

The influence of 2-amino-2-methyl-1-propanol and tri(hydroxymethyl)aminomethane on CO₂ absorption kinetics and mass transfer in ammonia solution

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The main issue in CO₂ absorption using aqueous ammonia is to reduce ammonia vaporization. The methods to suppress the ammonia vaporization have been proposed using 2-amino-2-methyl-1-propanol and tri(hydroxymethyl)aminomethane. However, there are little researches on the effects of using additives with ammonia solution for CO₂ absorption. Therefore, this study investigated the influences of these additives in aqueous ammonia on CO₂ absorption kinetics and mass transfer using wetted wall column. The reaction rate constants in additive-containing absorbent were higher than those in additive-free solution, which were under 10wt% of the ammonia concentration region. However, flipped results were observed for the ammonia concentration region above 10wt%. The overall mass transfer coefficients showed similar tendencies as the reaction rate constants. With these results, we concluded that CO₂ absorption kinetics and mass transfer under low ammonia concentration region can be enhance by these additives in aqueous ammonia.