

CZECH TECHNICAL UNIVERSITY IN PRAGUE
FACULTY OF CIVIL ENGINEERING – TEST LABORATORY
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ČSN EN ISO/IEC 17025:2018
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upon the test : **Determination of the radon diffusion coefficient
of the ECOPROOF ST coating carried out in accordance with
the ISO/TS 11665-13**

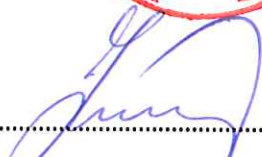
Client:

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Date of issue: 13.2.2020

Approved by:




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

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Subject of the test: EcoProof ST – seamless coating composed of polymer modified emulsified asphalt

Testing procedure: Determination of the radon diffusion coefficient

Test regulation: ISO/TS 11665-13, method C

Test execution date: 28.1.2020 – 13.2.2020

Test execution place: laboratory OL124 – D2044d

Test samples

Test samples were cut from the material handed by the client representative CH. Cartwright on 27.1.2020. The samples were registered with marks 3/20/J (1 to 3) by M. Jiránek. The dimensions of the samples were 135 x 325 mm (effective area $293 \cdot 10^{-4} \text{ m}^2$) and their thickness varied from 1,35 mm to 1,54 mm.

Test method

Radon diffusion coefficient was determined according to the method C 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. Radon concentration in the receiver containers is held at values below 1 kBq/m^3 by continuous ventilation of the receiver containers. After establishing the stationary radon diffusion through the samples, the ventilation of the receiver containers is stopped and the increase in the radon concentration in the receiver containers is measured. From the known time dependent curves of the radon concentration increase in the receiver containers and the steady state radon concentration in the source container the radon diffusion coefficient is calculated.

Laboratory conditions

EcoProof ST – material

Steady state radon concentration in the source container: $25,2 \pm 0,9 \text{ MBq/m}^3$

Radon supply rate into the receiver container: $3,3 \pm 0,7 \text{ Bq/m}^3\text{s}$

Laboratory temperature: $20^\circ\text{C} \pm 2^\circ\text{C}$

Relative humidity of air in the laboratory: $35,5\% \pm 4\%$

Pressure difference between the lower and the upper containers: $1 \text{ Pa} \pm 1 \text{ Pa}$

Test device

Radon monitor RDA 200 (N12)

Micrometer (N11)

Test results

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

TESTED MATERIAL	RN DIFFUSION COEFFICIENT D (m^2/s)		RN DIFFUSION LENGTH l (m)	
	mean value	$\pm U$	mean value	$\pm U$
EcoProof ST	$9,2 \cdot 10^{-12}$	$\pm 1,1 \cdot 10^{-12}$	$2,1 \cdot 10^{-3}$	$\pm 0,2 \cdot 10^{-3}$

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 test was performed by: prof. Ing. Martin Jiránek, CSc.

The report was prepared by: prof. Ing. Martin Jiránek, CSc.

end of the report