<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>constant (Equations 2.24, 2.29, 2.40, 2.44, 2.76, 2.77, 2.93)</td>
</tr>
<tr>
<td>A</td>
<td>Antoine constant</td>
</tr>
<tr>
<td>A&lt;sub&gt;ij&lt;/sub&gt;, A&lt;sub&gt;ji&lt;/sub&gt;</td>
<td>constants in the activity coefficient correlations (i,j = 0,1,2)</td>
</tr>
<tr>
<td>A&lt;sub&gt;1&lt;/sub&gt;, A&lt;sub&gt;2&lt;/sub&gt;, A&lt;sub&gt;3&lt;/sub&gt;</td>
<td>constant (Equations 7.2, 7.3)</td>
</tr>
<tr>
<td>a</td>
<td>Chao constant (Equation 2.87)</td>
</tr>
<tr>
<td>a&lt;sub&gt;ij&lt;/sub&gt;, a&lt;sub&gt;ji&lt;/sub&gt;</td>
<td>constants (Equation 2.82)</td>
</tr>
<tr>
<td>B</td>
<td>second virial coefficient, ml / g mole</td>
</tr>
<tr>
<td>Symbol</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
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</tr>
<tr>
<td>B</td>
<td>Antoine constant</td>
</tr>
<tr>
<td>B</td>
<td>Redlich-Kister constant (Equation 2.83 to 2.86)</td>
</tr>
<tr>
<td>$B_{11},B_{12},B_{22}$</td>
<td>second virial coefficients for pairs of molecules in collisions 1-1, 1-2, 2-2 respectively, ml / g mole</td>
</tr>
<tr>
<td>b</td>
<td>constant (Equations 2.64, 2.65)</td>
</tr>
<tr>
<td>b</td>
<td>Chao constant (Equation 2.87)</td>
</tr>
<tr>
<td>C</td>
<td>constant (Equations 2.29, 2.40, 2.93, 2.94)</td>
</tr>
<tr>
<td>C</td>
<td>Antoine constant</td>
</tr>
<tr>
<td>C</td>
<td>third virial coefficient (Equation 2.33)</td>
</tr>
<tr>
<td>C</td>
<td>Redlich-Kister constant (Equations 2.83 to 2.86)</td>
</tr>
<tr>
<td>c</td>
<td>correction factor for Z in Equation 2.14, 2.15</td>
</tr>
<tr>
<td>c</td>
<td>constant (Equations 2.41, 2.64, 2.66)</td>
</tr>
<tr>
<td>c</td>
<td>Chao constant (Equation 2.87)</td>
</tr>
<tr>
<td>$c_{ij}$</td>
<td>constant (Equation 2.82a)</td>
</tr>
<tr>
<td>D</td>
<td>constant (Equations 2.29, 2.44, 2.94)</td>
</tr>
<tr>
<td>D</td>
<td>defined deviation (Equation 2.55)</td>
</tr>
<tr>
<td>D</td>
<td>Redlich-Kister constant (Equations 2.83 to 2.86)</td>
</tr>
<tr>
<td>$d'$</td>
<td>defined deviation (Equation 2.58)</td>
</tr>
<tr>
<td>$d^h$</td>
<td>function defined by Equation 2.57</td>
</tr>
<tr>
<td>d</td>
<td>Chao constant (Equation 2.87)</td>
</tr>
<tr>
<td>E</td>
<td>constant (Equations 2.29, 2.40, 2.94)</td>
</tr>
<tr>
<td>$E'$</td>
<td>constant (Equation 2.39c)</td>
</tr>
<tr>
<td>$E_i$</td>
<td>function defined by Equation 2.82a</td>
</tr>
</tbody>
</table>
constant (Equation 2.29)
reference state fugacity given by Equation 2.8
pure component liquid phase fugacity in the reference state
pure component vapour phase fugacity in the reference state
fugacity in the saturated vapour phase
parameters in the NRTL equations (i,j = 0,1,2)
temperature dependent parameters in the NRTL equations
excess free energy of mixing, cal / g mole
partial molal excess free energy of mixing, cal / g mole
heat of vapourisation at normal boiling point (Equation 2.26a, 2.31a)
excess enthalpy of mixing, cal / g mole
heat of vapourisation (Equation 2.69)
a function of T_r (Equation 2.25a)
a function defined by Equation 2.56
vapour phase association constant (mm Hg)^{-1} (Equations 2.11, 2.13, 2.16)
association constant in the pure gaseous associating substance, mm Hg (Equations 2.12, 2.17)
function defined by Equation 2.25b
ratio of molal heats of vapourisation of the lower boiling component to that of the higher boiling component (Equation 2.78)
molecular weight of the component constant (Equation 2.28)
total number of components
number of moles (Equations 2.70, 2.79)
index of refraction (Equations 2.36, 2.41)
atmospheric pressure
equilibrium pressure of nonassociating substance B (Equation 2.14)
vapour pressure, PSIA
pure component vapour pressure, mm of Hg
saturation pressure of pure component pressure
vapour pressure of pure associating substance, mm of Hg
corrected vapour pressure of the associating substance A, mm of Hg (Equation 2.10)
function defined by Equation 2.57a
gas law constant
excess entropy of mixing
temperature, °K
minimum boiling temperature, °K
temperature, °C
normal boiling temperature of the pure component, °C
volume
liquid molal volume, ml / g mole
function defined by Equation 2.47
excess volume of mixing, ml / g mole
gas volume
liquid and vapour phase composition ratios defined by Equations 2.95 and 2.96

mole fraction in the liquid and vapour phase respectively

compressibility factor (Equations 2.5, 2.6)

function defined by Equation 2.78

vapour phase imperfection coefficient

association factor in the vapour phase of the mixture (Equation 2.10)

association factor of nonassociating substance B (Equation 2.13)

constant (Equations 2.49a to 2.49c, 2.97)

empirical constant in NRTL equations

constant (Equations 2.48, 2.48c, 2.48d, 2.49a, 2.49b, 2.49d)

activity coefficient

constant (Equations 2.48, 2.48d, 2.49b)

constant (Equations 2.48b, 2.48d, 2.49g, 2.49h)

interaction coefficient defined by Equation 2.3a

finite difference

constant (Equations 2.49j, 2.49l)

association factor (Equation 2.38)

Wilson parameters defined by Equation 2.88

energy parameters in Wilson correlation
\[ \mu \] dipole moment, Debye units
\[ \gamma \] constant (Equations 2.49a, 2.49e)
\[ \rho \] density, ml / g mole
\[ \beta \] constant term (Equation 2.42)
\[ \tau \] constant (Equations 2.49a, 2.49f)
\[ \tau_{ij} \] parameters in the NRTL equations (1, j = 0, 1, 2)
\[ \pi \] system pressure, mm of Hg
\[ \varphi \] fugacity coefficient
\[ \varphi^0 \] fugacity coefficient of pure vapour at temperature T and saturation pressure \( p^0 \)
\[ \Theta \] variable defined by Equation 2.26c
\[ \Theta \] mean temperature difference for the system, °C
\[ \omega \] Pitzer's acentric factor
\[ \omega_H \] acentric factor for homomorph
\[ \chi \] Stiel's polar factor
\[ \Sigma \] summation
\[ \Sigma \] sum of the areas with no regard to sign in the Herington thermodynamic consistency test

Subscripts

1, 2, ..., i, j components, 1, 2, ..., i, j
A component A
As associating component
a carboxylic acid (Equation 2.18)
a, b, ..., x, y experimental points a, b, ..., x, y
atm atmospheric
B component B
B3  nonassociating component
b  at normal boiling temperature
corrected (Equations 2.10, 2.12)
c  critical property
c  calculated
e  experimental
H  homomorph
L  liquid
l  liquid
n  no of moles
p  paraffin (Equation 2.18)
r  reduced
T  constant temperature
v  vapour