



Modeling of CO₂ Capture Process with Aqueous Ammonia Solutions

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Abstract: This paper is studying modeling of carbon dioxide capture in the air with the aqueous ammonia solution. Capture of CO₂ has been carried out in a pilot plant. The experiments were carried out at 25⁰C temperature and atmospheric pressure with 5% concentration of ammonia solution. The goal is to establish the main parameters of mass-transfer in a chemical absorption in the packing column. Hydrodynamics measurements were carried out in a pilot plant, first blank column and later in packed column with grid structured packing. The parameters of the grid structured packing that were determined are: porosity, equivalent diameter, shape factor and the most important specific surface of filling. The loading point, the point at which the liquid holdup started to increase, was determined. The gas velocity was taken lower than the flooding velocity. For each test performed was measured flow of liquid, its density, gas flow, the concentration of carbon dioxide in the entry and exit and barometric pressure. According to measurements carried out, were defined key parameters of mass-transfer: coefficients of mass-transfer for both phases and the rate of conversion. Results obtained were treated and was studied the dependence between parameters.

Key words: *ammonia, carbon dioxide, kinetics, absorption, packed column*

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