

Radon Diffusion Coefficient In Radon Proof Membranes

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Radon diffusion coefficients and radon resistances of ...

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Figure 1. Principle of the measuring method for determining the radon diffusion coefficient The radon concentrations in both chambers are determined alpha-spectroscopically using surface barrier detectors. The radon progeny Polonium-218 is positively charged and can be electrostatic deposited onto the +HVdetcorppislangrdp pre-amplifier amplifier

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In both cases, the calculation results in determining the radon diffusion length, from which the radon diffusion coefficient and the radon resistance are subsequently calculated. A detailed description of the measuring process and the mathematical procedure can be found in (O/11665-13 (E) Measu, 1166 ; Jiránek and Svoboda, 2009).

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where D is the radon diffusion coefficient [m²s⁻¹], λ is the radon decay constant (2.1 x 10⁻⁶ s⁻¹) and C(x,t) is the radon concentration [Bqm⁻³]. We assume simple boundary conditions: constant radon concentration in the lower container of the system C(0,t) = C0 and zero concentration C(d,t) = 0

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Diffusion coefficient D = 1,93 .10⁻¹² m²/s Radon transfer diff = 0,11 Bq/(m²h) at 100 kBq/m³ source strength Evaluation and usage instructions The diffusion coefficient is considerably smaller than concrete. The material can reduce the transfer of radon very good at a material thickness of 4 mm.

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