

## CC Hydro™ Properties

2002.01.EN

### Pre-set

	Test Method	Unit	Typical Values	
			CCH5™	CCH8™
<b>Physical Properties</b>				
Total Thickness	BS EN 1849-2	mm	6	9
Bulk Roll Sizes		m	1.0x150	1.0x100
Mass per Unit Area	BS EN 1849-2	kg/m <sup>2</sup>	8	13
Concrete Density	BS EN 1849-2	kg/m <sup>3</sup>	1430-1540	
Density Increase on Curing		% Increase	30-35	
<b>Other Properties</b>				
Peel Strength (strength of internal linking fibres)	BS EN ISO 13426-2	kN/m	4.0	4.5
Tensile Strength of Geomembrane Barrier MD/CMD (MARV)	BS EN ISO 527-4	kN/m	14/13	
Working Time from Hydration (refer to the CC Hydro™ Hydration Guide)		Hours	1 to 2	

### Post-set

(Hydrated by full immersion in accordance with ASTM D8030. Water:GCCM ratio of 0.33)

	Test Method	Unit	Typical Values	
			CCH5™	CCH8™
<b>Mechanical Performance</b>				
Compressive Strength of Cementitious Mix* - 24 Hour	BS EN 12390-3	MPa	50	
Compressive Strength of Cementitious Mix* - 28 Day	BS EN 12390-3	MPa	80	
Flexural Strength at 24 Hours from Hydration - Initial Break (MD)	ASTM D8058	MPa	>4.0	
Flexural Strength at 24 Hours from Hydration - Final Break (MD)	ASTM D8058	MPa	>13	>13
Static Puncture Resistance (mean ultimate puncture force)	BS EN ISO 12236	kN	3.5	4.5
Dynamic Puncture Resistance (depth of perforation)	BS EN ISO 13433	mm	0*	
Pyramid Puncture Resistance	BS EN ISO 14574	kN	7.5	10
Differential Ground Movement (strain to PVC failure)		%	>15	
Coefficient of Thermal Expansion		α (mm/mk)	0.012-0.015	
<b>Impermeability (Geomembrane Barrier)</b>				
Water Permeability	BS EN 14150	m/s	1 x 10 <sup>-11</sup>	
Gas Permeability	ASTM D1434	$\frac{\text{cm}^3 \cdot \text{cm}}{\text{cm}^2 \cdot \text{s} \cdot \text{Pa}}$	5 x 10 <sup>-12</sup>	
<b>Environmental Durability (minimum 50 year expected life - see BBA Certificate 19/5685)</b>				
Weathering Resistance (refer to CC Hydro™ Weather Resistance)	BS EN 12467	-	Passed	
Chemical Resistance - Retained Initial Flexural Strength (MD)				
Method A - Acid (10% solution H <sub>2</sub> SO <sub>4</sub> )	BS EN 14414	%	79	85
Method B - Alkaline (saturated suspension Ca(OH) <sub>2</sub> )	BS EN 14414	%	132	138
Method C - Solvation & Swelling (35% vol diesel, 35% vol paraffin, 30% vol lubricating oil HD30)	BS EN 14414	%	128	110
Method D - Synthetic Leachate	BS EN 14414	%	133	129
Root Resistance (refer to CC Root Resistance Testing)	DD CEN/TS 14416	-	Passed	
Flammability (refer to CC Hydro™ Fire Certification)	CAN/ULC-S668-12	-	Passed	
<b>Hydraulic Performance</b>				
Abrasion Resistance (cementitious barrier depth of wear)	ASTM C1353	mm/1000 Cycles	0.2	
Manning's Roughness Coefficient	ASTM D6460	n	0.011	
Recommended Permissible Velocity (intermediate fixings may be required - contact CC Ltd)		m/s	Application Dependent	<8.6

\* Cube testing at Water:Powder ratio of 0.3 to correspond to GCCM hydration by immersion to ASTM D8030 \* Probe did not make a full penetration through the product, therefore the depth of penetration is zero.  
\* When used for the primary containment on non pollutants and secondary containment of other liquids.

Occasionally there will be a Beam Fault (fabric imperfection under 100mm wide running across the width) in a Bulk Roll. This fault is unavoidable due to the manufacturing process and the fault will be clearly marked with a white tag, there will be a maximum of (1) one Beam Fault in any Bulk Roll. A joint may need to be made on site where there is a Beam Fault as the material at a fault will not reach the performance specified in this Data Sheet. The maximum un-useable material due to any Beam Fault will be 100mm. There are no beam faults in standard batched rolls.

CC Hydro™ should not be used for the primary containment of liquids that would be detrimental to the environment. Information is provided based on current test data and may be subject to change as new information becomes available. The versatile nature of CC Hydro™ means that all application conditions cannot be anticipated. Concrete Canvas Ltd makes no warranties and assumes no liability in connection with this information. Project specific testing may be required to determine the suitability for CC Hydro™ material use in a particular application.

