

Dynamic fluid properties

Material properties of fluid affecting the fluid dynamics:

Density	FVF	Z-factor	Compressibility	Viscosity	Specific heat capacity	Thermal conductivity	Critical Temperature	Critical Pressure
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For 3-phase Oil + Gas + Water fluid model this will be:

	Oil	Gas	Water
Density	$\rho_o = \rho_o(p, T)$	$\rho_g = \rho_g(p, T)$	$\rho_w = \rho_w(p, T)$
Z-factor	$Z_o = Z_o(T, p)$	$Z_g = Z_g(T, p)$	$Z_w = Z_w(T, p)$
FVF	$B_o = B_o(P, T) = \frac{\rho_o^\circ}{\rho_o} = \frac{V_o}{V_o^\circ}$	$B_g = B_g(P, T) = \frac{\rho_g^\circ}{\rho_g} = \frac{V_g}{V_g^\circ}$	$B_w = B_w(P, T) = \frac{\rho_w^\circ}{\rho_w} = \frac{V_w}{V_w^\circ}$
Compressibility	$c_o = c_o(P, T)$	$c_g = c_g(P, T)$	$c_w = c_w(P, T)$
Viscosity	$\mu_g = \mu_g(P, T)$	$\mu_o = \mu_o(P, T)$	$\mu_w = \mu_w(P, T)$
Specific heat capacity	$c_{po} = c_{po}(P, T)$	$c_{pg} = c_{pg}(P, T)$	$c_{pw} = c_{pw}(P, T)$
Thermal conductivity	$\lambda_o = \lambda_o(P, T)$	$\lambda_g = \lambda_g(P, T)$	$\lambda_w = \lambda_w(P, T)$
Oil-Gas exchange	$R_s(p, T)$	$R_v(p, T)$	
Saturation pressure	$P_b = P_b(T)$	$P_d = P_d(T)$	

See Also

Petroleum Industry / Upstream / Subsurface E&P Disciplines / Fluid Analysis (PVT)

Reference

CURTIS H. WHITSON AND MICHAEL R. BRULÉ, PHASE BEHAVIOR, SPE Monograph Volume 20, 2000