Z-factor Correlations @model

The Z-factor $Z(p,T)$ correlations for fluid mixtures provide fast computational procedures using the fluid mixture properties rather than multi-component procedures of Equation of State.

These correlations are usually modelled through the pseudo-reduced fluid properties (T_{pr}, P_{pr}):

$T_{pr} = T/T_{pc}$	Pseudo-reduced temperature	T_{pc}	Pseudo-critical temperature
$P_{pr} = P/P_{pc}$	Pseudo-reduced pressure	P_{pc}	Pseudo-critical pressure

Charts

Standing-Katz Z-factor correlation chart

Implicit Correlations

These correlations are quite accurate and work in a wide range of pressures and temperatures but computationally expensive and may have problems with convergence when approaching the critical temperature.

Dranchuk, Purvis and Robinson (1971)
Hall and Yarborough (1973)
Dranchuk and Abou-Kassem (1975)

Explicit Correlations

The explicit correlations do not have convergence issues, generate smooth derivatives for compressibility calculations and provide fast computing.

Artificial Neural Network correlations
Ahmed (2017)
Kareem (2016)
Brill & Beggs (1973)
Standing-Katz (1942)
Sanjari and Nemati's Correlation (2012)
Azizi, Behbahani and Isazadeh's Correlation (2010)
Heidaryan, Moghdasi and Rahimi's Correlation (2010)

See also

[Pseudo-Critical Point Correlations @model]