

Non-linear dynamic porosity @model

Small deviations of ambient pressure p from initial pressure formation p_0 lead to the exponential changes in porosity:

$$(1) \quad \phi = \phi_0 e^{c_r(p-p_0)}$$

where c_r is [formation compressibility](#), ϕ_0 is porosity at reference pressure p_0 (usually picked up at initial reservoir pressure $p_0 = p_i$).

The above correlation assumes constant [formation compressibility](#) which in most practical applications holds true in a wide range of pressure variations all the way down to porosity cut-off and all the way up to the fracture point.