

Radon Diffusion Coefficient In Radon Proof Membranes

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RADON DIFFUSION COEFFICIENT IN RADON-PROOF MEMBRANES DETERMINATION AND APPLICABILITY FOR THE DESIGN OF RADON BARRIERS. The selection of effective radon-proof insulation from the total amount of tanking materials is very difficult due to the lack of information about radon diffusion through these materials and the absence of general guidelines for the design of radon barriers.

[PDF] RADON DIFFUSION COEFFICIENT IN RADON-PROOF MEMBRANES ...

(1) $R_{Rn} = d/D$ (2) $R_{Rn} = \sinh(d/l) / l$. l, where R_{Rn} is the radon resistance [s/m], λ is the radon decay constant [s⁻¹], d is the thickness of the material [m], l is the radon diffusion length in the material calculated as $l = (D/\lambda)^{1/2}$ [m], and D is the radon diffusion coefficient of the waterproofing material [m²/s].

Radon diffusion coefficients and radon resistances of ...

insulation, the diffusion coefficients vary between 10⁻¹³ m²s⁻¹ and 10⁻¹⁰ m²s⁻¹. The lowest values of the radon diffusion coefficient D were obtained for polypropylene foils. In HDPE foils with dimples, the coefficient varies in the range 1 x 10⁻¹² and 5 x 10⁻¹² m²s⁻¹. Radon diffusion coefficients for HDPE and PVC Insulation thickness (mm) Diffusion coef.

RADON DIFFUSION COEFFICIENT IN RADON-PROOF MEMBRANES ...

B.J. Thamer / Diffusion coefficient of radon 171 Elapsed Time (s) Fig. 5. Diffusion of radon in sand. Curve calculated with the observed radon diffusion coefficient of 3.2x10⁻⁷m²/s and 50% of moisture saturation (L = 0.042 m, 297 K, 85000 Pa, EXRNI=0), indication of the exhalation rate versus time.

The determination of the diffusion coefficient of radon in ...

Radon gas diffusion through concrete can be a significant mechanism for radon entry into dwellings. Measurements of radon diffusion coefficients in the pores of residential concretes ranged from 2.1 x 10⁻⁸ m² s⁻¹ to 5.2 x 10⁻⁷ m² s⁻¹. The pore diffusion coefficients generally increased with the water-cement ratio of the concrete and decreased with its density.

Radon Diffusion Coefficients for Residential Concretes ...

The diffusion length R was calculated from the diffusion coefficient D with $RD = \lambda$. If the thickness of the material is more than three times the diffusion length, then it is called radon-tight. The mean radon-222 exhalation rates for the building materials varied between 0.4 mBq/m²s and 0.05 mBq/m²s.

RADON PERMEABILITY AND RADON EXHALATION OF BUILDING MATERIALS

For a typical single-family house, typical soil gas radon concentration and typical thickness of the membrane, the maximum value of the radon diffusion coefficient should be around 1.10-11m²/s. Materials with higher diffusion coefficients are excluded from usage as radon barriers.

RADPAR WP6: Assessment of radon control technologies

The radon diffusion coefficients and radon . diffusion lengths (Figure 4) presents the calculated . radon gas diffu sion lengths. The corrected . data include a subtraction of the radon gas .

(PDF) Supplementary Cementitious Materials and Additives ...

A linear diffusion model serves as the basis for determination of an effective radon diffusion coefficient in concrete. The coefficient was needed to later allow quantitative prediction of radon accumulation within and behind concrete walls after application of an impervious radon barrier.

Effective Diffusion Coefficient of Radon in Concrete ...

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

The Radon Diffusion Length as a Criterion for the Radon ...

The radon diffusion coefficient used in the RADON model can either be calculated within the model (based on an empirical relationship with degree of saturation) or input directly in the model using values measured from laboratory testing.

APPENDIX D Radon Emanation Modeling

The studies related the radon diffusion coefficient shows that open-air radon diffusion coefficient is the upper bound as 1.2 x10⁻⁵ m² s⁻¹ and typically radon diffusion coefficient for soil with...

(PDF) Radon diffusion studies in air, gravel, sand, soil ...

radon diffusion coefficients ranged from 10⁻⁸ cm²s⁻¹ (0.7 mil mylar) to lo⁴ cm²s⁻¹ (2 mil natural rubber). Fleischer (1988) reported on a closed loop system composed of two small volume cups (a few hundred cm³) separated by the membrane specimen. The lower cup held a radon emanation source (6-8 g uranium ore); each chamber contained

Test Methods For Evaluating Radon Barriers

Finite-Difference Time-Domain Simulations of Radon Transport in Porous Media In this work, an efficient algorithm, using a finite-difference time-domain (FDTD) technique, is proposed for modeling the variation of radon concentration as a function of soil structure parameters and vice versa.

Finite-Difference Time-Domain Simulations of Radon ...

the multi-layer profile of radon in natural soils is more descriptive than the one-layer one used traditionally, where each layer has its own diffusion coefficient. The effec-tive diffusion coefficient, D, shows variation with the soil depth and its value differs from one geophysical location to another. A constant soil-air interface transfer coef-

Finite element modeling of radon distribution in natural ...

Abstract. Radon migration in porous, earthen materials is characterized by diffusion in both the air and water components of the system as well as by the interaction of the radon between the air and water. The size distribution and configuration of the pore spaces and their moisture distributions are key parameters in determining the radon diffusion coefficient for the bulk material.

Mathematical model for radon diffusion in earthen ...

Over time the radon gas that is not being vented out will slowly build back up in your home. Ask to see data sheet on the plastic. Look for Radon Diffusion Coefficient test data on the data sheet. (If this is not listed then the product has not been tested to block out radon) Also stand firm.

Blogging Plastic Sheeting | Radon Vapor Barrier

The radon diffusion coefficient of concrete quantifies the ability of the radon gas to flow through concrete when a concentration gradient is the driving force. This parameter is also closely related and proportional to the porosity and permeability.

Measurements & Analysis of the Transport of Radon Through ...

The radon diffusion coefficient was measured under nonstationary conditions, because homemade radon sources with a slow rate of radon emanation were used. The radon diffusion coefficients identified in the study were compared according to the thickness of the material and the number and the size of the pinholes.