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Number of issues : 2
Issue Number : 1
Number of pages : 3
Page Number : 1

Order No: 8601860A000

TEST REPORT No: 124054/2018

upon the test : **Radon diffusion coefficient of a pipe penetration through the SISALEX 871 membrane using the EPDM collar carried out in accordance with the K124/02/95 method**

Client:

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Date of issue: 20.11.2018

Approved by:

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

The measurement of the radon diffusion coefficient of a pipe penetration through the Sisalex 871 membrane using the EPDM collar was performed in accordance with the requirements for determination of the radon diffusion coefficient stated in the K124/02/95 test method. The test was carried out during the period from 29.10.2018 to 20.11.2018.

Test samples

Test samples were cut from the material handed by the client (Ulrich Höing) on 21.9.2018. The samples were registered with marks 38/18/J (1 to 2) by M. Jiránek. The test samples were 280 mm in diameter; the thickness of the collar was 1,50 mm; the diameter of a stainless steel tube penetrating through the Sisalex 871 membrane was 76 mm and the thickness of the Sisalex 871 membrane was 0,4 mm.

Test method

Radon diffusion coefficient was measured according to the accredited method K124/02/95 (method C of ISO/TS 11665-13). The tested sample is placed between two containers. Radon diffuses from the lower container, which is connected to the radon source, through the sample to the upper container. When the steady state concentration profile within the sample is reached, the growth of radon concentration in the upper container is measured. From the known time dependent curve of the radon concentration increase in the upper container the radon diffusion coefficient can be calculated. The test method was approved by the State Office for Nuclear Safety on 6.8.1998.

Laboratory conditions

Pipe penetration with the EPDM collar – material
Steady state radon concentration in the lower container: 48,3 ± 0,1 MBq/m^3
Radon supply rate into the upper container: 47,7 ± 4,0 Bq/m^{3}s

Measuring device: radon monitor RDA 200 (N12), micrometer (N11)
Laboratory temperature: 21 ± 2°C
Relative humidity of air in the laboratory: 38% ± 4%
Pressure difference between the lower and the upper containers: 0 Pa

Test results

The results of performed tests are compiled in the following table:

TESTED MATERIAL	RADON DIFFUSION COEFFICIENT D (m^2/s)	
	mean value	**uncertainty**
Pipe penetration with the EPDM collar	$2{,}8.10^{-11}$	$\pm 0{,}3.10^{-11}$

The stated uncertainty of the measurement is the uncertainty with the coefficient k = 2, which for the normal distribution corresponds to the probability of coverage approx. 95 %.

Recommendation

Applicability of the tested material for a radon-proof product can be in a particular case considered in accordance with national building codes or standards.

The test was performed by: Prof. Ing. Martin Jiránek, CSc.
The report was prepared by: Prof. Ing. Martin Jiránek, CSc.

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test specialist

end of the report