid Loss	ASTM D5891	ml	≤ 18
Montmorillonite content	VDP69 (Methylene blue)	mg/g	≥ 300
<b>Polyethylene coating:</b>			
Mass per unit area	EN ISO 9864	g/m <sup>2</sup>	≥ 200
<b>Bentofix X2 NSP 4900:</b>			
Mass per unit area	EN 14196 ( $\rho_{\text{GBR-C}}$ , 0%)	g/m <sup>2</sup>	≥ 4,200
Thickness	EN ISO 9863-1	mm	≥ 5.4
Max. tensile strength, md/cmd**	EN ISO 10319 / ASTM D6768	kN/m	≥ 10.8 / ≥ 10.8
Elongation at break, md/cmd**	EN ISO 10319 / ASTM D6768	%	≥ 8 / ≥ 5
Peel strength (nonwoven vs.woven/coating)	ASTM D6496	N/m	≥ 360
Static puncture strength	EN ISO 12236 / ASTM D6241	N	≥ 1,800
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>
Permeability / Hydraulic Conductivity (k <sub>10</sub> )	EN 16416 / ASTM D5887 (GBR-C only)	m/s	≤ 2.5 x 10 <sup>-11</sup>
Index Flux (q <sub>10</sub> )	EN 16416 / ASTM D5887 (GBR-C only)	(m <sup>3</sup> /m <sup>2</sup> )/s	≤ 9 x 10 <sup>-9</sup>
<b>Roll width</b>	-	m	4.85

\* = based on; \*\*md = machine direction, cmd = cross machine direction, ≥ = MARV, ≤ = MaxARV

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