

Inhibitor Containing Systems in Gas Hydrate Forming Phase Equilibria

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Inhibitors such as methanol and ethylene glycol are used to suppress gas hydrate formation if needed for flow assurance. Water solubility and incipient hydrate forming conditions are calculated first without inhibitors to check the possibility of hydrate formation and then amount of inhibitors are determined for applicable process conditions if needed. Uncertainties of data on inhibitor containing systems appear to be partly due to failure in defining thermodynamic systems. High viscosity of concentrated ethylene glycol solution at low temperatures is also suspected to be partially responsible for the uncertainty. In the present work reproducible experimental results were presented for well-defined ethylene glycol containing CO₂+ water mixtures. Recent modeling study of Lee et al. (Fluid Phase Equilib. 409, 2016; 136–149) in which a hydrogen bonding equation of state was used for liquid and vapor phases and Van der Waals–Platteeuw model for guest included hydrate phase was applied to the system with good agreements.