

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-19-170-03/EXT Page 1/5
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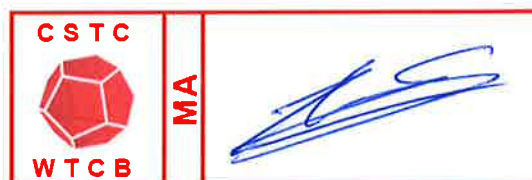
Requested by	INTELLIGENT MEMBRANES LTD. Clopton Farm Lower Road Croydon Cambridgeshire SG8 0EF UK		
Date of the order	11/12/2019	Samples registration	S2016-40-14
		Date of reception of samples	27/09/2016
Date of issue of the report	10/01/2020		
Test carried out	Determination of the tensile force and elongation at rupture of the product PASSIVE PURPLE EXTERNAL before and after exposure to UV-radiations		
References	NBN EN 12311-1 (1999) Flexible sheets for waterproofing – Part 1: Bitumen sheets for roof waterproofing – Determination of tensile properties		

This test report contains 5 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

The purpose of this test is to determine the tensile force and elongation at rupture of the product "PASSIVE PURPLE EXTERNAL" (acrylic dispersion of pure polymer, with fillers and additives, coating).

In this purpose 4 sheets of PASSIVE PURPLE EXTERNAL were delivered at the test centre of BBRI in Limelette and registered under the lab number MA-19-170.



Figure 1 – Delivered sheet of PASSIVE PURPLE EXTERNAL

2 Tests

The sheets show slightly lines due to the application of the product. It was therefore decided to test the performances in the two directions: parallel and perpendicular to the direction of the application.

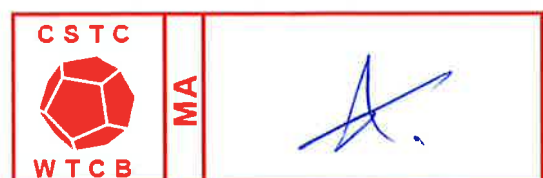
Five samples with dimensions 30 mm x 50 mm were cut from the sheet in each direction (longitudinal, parallel to the direction of application, and transversal, perpendicular to the direction of application).

The thickness of the samples was first measured at four different points of the length by means of precision equipment of the brand "Sylvac System, type S229" with 0.01mm accuracy.

Each sample was then tightly clamped in the tensile test machine grips with a clear distance between the grips of 200 ± 2 mm. The test is carried out at $23 \pm 2^\circ\text{C}$ and at a constant tensile speed of 100 ± 10 mm/min.

The tensile strength and the deformation are measured according to the longitudinal axis of the samples until break happens.

Two other sheets were also submitted to UV-radiations (UV-A 340) for 500h. After exposure, five samples were cut from these sheets in each direction and tested in the tensile test machine.



3 Results

The thickness of the samples is given in the following tables.

Table 1: Thickness of the samples “PASSIVE PURPLE EXTERNAL” without UV-radiations

Longitudinal direction				
Sample no	Measurement 1 (mm)	Measurement 2 (mm)	Measurement 3 (mm)	Measurement 4 (mm)
L1	0.28	0.24	0.28	0.29
L2	0.31	0.26	0.28	0.30
L3	0.30	0.28	0.28	0.31
L4	0.35	0.32	0.28	0.32
L5	0.30	0.27	0.25	0.31
Transversal direction				
Sample no	Measurement 1 (mm)	Measurement 2 (mm)	Measurement 3 (mm)	Measurement 4 (mm)
T1	0.28	0.26	0.25	0.32
T2	0.26	0.26	0.27	0.24
T3	0.31	0.30	0.31	0.29
T4	0.33	0.36	0.32	0.31
T5	0.34	0.37	0.35	0.34

Table 2: Thickness of the samples “PASSIVE PURPLE EXTERNAL” after UV-radiations

Longitudinal direction				
Sample no	Measurement 1 (mm)	Measurement 2 (mm)	Measurement 3 (mm)	Measurement 4 (mm)
L1	0.33	0.30	0.30	0.32
L2	0.34	0.32	0.31	0.38
L3	0.35	0.32	0.30	0.29
L4	0.33	0.25	0.29	0.28
L5	0.35	0.28	0.27	0.31
Transversal direction				
Sample no	Measurement 1 (mm)	Measurement 2 (mm)	Measurement 3 (mm)	Measurement 4 (mm)
T1	0.27	0.29	0.28	0.27
T2	0.26	0.28	0.29	0.31
T3	0.27	0.26	0.28	0.29
T4	0.28	0.28	0.28	0.25
T5	0.26	0.27	0.28	0.23

The results of the tensile strength and the elongation at break of the product PASSIVE PURPLE EXTERNAL are given in the following tables.

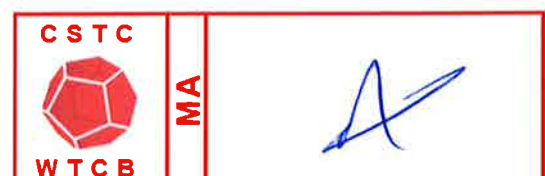


Table 3: Result of the tensile strength of the product “PASSIVE PURPLE EXTERNAL” without UV-radiations

Longitudinal direction		
Sample no	Maximum strength (N/50mm)	Elongation (%)
L1	25	29
L2	28	31
L3	26	28
L4	29	32
L5	25	29
Average	27	30
Standard deviation	2	2
Result according to the standard	25	30
Transversal direction		
Sample no	Maximum strength (N/50mm)	Elongation (%)
T1	26	40
T2	24	37
T3	30	34
T4	31	32
T5	31	30
Average	28	35
Standard deviation	3	4
Result according to the standard	30	35

After UV-radiations, no damage was observed on the sheets (see Figure 2).

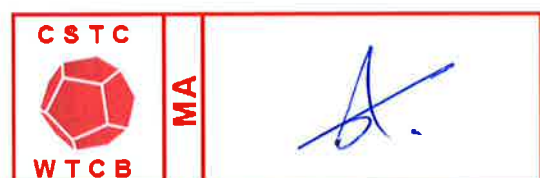




Figure 2 – Sheets of PASSIVE PURPLE EXTERNAL after exposure to UV-radiations

Table 4: Result of the tensile strength of the product “PASSIVE PURPLE EXTERNAL” after UV-radiations

Longitudinal direction		
Sample no	Maximum strength (N/50mm)	Elongation (%)
L1	38	35
L2	38	39
L3	36	33
L4	38	40
L5	37	44
Average	38	38
Standard deviation	1	4
Result according to the standard	40	38
Transversal direction		
Sample no	Maximum strength (N/50mm)	Elongation (%)
T1	33	48
T2	34	43
T3	35	45
T4	37	46
T5	34	44
Average	35	45
Standard deviation	2	2
Result according to the standard	35	45

