

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	MATERIALS	O/References	MA-21-105-01 DE-MA-0347 <u>PREVIOUSLY :</u> DE651XB679 BHC16066 LMA5823 LMA5824
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Requestor	INTELLIGENT MEMBRANES. Clopton Manor, Clopton Farm, Lower Road, Croydon, Cambridgeshire SG8 0EF UK		
Date of the order	27/07/2021	Samples registration	S2016-38-33
		Date of reception of samples	01/09/2016
Date of the draft report	27/07/2021		
Test carried out	Determination of the crack bridging ability of the products WATERPROOF BLUE LIQUID DPM and WATERPROOF BLUE LIQUID DPM BRUSH		
References	NBN EN 14891 (2012): Liquid applied water impermeable products for use beneath ceramic tiling bonded with adhesives – Requirements, test methods, evaluation of conformity, classification and designation.		

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- 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.

	AUTORISE PAR :	
Responsable technique de l'essai	Chef de laboratoire	
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1 INTRODUCTION

At the request of company INTELLIGENT MEMBRANES, the laboratory Materials of BBRI carried out tests of crack bridging ability on two versions (WATERPROOF BLUE LIQUID DPM and WATERPROOF BLUE LIQUID DPM BRUSH) of the impermeable product " WATERPROOF BLUE LIQUID". The tests were carried out at a temperature of $23\pm 2^{\circ}\text{C}$ according to the standard NBN EN 14891 (2012).

2 SAMPLE RECEIVED

On 01/09/2016, samples of the products WATERPROOF BLUE LIQUID DPM and WATERPROOF BLUE LIQUID DPM BRUSH were delivered by the demander to BBRI. They received the sample number S2016-38-33 and the laboratory numbers LMA5823 and LMA5824. A description of these sample is given in Table 1.

Product	Quantity	Batch number	Laboratory number	Sample number
WATERPROOF BLUE LIQUID DPM	10 kg	L 0908640	LMA 5823	S2016-38-33
WATERPROOF BLUE LIQUID DPM BRUSH	5 kg	L 2706641	LMA 5824	

Table 1 – Description of the samples received.

3 TEST DESCRIPTION

The test is carried out in two stages. In a first step, the mortar support over which the impermeable product was previously applied is broken in 3-point bending. In a second stage, a tensile load is applied to the specimen in order to progressively enlarge the crack and stretch the coating. The test ends when a failure is visible on the surface of the tested product. The maximum crack opening that can be supported by the system is then recorded.

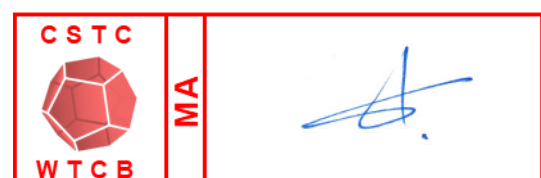
The supports used for the test are mortar specimens of dimensions $160 \times 40 \times 12 \text{ mm}^3$. The composition of the mortar is conform to the standard NBN EN 14891 (2012). It uses a standard sand 0-2 mm and a cement CEM I 52.5. After removal from the mold at 24 hours, the specimens are stored for 28 days in a humid chamber controlled at a temperature of $20\pm 1^{\circ}\text{C}$ and at a relative humidity of more than 95%. They are then stored in a climate chamber at a temperature of $23\pm 2^{\circ}\text{C}$ and a relative humidity of $50\pm 5\%$.

4 APPLICATION OF THE PRODUCTS AND CONDITIONING

The applications of the two products were performed by the manufacturer on 01 and 02 /09/2016. Each of the products was applied in two layers. Applications were carried out in a climate chamber controlled at a temperature of $23\pm 2^{\circ}\text{C}$ and at a relative humidity of $50\pm 5\%$. The specimens were stored under similar conditions until the test.

5 TESTS PROTOCOL

The tests were carried out on a Zwick mechanical testing machine with a capacity of 20 kN. The test rate was 0.15 mm/min. A pre-tensile load of 20 N was applied before the start of each test. The crack opening was measured using two LVDT sensors placed on each specimen face (figure 1).



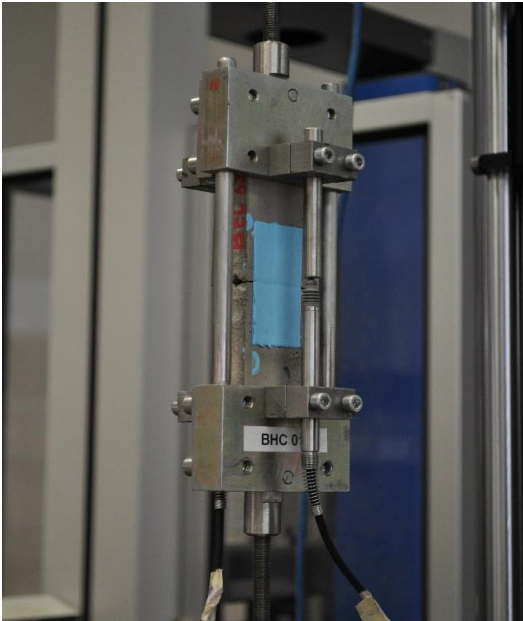


Figure 1 – Test of crack bridging ability.

6 RESULTS

6.1 Crack bridging ability

The tests were carried out on 10/10/2016 at a temperature of $23 \pm 2^\circ\text{C}$. The crack openings measured when the first failure on the surface of the product is visible, are given in Tables 2 and 3.

Product	Specimen number	Crack opening (mm)
WATERPROOF BLUE LIQUID DPM	LMA 5823-6	>4, 5 mm (*)
	LMA 5823-7	4,46
	LMA 5823-8	3,97

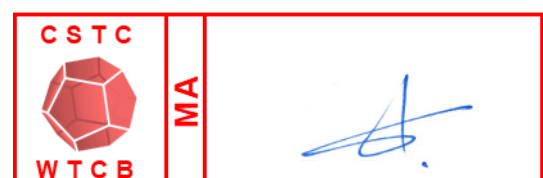
Table 2 – Crack opening determined for the product WATERPROOF BLUE LIQUID DPM. (*) The LVDT measurement limit is reached.

Product	Specimen number	Crack opening (mm)
WATERPROOF BLUE LIQUID DPM BRUSH	LMA 5824-1	1,52
	LMA 5824-2	1,62
	LMA 5824-3	1,75

Table 3 – Crack opening determined for the product WATERPROOF BLUE LIQUID DPM BRUSH.

6.2 Thickness of the tested products

Following the determination of the crack bridging ability, the thickness of the impermeable products was measured on each specimen. Measurements were performed by microstructural observations according to the standard NBN EN ISO 2808 (2007). To perform these measurements, the samples were cut in the transverse direction. Ten measurements were then made on each specimen. The average values obtained are given in Table 4.



Product	Specimen number	Average thickness (µm)	Standard deviation (µm)
WATERPROOF BLUE LIQUID DPM	LMA 5823-6	1073	82
	LMA 5823-7	1163	63
	LMA 5823-8	943	69
WATERPROOF BLUE LIQUID DPM BRUSH	LMA 5824-1	501	160
	LMA 5824-2	535	131
	LMA 5824-3	544	106

Table 4 – Average thickness of the products on each specimen.

