

## TEST REPORT

**No. 94615431**

**31<sup>st</sup> July 2013**

**Client:** PERI GmbH  
Schalung und Gerüste  
Rudolf-Diesel-Straße  
89264 Weißenhorn

**Date of Order:** E-mail dated 18<sup>th</sup> July 2013

**Subject of Order:** Testing sealed tie holes for water impermeability

**Test Material:** 3 test cubes 150 mm nominal dimension, water-impermeable concrete

Specifications provided by client  
- prepared with PERI sealing anchor MX 15 - 30  
- sealed with Screw Plug MX 15-75 MF-L, tightened to a torque of 10 Nm

**Date of Sample Delivery:** 19<sup>th</sup> July 2013, by forwarding agent

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The rest report comprises 3 written pages and 1 appendix.

All results pertain to test material handled in this report exclusively.

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Order processing requires recording of essential data, including client's address.  
Data protection is guaranteed.

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## 1. Order and Test Programme

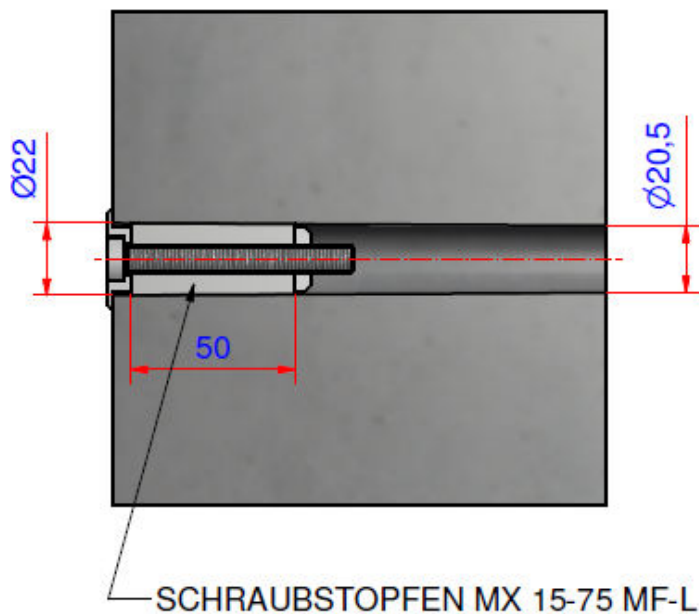
PERI GmbH Weißenhorn sent an e-mail order on 2013-07-18 to TÜV Rheinland LGA Bautechnik GmbH, to test water impermeability of concrete test cubes tie holes made with Screw Plugs MAXIMO MX 15-30, sealed by screw rods MX 15-75 MF-L.

The test cubes had been prepared by TBR Technologiezentrum GmbH & Co. KG of the Schwenk Zement KG, in Allmendingen, Germany. Up to the date of testing (>28 days) the cubes were placed under water. The anchor point was sealed by PERI.

Testing of the samples was carried out according to DIN EN 12390-8 (5 bar water pressure, duration of test period: 72 h).

Screw rod fitting is illustrated in drawing No. 1.

Drawing No. 1: Fitting the screw rods



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## 2. Determining Water Penetration

Beginning of test: 2013-07-26  
 End of test: 2013-07-29

Table No. 1: Determining Water Penetration

| Test Cube No. | Appearance after load |         | max. penetration | Fig. No. |
|---------------|-----------------------|---------|------------------|----------|
|               | top                   | lateral |                  |          |
| --            | top                   | lateral | [mm]             | --       |
| S 1           | dry                   | dry     | 22               | 1 to 3   |
| S 2           | dry                   | dry     | 27               | 4 to 6   |
| S 3           | dry                   | dry     | 24               | 7 to 9   |

## 3. Evaluation

Samples tested according to DIN 12390-8, such as

- concrete samples, nominal dimension 150 mm, water-impermeable concrete
- anchor point prepared with PERI MAXIMO anchor MX 15/30
- sealed with Screw Plug MX 15-75 MF-L

can be classified as construction component highly resistant to water penetration, depth of penetration  $\leq 50$  mm, in accordance with Section 5.5.3 of DIN EN 206-1 / DIN 1045-2.

Sealing of MAXIMO anchor points, as presented in the description, qualifies for use in construction components or structures load class 1 and for utilization class A, according to DAfStb-directives „Water-impermeable Concrete Structures“, edition: November 2003.

LGA Bautechnik GmbH  
 Construction Materials and Concrete Technology



Dipl.-Ing. (FH) Hermann Lechner  
 Head of Expert Center

Expert:



Johannes Knörler

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Attachment:



Fig No. 1 Sample S1 Lateral view

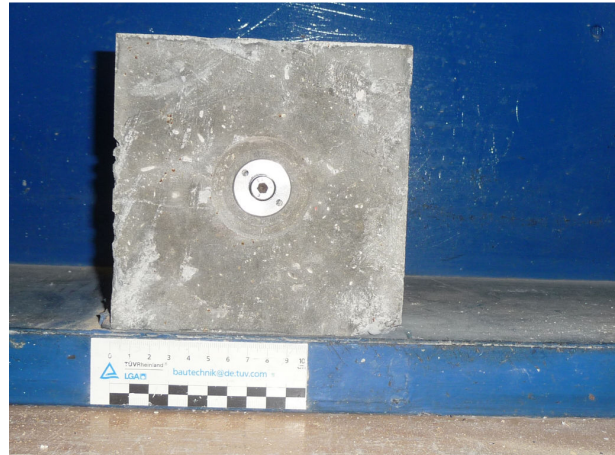


Fig. No. 2 Sample S1 View from below

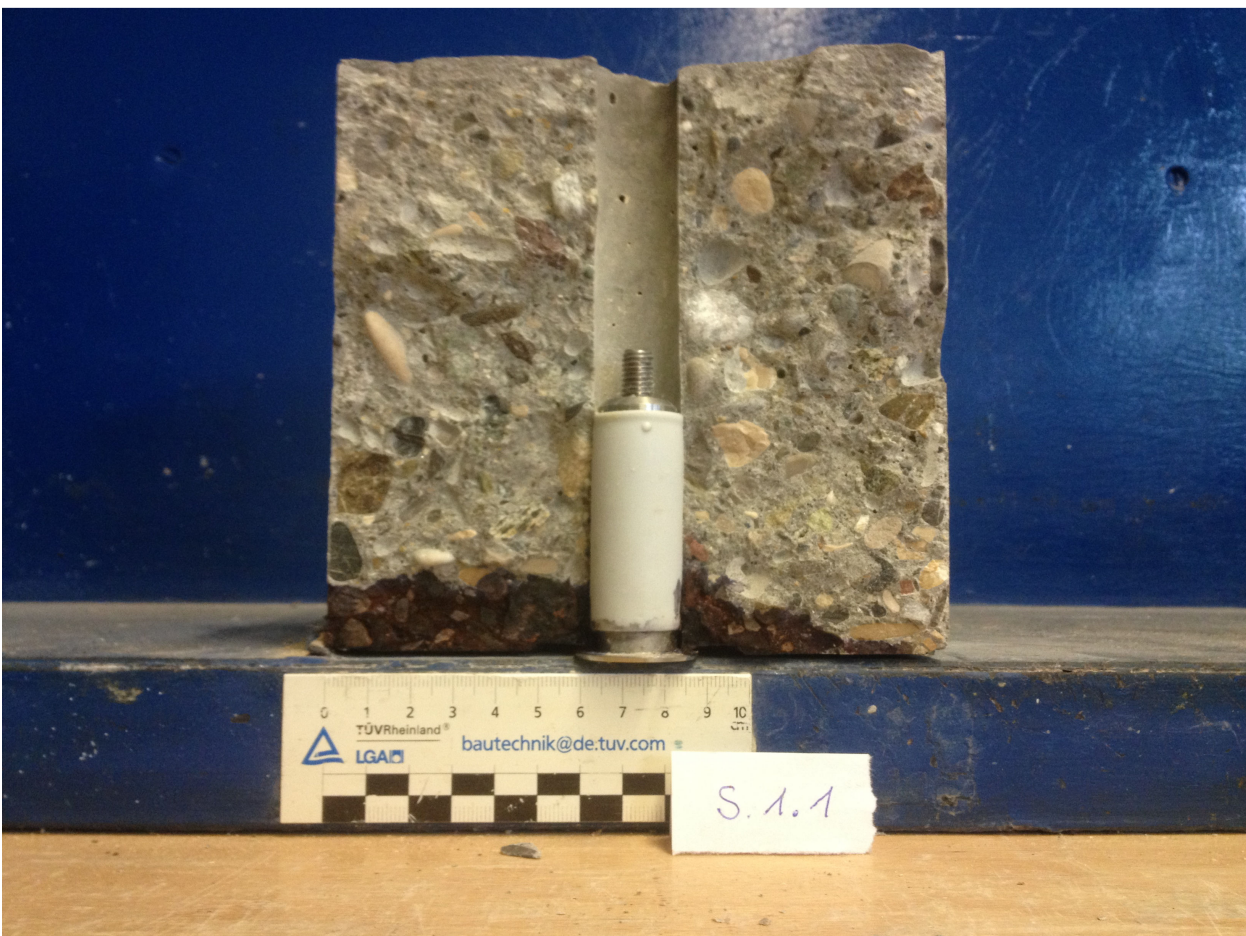


Fig No. 3 Sample S1 Water penetration

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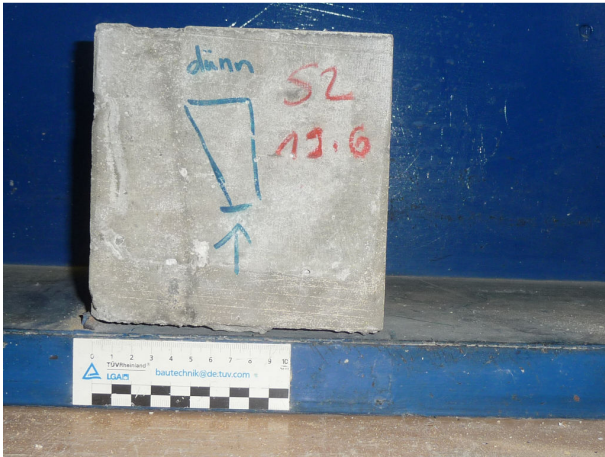


Fig. No. 4 Sample S2 Lateral view

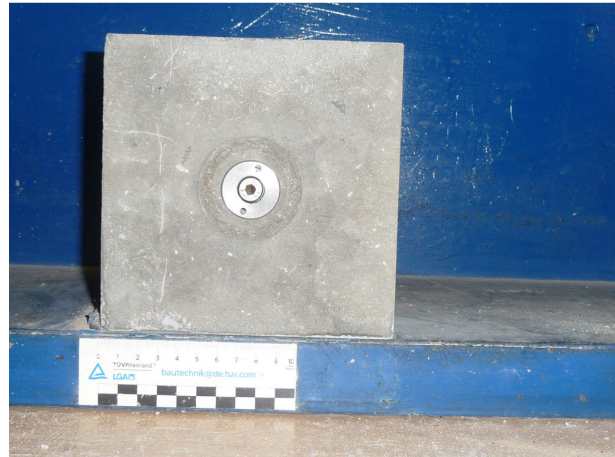


Fig. No. 5 Sample S2 View from below

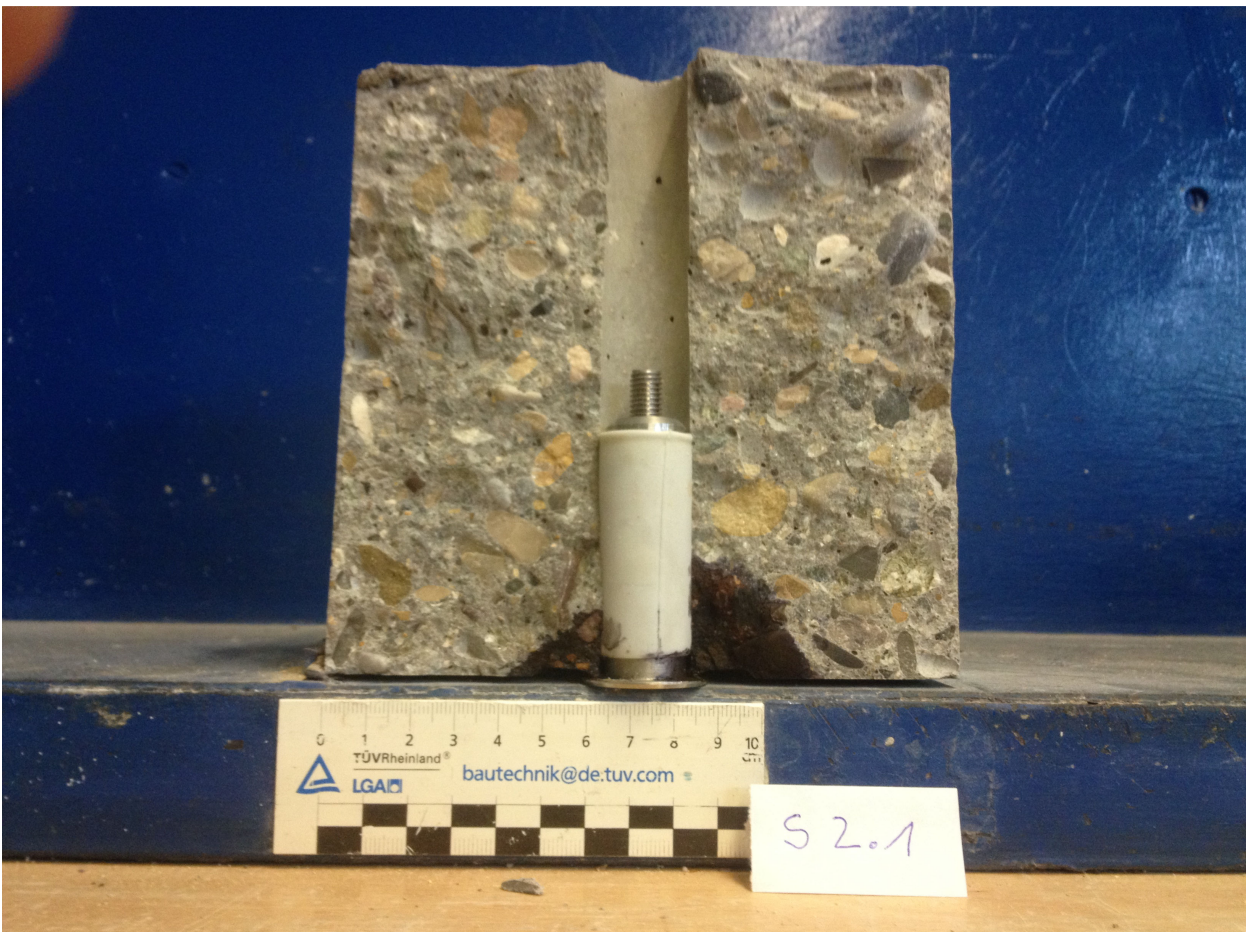


Fig. No. 6 Sample S2 Water penetration

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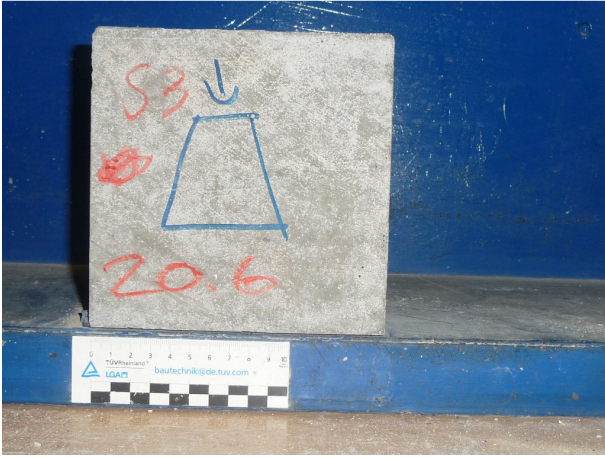


Fig. No. 7 Sample S3 Lateral view

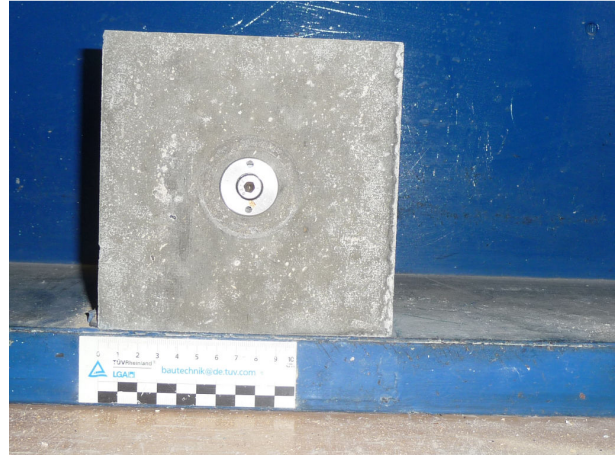


Fig. No. 8 Sample S3 View from below



Fig. No. 9 Sample S3 Water penetration