

RN 21228888

Zagreb, 2008-12-22

TESTING REPORT No. 2122-02-PS/003/08

Client: **BENING d.o.o.**
Pavlovec Zabočki 121, Zabok

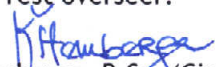
Contract/order: Order No. 01/2008-EB dated 2008-01-03

Construction product: Product **VETROFLUID**

Tested properties: Depth of penetration according to HRN EN 1504-2, Table 3
Determination of water absorption coefficient by partial immersion according to HRN EN ISO 15148
Bond strength by pull-off according to HRN EN 1542
Measurement of abrasion resistance according to HRN EN 1339, annex G and annex H
Chemical resistance according to HRN EN 13529
Depth of penetration of water under pressure according to HRN EN 12390-8
Compatibility on wet concrete according to HRN EN 13578
Determination of permeability to gases according to EN 993-4

Testing purpose: Testing of product **VETROFLUID** according to IGH offer No. 2122-0-0641/07

Test overseer:


Karla Štemberga, B.Sc. (Civ.Eng.)

Head of the Laboratory for Concrete, Mortar and
Repair Materials:


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Head of the Concrete and Brick Laboratory:


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4.3 BOND STRENGTH TEST RESULTS

Tested property: Measuring of bond strength by pull-off method
Testing carried out according to: HRN EN 1542
Substrate: Concrete slab (300x300x100) mm, grit-blasted surface. Concrete type MC(0,40) according to HRN EN 1766, label LB-14/08
Treatment procedure: The treatment was carried out according to client recommendation. Product is applied in two layers with brush. Producer recommendation for product consumption is 345-460 g/m². Product consumption for testing is given in Table 8.
Treatment date: Young concrete 2008-02-21 i 2008-02-22
Saturated aged concrete 2008-04-21 i 2008-04-22
Curing: 24 h in laboratory conditions (21 ± 2) °C i (60 ± 10) % r.h. covered in film
27 day in wet chamber (21 ± 2) °C i > 95 % r.h.
Conditioning: In laboratory conditions (21 ± 2) °C i (60 ± 10) % r.h.
Test date: Young concrete 2008-06-06
Saturated aged concrete 2008-06-17
Test location: Laboratory for concrete, mortar and repair materials 2 2122
Equipment used: Grinding equipment (a.c. 1138); Pull-off apparatus (a.c. 1987); Vernier claipe, (a.c. 2281)
Type of adhesive: MG Spezialkleber
Deviation from standard method of testing: None
Note: None
Type of failure marks: A - substrate (concrete), Y - adhesive
Testing scheme:

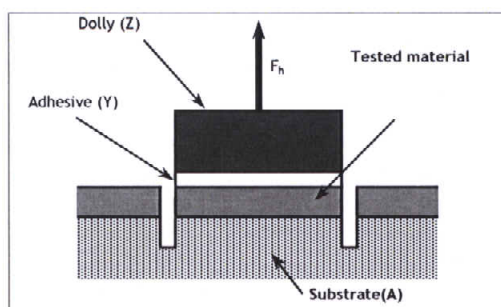


Table 8 Product consumption during treatment

SAMPLE	LAYER	C _{mi} (g/m²)	Total consumption of 1 st and 2 nd layer (g/m²)
YOUNG CONCRETE			
CONCRETE SLAB 300/300/100 mm	I	226,33	435,22
	II	208,89	
SATURATED AGED CONCRETE			
CONCRETE SLAB 300/300/100 mm	I	216,67	431,11
	II	214,44	

Test results refer only to the tested specimens.
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Table 9 Testing result of bond strength

SAMPLE	FAILURE LOAD (kN)	MEAN DIAMETER TESTED SPECIMEN (mm)	BOND STRENGTH (MPa)			TYPE OF FAILURE
			single	minimal value	mean value	
REFERENT CONCRETE						
PS 003-3/1-1	8,87	50,2	4,5	3,7	4,0	100 % A
PS 003-3/1-2	7,60	50,3	3,8			100 % A
PS 003-3/1-3	7,26	50,3	3,7			100 % A
PS 003-3/1-4	7,52	50,3	3,8			100 % A
PS 003-3/1-5	8,70	50,4	4,4			100 % A
YOUNG CONCRETE						
PS 003-3/2-1	6,93	50,4	3,5	3,4	3,5	100 % A
PS 003-3/2-2	7,07	50,3	3,6			100 % A
PS 003-3/2-3	6,68	50,4	3,4			100 % A
PS 003-3/2-4	7,23	50,3	3,6			100 % A
PS 003-3/2-5	6,72	50,4	3,4			100 % A
SATURATED AGED CONCRETE						
PS 003-3/3-1	6,42	50,3	3,2	3,1	3,6	100 % A
PS 003-3/3-2	6,05	50,2	3,1			100 % A
PS 003-3/3-3	8,99	50,3	4,5			100 % A
PS 003-3/3-4	7,81	50,3	3,9			100 % A
PS 003-3/3-5	6,58	50,4	3,3			100 % A

Statement: Testing was carried out in according with standard, except as detailed from given in „Deviation from standard method of testing“.

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Table 17 Bond strength after conditioning according to HRN EN 1542

SPECIMEN	FAILURE LOAD (kN)	MEAN DIAMETER TESTED SPECIMEN (mm)	BOND STRENGTH (MPa)		TYPE OF FAILURE
			single	mean value	
SPECIMENS STORED IN WATER AND ON 5 °C					
PS003-8/1-1	7,40	50,2	3,75	3,8	100 % A
PS003-8/1-2	8,27	50,1	4,19		100 % A
PS003-8/1-3	6,81	50,2	3,44		100 % A
PS003-8/1-4	6,54	50,2	3,30		100 % A
PS003-8/1-5	8,11	50,2	4,10		100 % A
PS003-8/2-1	8,72	50,2	4,40	4,1	100 % A
PS003-8/2-2	8,50	50,2	4,30		100 % A
PS003-8/2-3	7,21	50,3	3,63		100 % A
PS003-8/2-4	7,26	50,3	3,66		100 % A
PS003-8/2-5	8,80	50,2	4,45		100 % A
REFERENT SPECIMENS STORED IN CONDITIONS 5 °C AND (75 ± 10) % r.h.					
PS003-8/3-1	7,76	50,2	3,92	4,1	100 % A
PS003-8/3-2	8,50	50,2	4,30		100 % A
PS003-8/3-3	8,93	50,3	4,50		100 % A
PS003-8/3-4	7,91	50,2	4,00		100 % A
PS003-8/3-5	7,80	50,2	3,94		100 % A
PS003-8/4-1	8,15	50,1	4,13	4,1	100 % A
PS003-8/4-2	8,89	50,2	4,49		100 % A
PS003-8/4-3	7,13	50,2	3,60		100 % A
PS003-8/4-4	8,52	50,2	4,31		100 % A
PS003-8/4-5	7,78	50,2	3,93		100 % A

Statement: Testing was carried out in according with standard, except as detailed from given in „Deviation from standard method of testing“.

ANNEXES:

Testing report No. 2752-397/08 (abrasion, annex H)

Testing report No. 2752-398/08 (abrasion, annex H)

Testing report No. 2122-01-V 006/08 (depth of penetration of water under pressure)

Testing report No. 2122-03-PP 001/08 (permeability to gases)