

Test Report

Document number: (5093/830/14b) – Pan of 3 July 2014

Client: WEBAC-Chemie GmbH
Fahrenberg 22
22885 BARSBUTTEL, Germany

Order date: 26 February 2014

Order contents: Testing of watertightness of intersections/tie points provided with water-swellable sealing rings/plugs, in concrete building structures with high resistance to water penetration

Receipt of samples: 21 February 2014

Sampling: by client

Test period: April to June 2014

This Test Report consists of 3 pages incl. cover sheet and 3 sheets in the Annex.

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- 1) Institute for Construction Materials, Solid Construction and Fire Protection
- 2) Material Testing Institute for the Construction Sector

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1 Order

WEBAC-Chemie GmbH requested the *Materialprüfanstalt (MPA) für das Bauwesen* to test the watertightness of intersections/tie points which were provided with water-swellaible, elastic sealing rings/plugs, in concrete building structures with high resistance to water penetration.

2 Tests and results

The client provided the following intersections with the corresponding sealing rings/plugs for the implementation of the tests:

- Sample 1: tie rod (ribbed steel $\varnothing = 16$ mm) with sealing collar “WEBAC Connector” (inner $\varnothing = 16$ mm, outer $\varnothing =$ approx. 24 mm, depth = 36 mm)
- Sample 2: fiber glass rod (ripped $\varnothing = 14$ mm) with sealing flange “WEBAC Flange” (inner $\varnothing = 12$ mm, outer $\varnothing = 40$ mm, depth = 15 mm);
- Sample 3: plastic pipe (inner $\varnothing = 22$ mm, outer $\varnothing = 26$ mm) with sealing flange “WEBAC Flange” (inner $\varnothing = 24$ mm, outer $\varnothing = 52$ mm, depth = 15 mm) and plug “WEBAC Plug” (plastic with water-swellaible sealant (outer $\varnothing =$ approx. 23 mm, depth = 40 mm)
- Sample 4: like series 3; testing of negative water pressure on plug


The connecting surfaces were tested for watertightness on the intersections encased in concrete slabs (waterproof concrete, dimensions: 20 cm x 20 cm x 10 cm, compressive strength class 30/37) according to DIN 1048-5 (picture A 1). The intersections were wrapped with film down to the sealed area before encasing these in concrete in order to assure reliable access of the water to the areas provided with sealing rings and to assure the discharge of the water in case of a leak. After 28 days of curing time the samples were installed in a water penetration tester and water pressure applied step by step from 0.5 bar to 5.0 bar with residence times of 48 hours and kept at a constant level for 7 days. The following Table shows the test results.

Sample no.	Max. water pressure (bar)	Exposure time (d)	Test result ¹
1	5	7	watertight
2	5	7	watertight
3	5	7	watertight
4	4	2	watertight
	4.5	-	not watertight

¹) The connecting surface was assessed on the side opposite the water pressure


Following the watertightness test, the samples were split in the middle and the water penetration depth recorded (photographs A2 to A5).

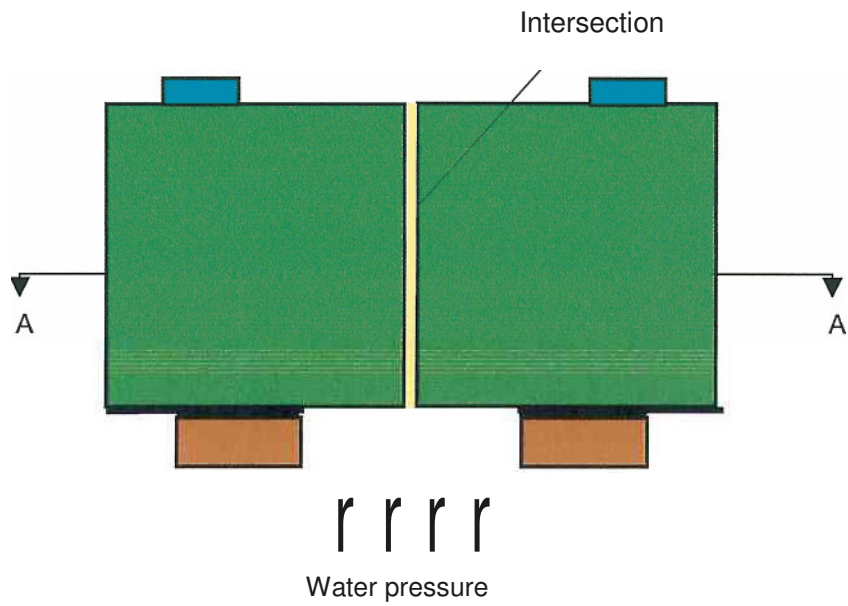
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Dr. K. Unterderweide
Deputy Head of Division

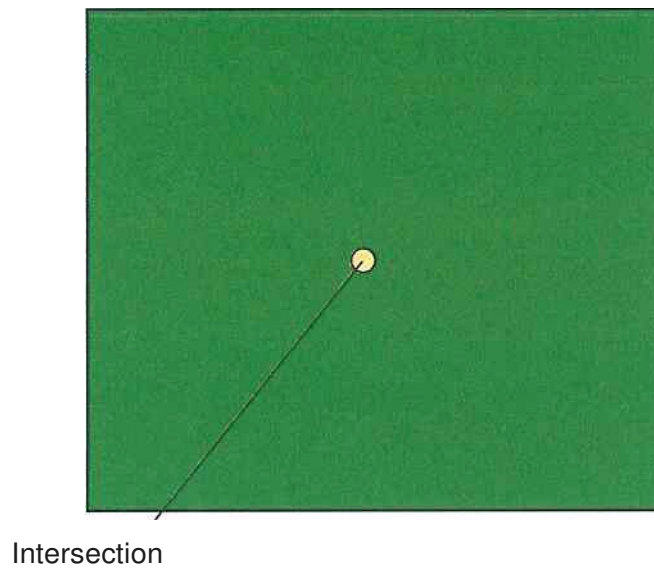


p.p.


M. Pankalla
Person in Charge



Section A-A



Picture A1: schematic diagram: water tightness test (concrete slabs 20 x 20 x 10 cm³)



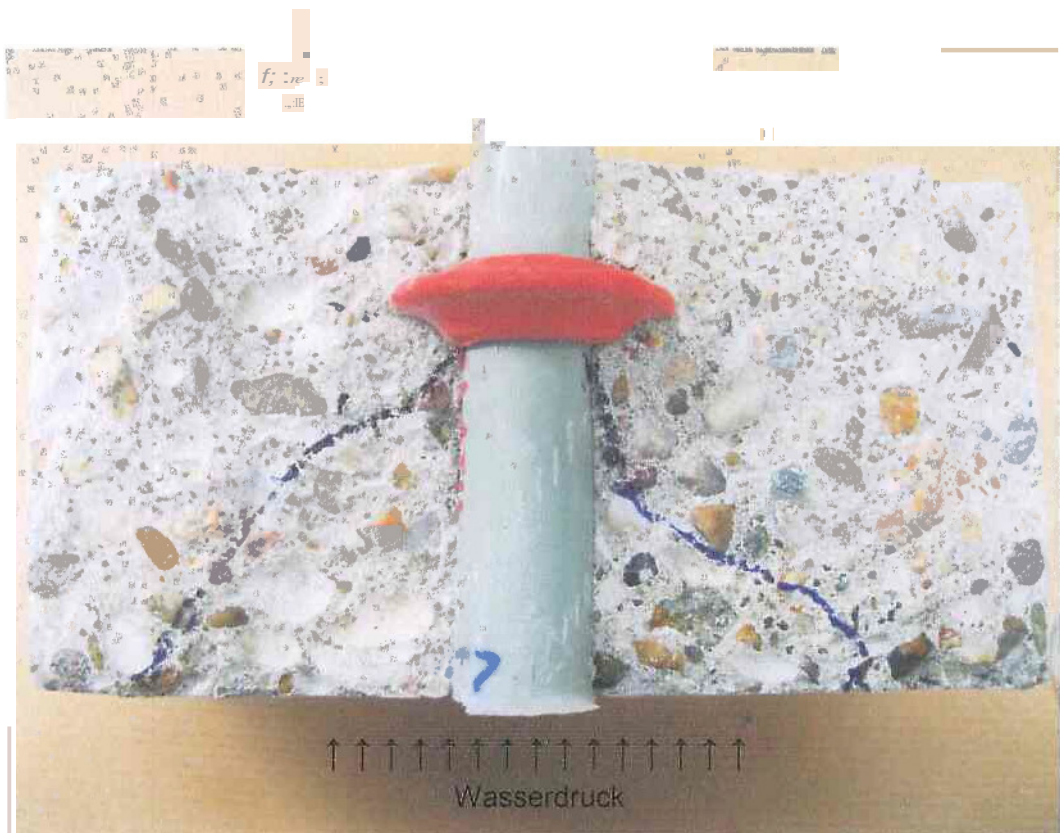
Picture A2: sample 1: tie rod (ripped steel $\varnothing = 16$ mm)



Picture A3: sample 2: glass fiber rod (ripped $\varnothing = 14$ mm)



Picture A4: sample 3: plastic pipe (inner $\varnothing = 22$ mm, outer $\varnothing = 26$ mm)



Picture A5: sample 4: plastic pipe (inner $\varnothing = 22$ mm, outer $\varnothing = 26$ mm); negative water pressure on plug