

activity coefficient, f , γ

The activity coefficient f_B of a substance B in a liquid or solid mixture containing mole fractions x_B , x_C , ... of the substances B, C, ... is a dimensionless quantity defined in terms of the chemical potential μ_B of B in the mixture by:

$$RT \ln(x_B f_B) = \mu_B(\text{cd}, T, P, x) - \mu_B^*(\text{cd}, T, p)$$

where x denotes the set of mole fractions x_B , x_C , The activity coefficient γ_B of a solute B in a solution (especially a dilute liquid solution) containing molalities m_B , m_C , ... of solutes B, C, ... in a solvent A is a dimensionless quantity defined in terms of the chemical potential μ_B by:

$$RT \ln\left(\frac{m_B \gamma_B}{m^\ominus}\right) = \mu_B - \left\{ \mu_B - RT \ln\left(\frac{m_B}{m^\ominus}\right) \right\}^\infty$$

Source:

PAC, 1994, 66, 533 (*Standard quantities in chemical thermodynamics. Fugacities, activities and equilibrium constants for pure and mixed phases (IUPAC Recommendations 1994)*) on page 543

PAC, 1994, 66, 533 (*Standard quantities in chemical thermodynamics. Fugacities, activities and equilibrium constants for pure and mixed phases (IUPAC Recommendations 1994)*) on page 546

PAC, 1990, 62, 2167 (*Glossary of atmospheric chemistry terms (Recommendations 1990)*) on page 2171

PAC, 1996, 68, 957 (*Glossary of terms in quantities and units in Clinical Chemistry (IUPAC-IFCC Recommendations 1996)*) on page 960