



 **CCHYDRO™**
Concrete on a Roll

MEMBRANE DURABILITY



RAIL



ROAD



MINING



PETROCHEM



AGRO



UTILITIES



PUBLIC WORKS



DEFENCE



DESIGN



SHELTER



Winner
Technical Innovation Award



Innovation Award
ICE Wales Cymru Awards 2017



2014 Fast Track 100
16th fastest growing
company in the UK.



2014 Queen's Award
for Enterprise in
Innovation



2013
MacRobert Award
Finalist



2013 Innovation Award Winner
Railtex Exhibition



2012 R&D 100
Award winner
R&D Magazine



2009 Winner
Material ConneXion Medium Award
Material of the Year



D&AD Yellow Pencil Award
Winner
Product Design

CC Hydro Membrane Testing - Secondary Containment Liners

The reinforced membrane of CC Hydro™ GCCB (Geosynthetic Cementitious Composite Barrier) was tested to assess the material's performance in accordance with the Canadian National Standard for the use of liners used for secondary containment (CAN/ULC S668-12, Standard For Liners Used For Secondary Containment of Above ground Flammable And Combustible Liquid Tanks). The testing was conducted by Milliken & Company and included tests to assess the mechanical, impermeability and chemical resistance of the CC Hydro™ membrane.

Summary of Results

Summary of Testing of CC-Hydro (Membrane Only) for CAN/ULC-S668-12						
Section	Property	Test Method	Chemical	Require Value	Tested Value	Notes
5.2	Grab Tensile	ASTM D751 (Sec 12-15)	N/A	> 500N	1340N	Pass
5.3	Vapor Transmission	ASTM D-814	Ethanol	< 20 g/(h·m2)	0.54	Pass
			Methanol	< 20 g/(h·m2)	2.61	
			Fuel C	< 20 g/(h·m2)	10.72	
			ASTM IRM 903	< 20 g/(h·m2)	0.13	
			Water	< 20 g/(h·m2)	0.46	
5.4	Chemical Compatibility Grab Tensile	ASTM D-751 (Sec 12-15)	Ethanol	< 50% Loss	18.3% Gain	Pass
			Methanol	< 50% Loss	10.1% Gain	
			Fuel C	< 50% Loss	20.6% Loss	
			ASTM IRM 903	< 50% Loss	19.8% Loss	
			Na Bicarbonate	< 50% Loss	4.2% Gain	
			Saturated NaCl	< 50% Loss	14.3% Gain	
			Dilute Sulfuric	< 50% Loss	4.1% Loss	
	All samples < 10% Mass Loss & <20% Volume Change					
5.5.1	Seam Strength Grab	ASTM D-751 (Sec 66-71)	N/A	> 500N	1205 N	Pass
5.5.2	Seam Strength Peel	ASTM D-6392	N/A	> 2.5 N/mm	3.9 N/mm	Pass
5.7	Cold Crack	ASTM D-751 (Section 51-64)	N/A	Pass	Pass	Pass
5.8	Accelerated Weathering	ASTM D-4355	N/A	< 30% Loss	10% Gain	Pass
5.9	Heat Aging	ASTM D-751 (Sec 12-15)	N/A	< 50% Loss	14% Gain	Pass
5.1	Soil Burial	ASTM G-160	N/A	< 30% Loss	1% Gain	Pass
5.12	Flammability	CAN/ULC-S668-12 (5.12)	N/A	Pass	Pass	Pass