THE ENHANCEMENT OF CO₂ ABSORPTION IN AQUEOUS SOLUTION OF K₂CO₃ WITH AN ADDITIVE

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ABSTRACT

The absorption process with K₂CO₃ reaction and an activator MDEA (Methyl Diethanolamine) is widely used in chemical industries to separate CO₂ from its mixture. Benfield process is one of CO₂ removal processes which it commonly used. This process consist of absorption and stripping processes for CO₂ gas. Vapor liquid equilibrium data for system CO₂-K₂CO₃-MDEA-H₂O are needed for design and operation of CO₂ removal unit. In this research, vapor liquid equilibrium system CO₂-K₂CO₃-MDEA-H₂O was measured experimentally with absorption using a wetted wall column. CO₂ content in both vapor and liquid phases were analysed by titration and orsat analyser. The results show that the addition of MDEA 2% in K₂CO₃ 30% solution at the temperatures 30°C and 50°C can improve CO₂ loading with average of 10.8% and 13.3% respectively. The equilibrium partial pressure of CO₂ was found to be 66.7% and 59.98% at the temperatures of 30°C and 50°C respectively.

Key words : Absorption, Benfield, CO₂ removal, VLE
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