Mixing Rules for Viscosity

Arrhenius	0 variables	(1) $\ln \mu_{12} = x_1 \cdot \ln \mu_1 + x_2 \cdot \ln \mu_2$
Lederer-Roegiers	1 variable	(2) $\ln \mu_{12} = \frac{x_1}{x_1 + \alpha\, x_2} \cdot \ln \mu_1 + \frac{\alpha\, x_2}{x_1 + \alpha\, x_2} \cdot \ln \mu_2$
Grunberg-Nissan	1 variable	(3) $\ln \mu_{12} = x_1 \cdot \ln \mu_1 + x_2 \cdot \ln \mu_2 + \epsilon\, x_1\, x_2$
Oswal-Desai	3 variables	(4) $\ln \mu_{12} = x_1 \cdot \ln \mu_1 + x_2 \cdot \ln \mu_2 + \epsilon\, x_1\, x_2 + K_1\, x_1\, x_2\, (x_1 - x_2) + K_2\, x_1\, x_2\, (x_1 - x_2)^2$
Kendall-Monroe	0 variables	(5) $v_{12} = \left[x_1 \cdot v_1^{1/3} + x_2 \cdot v_2^{1/3}\right]^3$

Refutas	0 variables	(6) $v_{12} = \exp\left[\exp\left(\frac{A_{12} - 10.975}{14.534}\right) - 0.8\right], \quad A_{12} = y_1\, A_1 + y_2\, A_2, \quad A_i = 14.534 \ln[\,\ln(v_i + 0.8)\,] + 10.975, \quad i = \{1, 2\}$

The Lederer-Roegiers equation is reported to be the most accurate among single-variable models.

See also

Physics / Fluid Dynamics / Mixing Rules

References

Boris Zhmud, Viscosity Blending Equations, Lube-tech, 121, 2014