WATER IMPERMEABILITY - OKTAGON® AND OKTAGON®-PLUS

Water impermeability according to ÖNORM EN 12390-8:2019

The following test certificate MA 39 - VFA 2019-1444.01 from the Magistrat 39 in Vienna certifies that the OKTAGON® and OKTAGON®-PLUS formwork spacers produced by us are impermeable to water according to ÖNORM EN 12390-8:2019 in the installed state.

We would like to make it very clear that the surrounding concrete has a significant influence on the tightness of the seal of the formwork spacer. For this reason, special care must be taken to ensure that the spacers are properly installed and the concrete surrounding the formwork spacer is properly compacted. We only guarantee the proper function of the product, but not its installation and processing.

The test certificate may not made available to third parties without this written note!

Stadt Wien | Testing, Inspection, and Certification Body

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MA 39-VFA 2019-1444.01

Vienna, 8 April 2020
Total pages: 8

Analysis Report

"Oktagon" and "Oktagon-Plus" Plastic Spacers

Client	Nevoga GmbH
Date of order	26 November 2019
Test object	"Oktagon" and "Oktagon-Plus" plastic spacers, incl. sealing plug; the test object was provided by the client.
Test program	Based on ÖNORM EN 12390-8:2019 Determination of the water penetration depth on concrete test specimens with plastic spacers installed

1 General information

1.1 Order

The Nevoga GmbH contracted MA 39 with the determination of the water penetration depth on concrete test specimens with plastic spacers installed based on ÖNORM EN 12390-8.

1.2 Test object

On 3 December 2019, plastic spacers with the designation “Oktagon” and “Oktagon-Plus” with sealing plugs were delivered to MA 39 from the client.

The plastic pipes had a length of 20 cm, and the sealing plugs were 3 cm long.

The appearance of the delivered test objects can be seen in the photographic documentation found in the appendix on page 5.

1.3 Measuring and test equipment

The following measuring and test equipment was used for the determination of the measurement and test results presented in this report:

Inv. No. 1251 tape measure, Inv. No. 6483/1-3 water impermeability test apparatus, Inv. No. 6544/1-3 water impermeability test apparatus

2 Test procedure

2.1 “Oktagon” plastic spacer

On 6 December 2019, three concrete test specimens (sample cubes with an edge length of 20 cm) were produced in the lab of MA 39 using a concrete of class C25/30(56)/BS1A/F52/GK32.

One “Oktagon” plastic spacer was embedded in the center of each of the sample cubes (see Figure 3 in the appendix).

The samples were stored for 24 hours in the molds (covered with damp cloths) and then underwater until the test.

After removal from the mold, circular areas approx. 10 cm in diameter was roughened on the side of the samples exposed to water pressure and then placed in storage.

Before mounting in the test apparatus, the encased plastic spacers were closed of using sealing plugs (the sealing plugs were hammered in place).

The samples, which were then ready for testing, were mounted in the test apparatus so that the intended water pressure could be applied to the roughened test surface, and therefore on the plugged spacer. For this purpose, a sealing ring with an open diameter of 10 cm was mounted.

The test was conducted according to ÖNORM EN 12390-8:2019, whereby a water pressure of 5 bar was applied to the test specimens for 3 days.

Test period: 7 January to 10 January 2020

Afterwards, the test specimens were split open vertically according to the standard and the water penetration depth measured on the exposed cross-section of the split specimen.

2.2 “Oktagon-Plus” plastic spacer

On 11 February 2020, three concrete test specimens (sample cubes with an edge length of 20 cm) were produced in the lab of MA 39 using a concrete of class C25/30(56)/BS1A/F52/GK32.

One “Oktagon-Plus” plastic spacer was embedded in the center of each of the sample cubes (see Figure 4 in the appendix).

The samples were stored for 24 hours in the molds (covered with damp cloths) and then underwater until the test.

After removal from the mold, circular areas approx. 10 cm in diameter was roughened on the side of the samples exposed to water pressure and then placed in storage.

Before mounting in the test apparatus, the spreader cones molded into the spacer by the client were broken on their predetermined breaking point and pulled out, and the encased plastic spacers were plugged on one side using sealing plugs (the sealing plugs were hammered in place).

The samples, which were then ready for testing, were mounted in the test apparatus so that the intended water pressure could be applied to the roughened test surface, and therefore on the plugged spacer. For this purpose, a sealing ring with an open diameter of 10 cm was mounted.

The test was conducted according to ÖNORM EN 12390-8:2019, whereby a water pressure of 5 bar was applied to the test specimens for 3 days.

Test period: 10 March to 13 March 2020

Afterwards, the test specimens were split open vertically according to the standard and the water penetration depth measured on the exposed cross-section of the split specimen.

3 Test results

3.1 “Oktagon” plastic spacer

After splitting the test specimens, it was possible to see that water had penetrated into the concrete to depths between 8 mm and 20 mm on the 3 samples tested.

No moisture could be detected along the plastic pipe on any of the samples.

The appearance of the split test specimens can be seen in the photographic documentation found in the appendix on page 7.

3.2 “Oktagon-Plus” plastic spacer

After splitting the test specimens, it was possible to see that water had penetrated into the concrete to depths between 30 mm and 50 mm on the 3 samples tested.

No moisture could be detected along the plastic pipe on any of the samples.

The appearance of the split test specimens can be seen in the photographic documentation found in the appendix on page 8.

Case manager
Ing. Herbert Kurz

The lab head
Dipl.-Ing. Andreas Tichy
Senior Town Planning Councillor

Head of the Testing, Inspection, and Certification Body
Dipl.-Ing. Georg Pommer
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Appendix: Photographic Documentation

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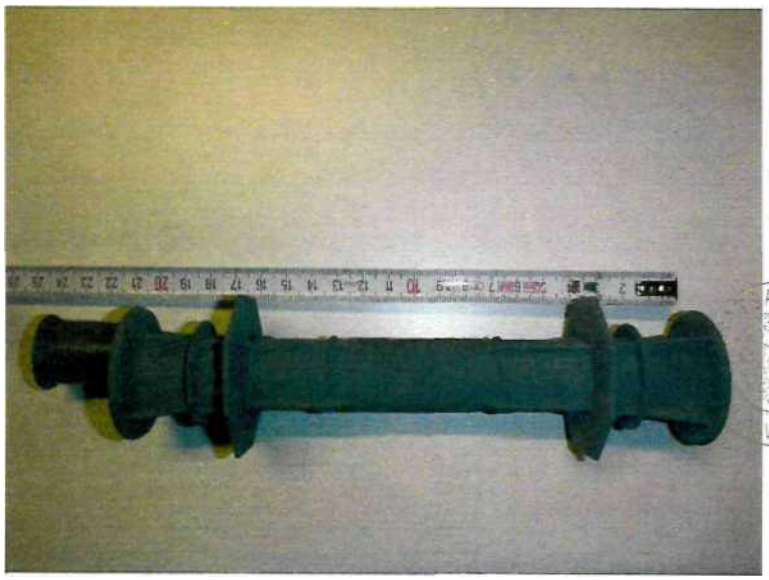

Figure 1:

"Oktagon" plastic spacer with sealing plug

Delivered condition

Figure 2:

"Oktagon-Plus" plastic spacer with sealing plug

Delivered condition

Figure 3:

Sample cube with encased “Oktagon” spacer

Figure 4:

Sample cube with encased “Oktagon-Plus” spacer

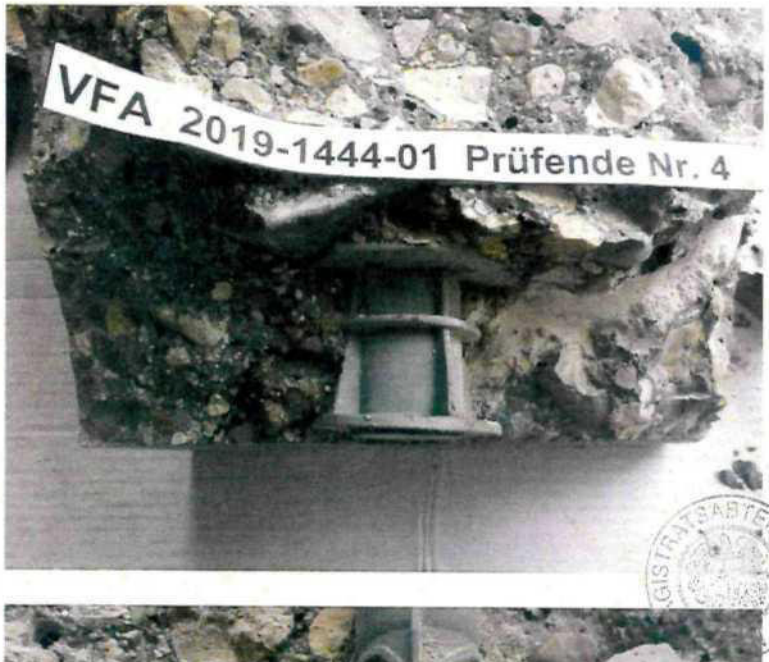

Figure 5:

Water penetration depth test

Sample No. 4 -
“Oktagon”

Water penetration depth 20 mm

Figure 6:

Water penetration depth test

Sample No. 5 -
“Oktagon”

Water penetration depth 8 mm

Figure 7:

Water penetration depth test

Sample No. 6 -
“Oktagon”

Water penetration depth 20 mm

Figure 8:

Water penetration depth test

Sample No. 1 -
“Oktagon-Plus”

Water penetration depth 30 mm

Figure 9:

Water penetration depth test

Sample No. 2 -
“Oktagon-Plus”

Water penetration depth 50 mm

Figure 10:

Water penetration depth test

Sample No. 3 -
“Oktagon-Plus”

Water penetration depth 38 mm