



 **CONCRETE CANVAS®**  
Concrete on a Roll

**FREEZE THAW  
RESISTANCE**



The Queen's Awards  
for Enterprise:  
International Trade  
2019



Board of Trade  
Winner  
2018



Winner  
Technical Innovation Award



ICE Wales Cymru Project Awards

Innovation Award  
ICE Wales Cymru Awards 2017



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## Freeze-Thaw Resistance (+/-50°C)

Based on testing performed according to BS EN 12467:2004 p7.4.1 Fibre-cement flat sheets – Product specification and test methods.

Concrete Canvas® GCCM\* (CC) products have been independently tested by PARC to assess the performance of CC5, CC8 and CC13 when subject to 100 cycles of freeze-thaw. The test method used is based on BS EN 12467:2004 p7.4.1, “Fibre-cement flat sheets – Product specification and test methods.” In order to meet the requirement to test within a temperature regime from -50°C to +50°C, the curing process was based on “BS EN 60068-2-14:2009 Test Nb”.

The test method involves testing sample bars (40x160mm) which are subject to 100 cycles of freezing at -50°C and thawing at +50°C. The temperature was changed at a rate of 1.5°C per minute and remained at each extreme for one hour. Samples were submerged in water at ambient temperature during each cycle, overnight and through weekends to keep them saturated through the freezing cycle. Following the 100 cycles of freeze-thaw cycling the samples were subject to visual inspection and to a 3-point bend flexural strength test.

The ratio between the flexural strength of each specimen and its control counterpart is calculated and the mean value is listed below as  $R_L$ . This is calculated at a 95% confidence level using the methodology established using ISO 2602.

According to BS EN 12467:2004,  $R_L$  shall not be less than 0.75 in order to qualify as a pass.

## Summary of Results

		CC5™	CC8™	CC13™
FREEZE AND THAW: -50°C to +50°C	Mean Strength (N)	102.2	186.4	341.8
	Retained strength (%)	128%	126%	112%
	$R_L$	1.25	1.20	1.03

CC products showed no loss of flexural strength following 100 cycles of freeze-thaw.

The results listed here should be used for indicative purposes only. Please contact Concrete Canvas Ltd with the specific nature of your application detailing the temperature profile under which the material will be used, in order that we can provide more information on the suitability of CC.