

# A Fractal Pore Model for Archie's Law in Sedimentary Rocks

Nigmatullin R., Dissado L., Soutougin N.  
*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

---

## Abstract

Archie's law, relating the conductivity and porosity of fluid saturated sedimentary rocks, is derived via a model which defines the conducting pore system as a subset of the total pore space. Most sedimentary rocks are found to be characterized by a set of fractal conducting paths whose number density is essentially determined by a cross section through the fractal pore space. Some exceptions to the typical behaviour are discussed. The model is also extended to the derivation of permeability expressions for which it is shown that a general form cannot be obtained because the pore and conductivity subspaces do not have a general relationship to that of the permeability. © 1992 IOP Publishing Ltd.

<http://dx.doi.org/10.1088/0022-3727/25/1/004>

---