Fluid Capacitance @model

(1)	$s_w \cdot \frac{(\epsilon - 1)(2\epsilon + 1)}{9\epsilon} + (1 - s_w) \cdot \frac{\epsilon - 1}{\epsilon + 2} = s_w P_w + s_o P_g + s_g P_g$		
(2)	$P_w = \frac{(\epsilon_w - 1)(2\epsilon_w + 1)}{9\,\epsilon_w}$	(3) $P_o(T) = \frac{\epsilon_o - 1}{\epsilon_o + 2}$	(4) $P_g(T) = \frac{\epsilon_g - 1}{\epsilon_g + 2}$
(5)	$\epsilon_w(T) = 87.74 - 0.40008 \cdot T + 9.398 \cdot 10^{-4} \cdot T^2 - 1.41 \cdot 10^{-6} \cdot T^3$	(6) $\epsilon_o(T) = 16 \div 20$	(7) $\epsilon_g(T) = 1 \div 2$

where

s_w, s_o, s_g	volumetric fractions of water, oil and gas phases: $s_w + s_o + s_g = 1$
P_w, P_o, P_g	electrical polarization of water, oil and gas phases
ϵ_w, ϵ_o, ϵ_g	relative dielectric permittivity of water, oil and gas phases
T	fluid temperature

See also

Petroleum Industry / Upstream / Subsurface E&P Disciplines / Fluid Analysis / Fluid Capacitance

[Dielectric permittivity of water @model]