

CC Hydro™ Properties

2405.01.EN

| Pre-set (Uncured) | Test Method | Unit | Typical Values | |
|---|-----------------|------------|----------------|---------|
| | | | CCHT1™ | CCHT2™ |
| ASTM D8364 'Standard Specification For GCCM Materials' Classification | | | | |
| GCCM/B Classification | ASTM D8364 | Type | I** | II** |
| Dimensions | | | | |
| Total Thickness | BS EN 1849-2 | mm | 6 | 8 |
| Bulk Roll Sizes*** | * | m | 1.0x150 | 1.0x100 |
| Physical Properties | | | | |
| Mass per Unit Area | BS EN 1849-2 | kg/m² | 9 | 13 |
| Concrete Density | BS EN 1849-2 | kg/m3³ | 1550-1750 | |
| Density Increase on Curing | * | % Increase | 15-25 | |
| Tensile Strength of Geomembrane Barrier MD/CD | BS EN ISO 527-4 | kN/m | 14/13 | |
| | | | | |
| | * | Hours | 1 to 2 | |

Post-set (Cured) - at 28 Days from Hydration unless specified

(Hydrated by full immersion in accordance with ASTM D8030)

| Mechanical Performance | | | | |
|--|-----------------------|--|-----------------------|-----|
| Compressive Strength of Cementitious Mix (water/cementitious materials ratio to ASTM D8329) | ASTM D8329 | MPa | 45 | 60 |
| Flexural Strength - 1 Day Initial Flexural Strength | ASTM D8058 | MPa | 4 | |
| Flexural Strength - 1 Day - Final Flexural Strength | 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 | 12 | |
| Differential Ground Movement (strain to PVC failure) | * | % | >15 | |
| Coefficient of Thermal Expansion | * | α (mm/mk) | 0.012-0.015 | |
| Impermeability (Geomembrane Barrier) | | | | |
| Water Permeability | BS EN 14150 | m/s | 1 x 10 ⁻¹¹ | |
| Gas Permeability | ASTM D1434 | $\frac{\text{cm}^3 \cdot \text{cm}}{\text{cm}^2 \cdot \text{s} \cdot \text{Pa}}$ | 5 x 10 ⁻¹² | |
| Environmental Durability (minimum 50 year expected life▲ - see BBA Certificate 19/5685) | | | | |
| Chemical Resistance Retained Initial Flexural Strength | | | | |
| Method A - Acid (10% solution H ₂ SO ₄) | BS EN 14414 | % | 20 | 15 |
| Method B - Alkaline (saturated suspension Ca(OH) ₂) | BS EN 14414 | % | 80 | 65 |
| Method C - Solvation & Swelling (35% vol diesel, 35% vol paraffin, 30% vol lubricating oil HD30) | BS EN 14414 | % | 65 | 70 |
| Method D Synthetic Leachate | BS EN 14414 | % | 65 | 75 |
| Permissible Long Term pH Immersion | * | pH | 4-9 | |
| 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 | |
| Hydraulic Performance | | | | |
| Abrasion Resistance (cementitious barrier depth of wear) | ASTM C1353/ASTM D8364 | mm/1000 Cycles | 0.15 | |
| Manning's Roughness Coefficient | ASTM D6460 | n | 0.011 | |

The above values are typical and provide an indication of product performance based on testing by BICS Laboratories Ltd or TRI Environmental or QAI Laboratories. Values marked with an asterisk (*) are based on Concrete Canvas Ltd laboratories internal assessments and testing. For design values, contact Concrete Canvas Ltd. **GCCM classification based on testing of the CCT1™ and CCT2™ GCCM material used for the manufacture of CC Hydro™. *** Bulk Rolls are supplied by area so the listed length and width dimensions are typical values and tolerances are typically +5%/-2.5% **** 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. 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.

