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INFLUENCE OF ETHYLENEDIAMINE CONTENT OVER PERFORMANCE OF CO₂ ABSORPTION INTO POTASSIUM CARBONATE SOLUTIONS

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Abstract

In the last years, various experimental works investigated the efficiency of different type of promoters over CO₂ absorption. The absorption process is recommended for removal of acidic contaminants from flue gases and for obtaining new products. The absorption with chemical reaction (chemisorption) can be done in: potassium carbonate solution promoted with amines; aqueous solution of the amines; ammonia solution, hydroxide solution etc. Chemisorption in potassium carbonate solution with the addition of amines, as promoters, at 343-353 K has larger used due to the following advantages: lower cost, easy regeneration, nontoxic, noncorrosive, etc. In this paper the post-combustion CO₂ capture in potassium carbonate solution promoted by amines is presented. It is known that physico-chemical fluid property values, crucial in the modeling of the reactor, are necessary to be determined for particular systems. The aim of this study is to measure the densities and viscosities of potassium carbonate solution with the addition of ethylenediamine and to evaluate the performance of the promoter content and temperature over the enhancement factor into a bubbling reactor. Experimental results showed that the enhancement factor values between 1.8 and 3 could be achieved, demonstrating the possibility of using ethylenediamine in bubbling absorption reactor.

Key words: absorption, carbon dioxide, ethylenediamine, potassium carbonate, properties

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