

Effect of Blending Ratio and Temperature on CO₂ Solubility in Blended Aqueous Solution of Three Blended Amine (MEA, DEA and TEA)

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Alkanolamine as a chemical solvent is widely used in an absorption process for removal of acid gases from natural, refinery and synthesis gases. Alkanolamines are classified into primary, secondary, and tertiary amine according to the number of amine group. Among them, MEA (Monoethanolamine) is widely used as the solvent for the CO₂ absorption process because of the rapid reaction rate and low cost. DEA (Diethanolamine) is has lower reaction enthalpy and is less corrosive than MEA. TEA (Triethanolamine) is expected to increase CO₂ loading ratio. CO₂ loading capacity, cyclic capacity, pH and mole fraction in liquid phase are calculated using Kent-Eisenberg model. The CO₂ solubility is experimented at 333.15K. Also, the liquid mole fraction is used to compare the simulation result and NMR data in a liquid phase. Calculations of simulation results were conducted by MATLAB® 2020a version.