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VMPA - Testing authority for concrete
VMPA-B-2003

Division I – Materials for civil engineering and construction work
Acting division manager: Dipl.-Ing. M. Orgass
Work group 1.1 – Mineral construction materials and construction chemicals

Test report

PB 1.1/ 09-270-3

Dated 03.08.2009 1. Copy

Object of test: Testing of a glass fiber cloth in line with DIN EN 13496 (Rapid Test)

Customer: Protektorwerk Florenz Maisch GmbH & Co. KG
Viktoriastraße 58
76571 Gaggenau

Order date: 13.07.2009

Samples received on: 13.07.2009

Samples taken by: the customer

ID: glass fiber No. 1490

Date of test: Jul. 2009

Processed by: Dipl.-Chem. J. Schneider

This Test report consists of 3 pages.

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1 Scope of test and testing methods

MFGPA Leipzig GmbH was commissioned to test a glass fiber cloth No. 1490 in line with the DIN EN 13496 (rapid test). The samples were taken by the customer and arrived at MFGPA Leipzig GmbH on 13.07.2009. The following tests have been carried out as commissioned:

- Determination of the tearing force and elongation at tear

- a) *in the condition upon delivery*

Before commencing the tests, the sample specimens were stored for a minimum of 24 hours at standard ambient conditions of $(23 \pm 2) ^\circ\text{C}$ and a relative humidity of $(50 \pm 5) \%$.

- b) *after storage in an alkaline solution*

The sample specimens were conditioned in an alkaline solution (pH 12.5) at $(60 \pm 2) ^\circ\text{C}$ over a period of 6 h. After the storage in the aggressive solution the sample specimens were rinsed carefully with fluent tap water. Then the samples were stored 1 hour in a 0.5 % hydrochloric acid solution and then rinsed carefully under fluent tap water until a pH of 7 was reached. The samples have dried 60 minutes with $(60 \pm 2) ^\circ\text{C}$ and were stored for a period of at least 24 hours at $(23 \pm 2) ^\circ\text{C}$ and at $(50 \pm 5) \%$ relative humidity before commencing the test.

The tensile test was performed in line with the DIN EN 13 496 at a test speed of 50 mm/min with 7 at least 50 mm width sample specimen.

- Determination of the mass per unit area in accordance with section C.6.1 (ETAG 004)
- Determination of the ash content at 625°C in accordance with section C.6.2 (ETAG 004)
- Determination of the mesh size in accordance with section C.6.3 (ETAG 004)

2 Test results

2.1 Determination of the mass per unit area, ash content and mesh size

Table 1: Test results in accordance with section C.6.1-3, ETAG 004

Designation of sample	Ash content at 625°C in % (Single values)	Ash content at 625° in % (Mean values)	Grammage in g/m ²	Mesh size in mm	Mesh opening in mm
1490	86,26	86,25	169,25	4,04 x 4,20	3,55 x 3,25
	86,26				
	86,22				



2.2 Determination of the tearing force and elongation at tear

The results of the tearing force and elongation at tear determination can be found in tables 2 and 3.

Table 2: Tearing force in N / 13 threads, elongation in %, in warp direction

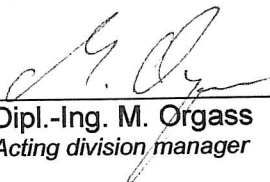
Specimen	Tearing force, initial state	Tearing force after storage in an alkaline solution	Elongation, initial state	Elongation after storage in an alkaline solution
1	1443.8	1217.6	3.23	2.95
2	1473.0	1309.6	3.35	2.94
3	1522.6	1350.0	3.64	3.10
4	1356.7	1211.5	3.46	3.00
5	1472.3	1279.9	3.63	2.99
6	1461.4	1224.9	3.58	2.85
7	1390.2	1373.6	3.46	3.03
Average value	1445.7	1281.0	3.48	2.98
<i>Standard deviation</i>	± 55.7	± 66.0	± 0.15	± 0.08

Table 3: Tearing force in N / 12 threads, elongation in %, weftwise

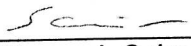
Specimen	Tearing force, initial state	Tearing force after storage in an alkaline solution	Elongation, initial state	Elongation after storage in an alkaline solution
1	2169.0	2047.1	3.03	2.58
2	2125.8	2076.3	2.88	2.58
3	2247.8	2060.4	3.26	2.62
4	2185.7	2094.6	2.84	2.59
5	2356.0	2063.5	3.04	2.51
6	2157.4	2058.2	2.94	2.62
7	2263.7	2076.2	3.00	2.52
Average value	2215.1	2068.0	3.00	2.57
<i>Standard deviation</i>	± 79.1	± 15.6	± 0.14	± 0.04

The residual tearing force after storage over 6 h at 60 °C in an alkaline solution is 88.6 % in warp direction and 93.4 % in weft direction of the tearing force in the delivery state.

Leipzig, den 03.08.2009


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