ADDITIONAL INFORMATION

to the test report No. 124048/2023

Radon resistance of WATERPROOF BLUE LIQUID DPM

Client:

INTELLIGENT MEMBRANES
Clopton Farm
Lower Road
Croydon, Cambridgeshire
UK-SG80EF
United Kingdom

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Prepared by:

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

Radon diffusion coefficient D of Waterproof Blue Liquid DPM coating was determined by the accredited test laboratory No.1048 of the Czech Technical University in Prague, Faculty of Civil Engineering, expert laboratory OL124. According to the test report No. 124048/2023, the D value is $(1,2 \pm 0,1).10^{-11}$ m^2/s.

Radon diffusion coefficient D stated in the test report mentioned above is a material constant that shows the ability of radon to diffuse in the material.

The ability of a product to form an efficient barrier against radon diffusion is expressed by the **radon resistance R_{Rn}** or the **radon transmittance T_{Rn}** that are defined by the following equations.

$$R_{Rn} = \frac{\sinh(d/l)}{\lambda \cdot l} \qquad [s/m]$$

$$T_{Rn} = \frac{1}{R_{Rn}} = \frac{\lambda \cdot l}{\sinh(d/l)} \qquad [m/s]$$

where d is the thickness of the product [m], λ is the radon decay constant $[2,1.10^{-6}\ s^{-1}]$ and l is the radon diffusion length in the material [m] calculated as follows: $l = \sqrt{D/\lambda}$.

Radon resistance and radon transmittance values of Waterproof Blue Liquid DPM coating depending on the product thickness are shown in the following table. Greater value of the radon resistance means better barrier properties.

Radon resistance and radon transmittance values for the specified thickness

d [mm]	D [m^2/s]	l [m]	R_{Rn} [s/m]	T_{Rn} [m/s]
0,5			$42,0.10^6$	$2,4.10^{-8}$
0,6			$50,5.10^6$	$2,0.10^{-8}$
0,7	$1,2.10^{-11}$	$2,4.10^{-3}$	$59,2.10^6$	$1,7.10^{-8}$
0,8			$67,9.10^6$	$1,5.10^{-8}$
0,9			$76,8.10^6$	$1,3.10^{-8}$
1,0			$85,8.10^6$	$1,2.10^{-8}$

Applicability of Waterproof Blue Liquid DPM coating for a radon-proof product can be in a particular case considered in accordance with national building codes or standards.

References

Jiránek M., Kačmaříková V.: Radon diffusion coefficients and radon resistances of waterproofing materials available on the building market. Journal of Environmental Radioactivity 208-209 (2019), doi.org./10.1016/j.jenvrad.2019.106019

Jiránek, M. New, efficient and generally applicable design of radon-proof insulations – a proposal for a uniform approach. Radiation Protection Dosimetry (2017), Vol. 177 (1-2), pp. 121-124, doi. 10.1093/rpd/ncx139