CZECH TECHNICAL UNIVERSITY IN PRAGUE
FACULTY OF CIVIL ENGINEERING –
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TEST REPORT No: 124029/2023

upon the test : **Determination of the radon diffusion coefficient of NO MORE DAMP TANKING SLURRY carried out in accordance with the ISO/TS 11665-13**

Client`s name and address:

Wykamol Group Ltd
Unit 3 Boran Court
Network 65 Business Park
Burnley, BB11 5TH
Great Britain

Date of issue: 21.6.2023

Approved by:

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prof. Ing. Martin Jiránek, CSc.
head of OL 124 laboratory

Subject of the test: No More Damp Tanking Slurry – a cementitious waterproof coating

Testing procedure: Determination of the radon diffusion coefficient

Test regulation: ISO/TS 11665-13

Test execution date: 16.6.2023 – 19.6.2023

Test execution place: laboratory OL124 – D2044d

Test samples

Test samples were made by the client from the material Batch 230521. The samples were delivered by the client representative Fleur Ashworth on 12.6.2023. They were registered with marks 27/23/J (1 to 3) by M. Jiránek. The tested coating was applied to a cement fibre board with a thickness of 12,17 mm, which radon diffusion coefficient was determined separately (test report 124027/2023). The dimensions of the samples were 135 x 325 mm (effective area 293.10^{-4} m^2) and their total thickness varied from 17,35 mm to 18,03 mm (the thickness of the coating itself varied from 5,18 mm to 5,86 mm).

Test method

Radon diffusion coefficient was determined according to the method A of ISO/TS 11665-13. The tested samples were placed between the source and the receiver containers. Radon diffuses through the samples from the source container, which is connected to the radon source RF 100, to the receiver containers. Concentrations on both sides of the tested samples are measured continuously by radon detectors TSR-4 of the TERA system (receiver containers) and current mode ionization chambers (source container). Radon diffusion coefficient was derived from the process of fitting the numerical solution to the curves of radon concentration measured in the receiver containers. Numerical solution is based on the one-dimensional time-dependent diffusion equation describing radon transport through the tested material.

Laboratory conditions

No More Damp Tanking Slurry – material
Steady state radon concentration in the source container: 318,8 ± 4,2 kBq/m^3
Maximum radon concentration in the receiver containers: 118,0 ± 2,6 kBq/m^3

Test device

Radon detectors TSR-4 of the TERA system (N17)
Measuring system with ionization chambers operating in current mode (N14)
Radon concentration measuring system RM-2 (N15)
Micrometer (N11)

Test results

The resulting mean values of the radon diffusion coefficient, the radon diffusion length and the radon resistance including expanded measurement uncertainty, are listed in the following table in the form of (mean ± U). The results refer to the samples as they were taken over.

TESTED MATERIAL	No More Damp Tanking Slurry
Rn diffusion coefficient ***D*** **(m²/s)**	$(9,2 \pm 1,1).10^{-9}$
Rn diffusion length ***l*** **(m)**	0,066 ± 0,008
Rn resistance R_{Rn} **(Ms/m)**	0,6 ± 0,1

The expanded uncertainties of measurement $\pm U$ mentioned are the product of standard measurement uncertainties and the expansion coefficient k = 2, which provides a confidence interval of approx. 95 %. The radon diffusion length was calculated according to the equation $l = \sqrt{D/\lambda}$ and the radon resistance as follows: $R_{Rn} = \frac{\sinh(d/l)}{\lambda \cdot l}$, where $\lambda = 2{,}1.10^{-6}$ s^{-1} and $d = 5{,}50$ mm = $5{,}50.10^{-3}$ m.

The test was performed by: prof. Ing. Martin Jiránek, CSc., Ing. Veronika Kačmaříková, Ph.D.

The report was prepared by: Ing. Veronika Kačmaříková, Ph.D.

end of the report