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MA 39 – VFA 2009-0197.04⁷⁾

Vienna, 28th of October 2009

Test Report about Waterproofing Product "MAPELASTIC"



Applicant: Mapei Ges.m.b.H.

Date of Application: 25th of February 2009

Test Material: Waterproofing product "MAPELASTIC" (2-components),
with 2-component-adhesive "Elastorapid"

Test Programme: Testing according to EN 14891, edition 2009-07-01

- Initial tensile adhesive strength
- Tensile adhesive strength after water contact
- Tensile adhesive strength after heat aging
- Tensile adhesive strength after contact with lime water
- Tensile adhesive strength after freeze-thaw cycles
- Tensile adhesive strength after contact with chlorinated water
- Waterproofing
- Crack bridging ability under standard conditions
- Crack bridging ability at low temperature (-5°C)
- Crack bridging ability at very low temperature (-20°C)

Summary: The test results conform with the requirements for a waterproofing product (liquid applied water impermeable products for use beneath ceramic tiling bonded with adhesives) of the classification CMOP according to EN 14891:2009.

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This report comprises 3 pages and 2 supplements (3 pages).

⁷⁾ This report is the second edition of the report MA 39 – VFA 2009-0197.01. The first edition was written in German language. In case of doubt the German edition is valid.

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Akkreditiert als Prüf- und Inspektionsstelle gemäß AKKIG per Bescheid des Bundesministeriums für Wirtschaft und Arbeit auf Basis der ÖVE/ONORM EN ISO/IEC 17025 und der ÖVE/ONORM EN ISO/IEC 17020; PSID 69; PSID 96; PSID 165
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Notifizierte Stelle (Notified body) gemäß Bauproduktenrichtlinie (89/105/EWG vom 21. 12. 1988) unter der Kennnummer 1140.





1 General information

On the 25th of February 2009 the applicant delivered a two-components waterproofing product "MAPELASTIC", consisting of an original sack of component A (content: 24.0 kg; consistency: powdery, charge number: "24/09/08 GRAY A2") and a plastic container with screw cap of component B (content: 8.4 kg; consistency: liquid, charge number: "15/10/08"), into the Structural Engineering Laboratory. The delivered samples are documented on the following picture:



Picture N°. 2009-0197-01

For the tests there also was delivered a two-component cementitious adhesive "Elastorapid" (classification C2FTE according to EN 12004 according to the product datasheet) consisting of an original sack of component A (charge number: "M2 08/10/08 02757") and a plastic container with screw cap of component B (charge number: "2001 09- 1").

According to the application the delivered waterproofing product should be tested in accordance with EN 14891. At the date of the delivery the standard applied as edition of the 1st October 2008, at the day of reporting however already as edition 1st July 2009.

According to the manufacturer's specifications the delivered waterproofing product has the classification CMOP (cementitious liquid-applied water impermeable product with crack bridging ability at low temperature and resistant to contact with chlorinated water) according to EN 14891.

2 Testing procedure and results

The samples were prepared on the 8th April 2009 in the structural engineering laboratory of the MA 39 at standard atmosphere.

The mixing of the liquid-applied water impermeable product occurred in accordance with the manufacturer's product data sheet, the mixing ratio conducted according to the manufacturer's instructions 3 : 1 (900 g of the component A and 300 g of the component B).

The mixing of the adhesive occurred in accordance with the manufacturer's product data sheet, the mixing ratio conducted 4 : 1 (4.000 g of the component A and 1.000 g of the component B).

The test program was adjusted according to the classification CMOP (type: CM, class: OP). The tests were carried out in accordance with the ÖNORM EN 14891 (Edition 1st October 2008 and edition 1st July 2009).

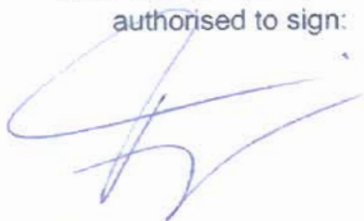
The tests, the test methods, the results and the requirements of ÖNORM EN 14891 are documented in the supplement 2. The results are detailed in supplement 1.

3 Summary

The delivered waterproofing product "MAPELASTIC" (2-components) was mixed with a mixing ratio component A : component B = 3 : 1 and was tested as a system with the 2-component-adhesive "Elastorapid".

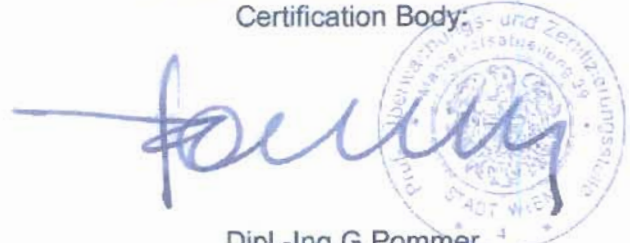
The test results of the delivered waterproofing product "MAPELASTIC" conform with the requirements for a waterproofing product (liquid applied water impermeable products for use beneath ceramic tiling bonded with adhesives) of the classification CMOP (cementitious liquid-applied water impermeable product with crack bridging ability at low temperature and resistant to contact with chlorinated water) according to EN 14891:2009.

The Head of the Laboratory
authorised to sign:



Dipl.-Ing.(FH) M.Fehringer

The Head of Testing, Inspection and
Certification Body:



Dipl.-Ing.G.Pommer
Oberstadtbaurat



Initial tensile adhesion strength

sample n°	Tensile adhesion str.		Failure patterns								Comment
	N	N/mm ²	BF	CF-T	AF-T	CF-W	AF-W	CF-M	AF-S	CF-S	
1	1810	0,7	-	-	-	-	-	100%	-	-	to discard
2	2290	0,9	-	-	-	-	-	100%	-	-	-
3	2460	1,0	-	-	-	-	-	100%	-	-	-
4	2130	0,9	-	-	-	-	-	100%	-	-	-
5	2780	1,1	-	-	-	-	-	90%	10%	-	-
6	2850	1,1	-	-	-	-	-	100%	-	-	-
7	2020	0,8	-	-	-	-	-	100%	-	-	-
8	2520	1,0	-	-	-	-	-	100%	-	-	-
9	2460	1,0	-	-	-	-	-	100%	-	-	-
10	2570	1,0	-	-	-	-	-	100%	-	-	-
mean v. 10	-	1,0	mean + 20%	1,1 N/mm ²			mean - 20%	0,8 N/mm ²			mean value 1,0 N/mm ²

Tensile adhesion strength after water contact

sample n°	Tensile adhesion str.		Failure patterns								Comment
	N	N/mm ²	BF	CF-T	AF-T	CF-W	AF-W	CF-M	AF-S	CF-S	
1	1150	0,5	-	-	-	-	-	100%	-	-	to discard
2	1070	0,4	-	-	-	-	-	100%	-	-	to discard
3	1220	0,5	-	-	-	-	-	100%	-	-	-
4	1440	0,6	-	-	-	-	-	100%	-	-	-
5	1630	0,7	-	-	-	-	-	100%	-	-	-
6	1520	0,6	-	-	-	-	-	100%	-	-	-
7	1220	0,5	-	-	-	-	-	100%	-	-	-
8	1650	0,7	-	-	-	-	-	100%	-	-	-
9	1870	0,7	-	-	-	-	-	100%	-	-	to discard
10	1710	0,7	-	-	-	-	-	100%	-	-	-
mean v. 10	-	0,6	mean + 20%	0,7 N/mm ²			mean - 20%	0,5 N/mm ²			mean value 0,6 N/mm ²

Tensile adhesion strength after heat ageing

sample n°	Tensile adhesion str.		Failure patterns								Comment
	N	N/mm ²	BF	CF-T	AF-T	CF-W	AF-W	CF-M	AF-S	CF-S	
1	2420	1,0	-	-	-	-	-	100%	-	-	-
2	2970	1,2	-	-	-	-	-	95%	5%	-	-
3	2850	1,1	-	-	-	-	-	90%	10%	-	-
4	3080	1,2	-	-	-	-	-	90%	10%	-	-
5	2690	1,1	-	-	-	-	-	90%	10%	-	-
6	2950	1,2	-	-	-	-	-	95%	5%	-	-
7	2790	1,1	-	-	-	-	-	95%	5%	-	-
8	3160	1,3	-	-	-	-	-	95%	5%	-	-
9	3050	1,2	-	-	-	-	-	80%	20%	-	-
10	2860	1,1	-	-	-	-	-	80%	20%	-	-
mean v. 10	-	1,2	mean + 20%	1,4 N/mm ²			mean - 20%	0,9 N/mm ²			mean value 1,2 N/mm ²

Explanation:

- BF Adhesive failure between tile and pull head plate
- AF-T Adhesive failure between tile and adhesive
- AF-W Adhesive failure between adhesive and waterproofing product
- AF-S Adhesive failure between adhesive and substrate
- CF-T Cohesive failure within the tile
- CF-A Cohesive failure within the adhesive
- CF-W Cohesive failure within the waterproofing product
- CF-S Cohesive failure within the substrate



Tensile adhesion strength after contact with lime-water

sample n ^o	Tensile adhesion str.		Failure patterns								Comment
	N	N/mm ²	BF	CF-T	AF-T	CF-W	AF-W	CF-M	AF-S	CF-S	
1	1980	0,8	-	-	-	-	-	100%	-	-	-
2	1760	0,7	-	-	-	-	-	100%	-	-	-
3	1580	0,6	-	-	-	-	-	100%	-	-	-
4	1550	0,6	-	-	-	-	-	100%	-	-	-
5	1900	0,8	-	-	-	-	-	100%	-	-	-
6	2070	0,8	-	-	-	-	-	100%	-	-	-
7	1780	0,7	-	-	-	-	-	100%	-	-	-
8	1610	0,6	-	-	-	-	-	100%	-	-	-
9	1970	0,8	-	-	-	-	-	100%	-	-	-
10	1870	0,7	-	-	-	-	-	100%	-	-	-
mean v. 10	-	0,7	mean + 20%	0,9 N/mm ²			mean - 20%	0,6 N/mm ²			mean value 0,7 N/mm ²

Tensile adhesion strength after freeze-thaw cycles

sample n ^o	Tensile adhesion str.		Failure patterns								Comment
	N	N/mm ²	BF	CF-T	AF-T	CF-W	AF-W	CF-M	AF-S	CF-S	
1	1100	0,4	-	-	-	-	-	100%	-	-	-
2	1250	0,5	-	-	-	-	-	100%	-	-	-
3	1270	0,5	-	-	-	-	-	100%	-	-	-
4	1260	0,5	-	-	-	-	-	100%	-	-	-
5	1310	0,5	-	-	-	-	-	100%	-	-	-
6	1130	0,5	-	-	-	-	-	100%	-	-	-
7	1220	0,5	-	-	-	-	-	100%	-	-	-
8	1250	0,5	-	-	-	-	-	100%	-	-	-
9	1180	0,5	-	-	-	-	-	100%	-	-	-
10	1250	0,5	-	-	-	-	-	100%	-	-	-
mean v. 10	-	0,5	mean + 20%	0,6 N/mm ²			mean - 20%	0,4 N/mm ²			mean value 0,5 N/mm ²

Tensile adhesion strength after contact with chlorinated water

sample n ^o	Tensile adhesion str.		Failure patterns								Comment
	N	N/mm ²	BF	CF-T	AF-T	CF-W	AF-W	CF-M	AF-S	CF-S	
1	1250	0,5	-	-	-	-	-	100%	-	-	-
2	1390	0,6	-	-	-	-	-	100%	-	-	-
3	1500	0,6	-	-	-	-	-	100%	-	-	-
4	1230	0,5	-	-	-	-	-	100%	-	-	-
5	1560	0,6	-	-	-	-	-	100%	-	-	-
6	1640	0,7	-	-	-	-	-	100%	-	-	-
7	1480	0,6	-	-	-	-	-	100%	-	-	-
8	1280	0,5	-	-	-	-	-	100%	-	-	-
9	1410	0,6	-	-	-	-	-	100%	-	-	-
10	1570	0,6	-	-	-	-	-	100%	-	-	-
mean v. 10	-	0,6	mean + 20%	0,7 N/mm ²			mean - 20%	0,5 N/mm ²			mean value 0,6 N/mm ²

Explanation: see supplement 1, page 1 / 2

Summary of the test results

about

Waterproofing Product „MAPELASTIC“

(to test report MA 39 – VFA 2009-0197.01, 28th of October 2009)

Applicant: Mapei Ges.m.b.H.

Date of Application: 25. Februar 2009

Test Material: Waterproofing product „MAPELASTIC“ (2-components), with 2-component-adhesive „Elastorapid“

Charge number: „GRAU A2 24/09/08“ (component A) and „15/10/08“ (component B)

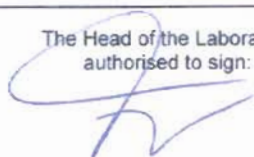
classification: type: CM, class: OP (cementitious liquid-applied water impermeable product with crack bridging ability at low temperature and resistant to contact with chlorinated water)

Line	Characteristic	Test method EN 14891	Unit	Test result	Requirement
1	Tensile adhesion strength				
1a	Initial tensile adhesion strength	A.6.2	N/mm ²	1,0	≥ 0,5
1b	after water contact	A.6.3	N/mm ²	0,6	≥ 0,5
1c	after heat ageing	A.6.4	N/mm ²	1,2	≥ 0,5
1d	after contact with lime-water	A.6.7	N/mm ²	0,7	≥ 0,5
1e	after freeze-thaw cycles	A.6.5	N/mm ²	0,5	≥ 0,5
1f	after contact with chlorinated water	A.6.6	N/mm ²	0,6	≥ 0,5
2	Waterproofing	A.7	-	no penetration	
3	Crack bridging ability				
3a	under standard conditions	A.8.2	mm	0,77	≥ 0,75
3b	at low temperature (-5°C)	A.8.3	mm	0,80	≥ 0,75
3c	at very low temperature (-20°C)	A.8.3	mm	0,86	≥ 0,75

Opinion

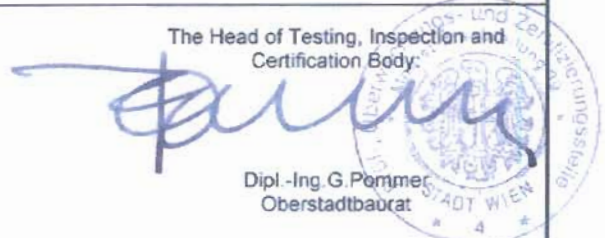
The test results conform with all requirements for a waterproofing product (liquid applied water impermeable products for use beneath ceramic tiling bonded with adhesives) of the **classification CMOP** (cementitious liquid-applied water impermeable product with crack bridging ability at low temperature and resistant to contact with chlorinated water) according to EN 14891:2009.

The Head of the Laboratory
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