

All tests in this report are executed according to the ISO 9001 certified Quality management system of the BBRI

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TEST REPORT

Laboratory MA – CONSTRUCTION MATERIALS	O/References	DE-MA-0149 MA-19-170-01/EXT Page 1/6
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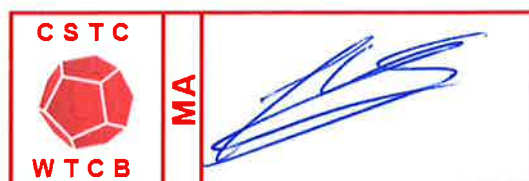
Requested by	INTELLIGENT MEMBRANES LTD. Clopton Farm Lower Road Croydon Cambridgeshire SG8 0EF UK		
Date of the order	11/12/2019	Samples registration	S2016-33-11
		Date of reception of samples	11/08/2016
Date of issue of the report	10/01/2020		
Test carried out	Determination of the water absorption of the product "PASSIVE PURPLE EXTERNAL"		
Reference	NBN EN 16302 (2013) Conservation of cultural heritage – Test methods – Measurement of water absorption by pipe method		

This test report contains 6 pages. This test report may only be reproduced in its entirety. Each page of the original report has been stamped (in red) by the laboratory and initialled by the head of laboratory. The results and findings are only valid for the tested samples.

- No sample
- Sample(s) subjected to destructive test
- Sample(s) to be removed from our laboratories 30 calendar days after sending of the report, save in the case of a further written request



Ir. E. Nguyen
In charge of the test



Ir. S. Charron
Head of laboratory

1 Introduction

Eight concrete slabs (15*15*4cm) were delivered in the test centre of BBRI in Limelette and subscribed under the lab number MA-19-170. They were divided in two groups:

- Four slabs were coated with the product “PASSIVE PURPLE EXTERNAL” (acrylic dispersion of pure polymer, with fillers and additives, coating).
- Four slabs have no coating and serve as reference for the water absorption.



Concrete slab coated with PASSIVE PURPLE EXTERNAL



Concrete slab (reference)

Figure 1 : Concrete slabs

The product PASSIVE PURPLE EXTERNAL has been applied by the demander. No information was given about the condition of application and the thickness of the applied product and the composition of the concrete slabs.

2 Tests

Minimum 3 samples per group were tested.

The samples were first cleaned up by means of compressed air and put in an oven at $(40\pm 2)^{\circ}\text{C}$ until constant mass is reached.

For each sample, a Karsten pipe (pipette type H for horizontal surfaces) is sealed on the surface by means of a butyl cord. Distilled water is introduced into the pipette to the zero level. The variations of the water level in the graduated column are measured over the time; at first after 1 minute and then every 5 minutes until a constant value is reached. If no constant value is reached, the test is stopped after 1 hour.

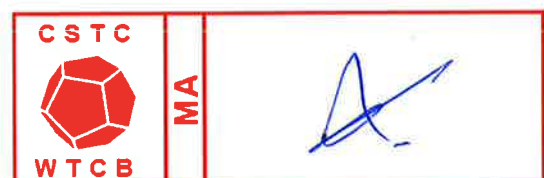




Figure 2 – Water absorption test

The total water absorption per unit area W_f at time t_f is calculated as:

$$W_f = \frac{Q_f}{A}$$

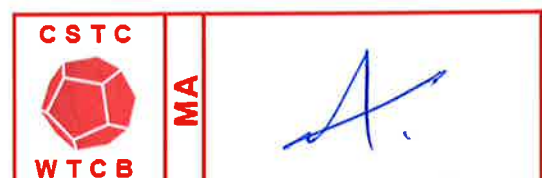
With Q_f : the volume of absorbed water at a time t_f (ml)

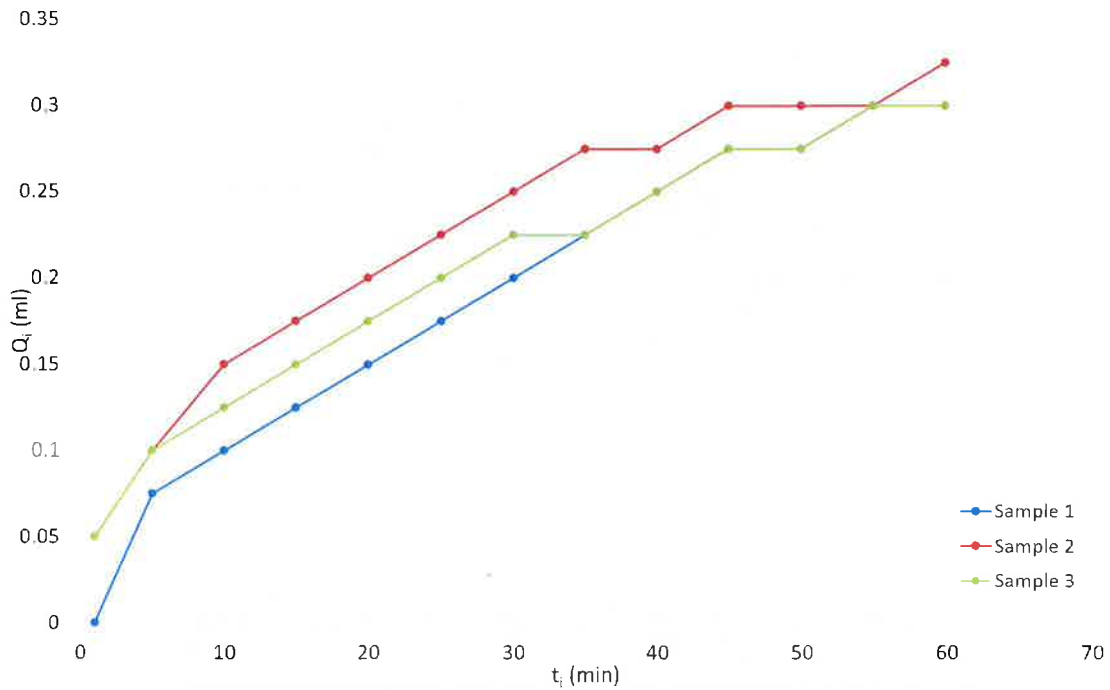
A : area of test (cm^2) = 5.7cm^2

3 Results

Concrete slabs

The results of the measurements are given in the following graph and table.

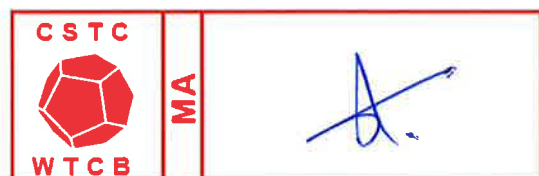




Graph 1 – Water absorption for concrete slabs

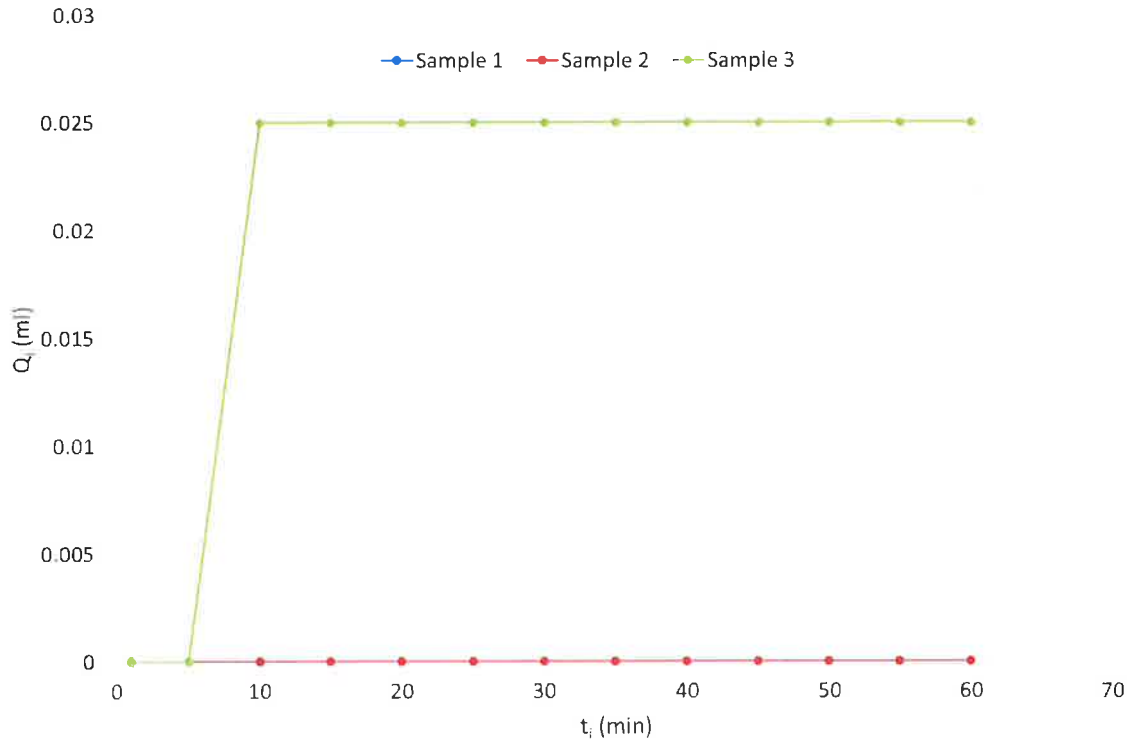
Table 1 – Water absorption per unit area for concrete slabs

Time (min)	Water absorption per unit area W_i (ml/cm ²)		
	Sample 1	Sample 2	Sample 3
1	0	0.009	0.009
5	0.013	0.018	0.018
10	0.018	0.026	0.022
15	0.022	0.031	0.026
20	0.026	0.035	0.031
25	0.031	0.039	0.035
30	0.035	0.044	0.039
35	0.039	0.048	0.039
40	0.044	0.048	0.044
45	0.048	0.053	0.048
50	0.048	0.053	0.048
55	0.053	0.053	0.053
60	0.053	0.057	0.053



Concrete slabs coated with PASSIVE PURPLE EXTERNAL

The results of the measurements are given in the following graph and table.



Graph 2 – Water absorption for concrete slabs coated with PASSIVE PURPLE EXTERNAL



Table 2: Water absorption per unit area for concrete slabs coated with PASSIVE PURPLE EXTERNAL

Time (min)	Water absorption per unit area W_i (ml/cm ²)		
	Sample 1	Sample 2	Sample 3
1	0	0	0
5	0	0	0
10	0	0	0.004
15	0	0	0.004
20	0	0	0.004
25	0	0	0.004
30	0	0	0.004
35	0	0	0.004
40	0	0	0.004
45	0	0	0.004
50	0	0	0.004
55	0	0	0.004
60	0	0	0.004

