CZECH TECHNICAL UNIVERSITY IN PRAGUE
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upon the test : **Radon diffusion coefficient of the waterproofing membrane NEWTON 403 HYDROBOND GB carried out in accordance with the method K124/02/95 (method C of ISO/DIS 11665-10)**

Client:

John Newton & Company Ltd
Newton House, 17-19 Sovereign Way
Tonbridge, Kent TN9 1RH
United Kingdom

Date of issue: 4.2.2016

Approved by:

ČESKÉ VYSOKÉ UČENÍ TECHNICKÉ V PRAZE Fakulta stavební FSv č. 1048 Akreditovaná zkušební laboratoř OL 124

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Prof. Ing. Richard Wasserbauer, DrSc.
head of laboratory OL 124

The measurement of the radon diffusion coefficient of the Newton 403 HydroBond GB membrane (composed of a geotextile and a hydrophilic polymer compound) was performed in accordance with the requirements for determination of the radon diffusion coefficient stated in the ISO/DIS 11665-10 standard. The test was carried out during the period from 18.1.2016 to 4.2.2016.

Test samples

Test samples were cut from the material handed by the client (W. Muschialli) on 4.1.2016. The samples were registered with marks 1/16/J (1 to 6) by M. Jiránek. The test samples were 160 mm and 200 mm in diameter and their thickness was 1,40 mm. The overlap joint was sealed with a 75 mm wide HydroBond Tape applied inside membrane overlap.

Test method

Radon diffusion coefficient was measured according to the accredited method K124/02/95 (method C of ISO/DIS 11665-10). 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

Newton 403 HydroBond GB – material
Steady state radon concentration in the lower container: 37,5 ± 0,2 MBq/m^3
Radon supply rate into the upper container: 0,3 ± 0,1 Bq/m^{3}s

Newton 403 HydroBond GB – joint
Steady state radon concentration in the lower container: 13,1 ± 0,2 MBq/m^3
Radon supply rate into the upper container: 280,5 – 7,5 Bq/m^{3}s

Measuring device: radon monitor RDA 200 (N12), micrometer (N11)
Laboratory temperature: 21°C ± 2°C
Relative humidity of air in the laboratory: 35% ± 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**
Newton 403 HydroBond GB	$1{,}0.10^{-12}$	$\pm\ 0{,}1.10^{-12}$
Newton 403 HydroBond GB, joint	$1{,}5.10^{-9}$	$\pm\ 0{,}2.10^{-9}$

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 to a radon-proof membrane can be in a particular case considered in accordance with national building codes or standards.

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

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test specialist

end of the report