Supplementary material to

Prediction of oily water separation efficiency by fiber beds using a new filter media property

Dunja S. Sokolović[1], Milica S. Hadnadjev-Kostic[2], Arpad I. Kiralj[2], Radmila M. Šećerov Sokolović[2]

[1]University of Novi Sad, Faculty of Technical Sciences, Serbia
[2]University of Novi Sad, Faculty of Technology, Serbia

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HOW MASS OF FILTER BED SAMPLES FOR SIMILAR PERMEABILITY WAS IDENTIFIED

We measured permeability of different mass of used polymer fibers and calculated porosity for these samples using relation:

$\varepsilon = 1 - \rho_n / \rho$

ε - porosity

ρ_n - bulk density

ρ - density of used material.

On this way we obtained experimental relation between permeability and bed porosity. All investigated fibers follow this relation.

$$\varepsilon = e^{\frac{-0.13185}{K_0 + 0.61037}}$$

Adj. R -Square=0.96646

When we want to prepare bed with some exact permeability we have information what porosity is for this permeability. From the bulk density is possible to calculate mass of the material for wanted permeability:

$\rho_n = (1- \varepsilon) \rho$

$m = \rho V_{bed}$

V_{bed} – bed volume

Note: Bed volume is known from bed length and inner diameter of experimental pipe