

Kinetic / VLE set-up High pressure

Purpose

Acid gases can be removed from industrial gas streams with a chemical and/or physical solvent. In this experimental set-up both the reaction kinetics, as the acid gas solubility (VLE) can be determined for different gas treating processes. The absorption process will take place in a stainless steel Büchi reactor, which is connected with a high intensity stirrer (gas and liquid phase). The reactor is double walled and connected with a heating bath.

Acid gases

- carbon dioxide, hydrogen sulphide, carbonyl sulphide, mercaptans (methyl- upto pentylmercaptans)

Solvents

- (alkanol)amines, alkaline salts, amino acid salts, ammonia, physical solvents

Picture



Specifications

100 mbar < P < 70 bar
5 < T < 120 °C
Charge quantity: ± 500 ml

Results

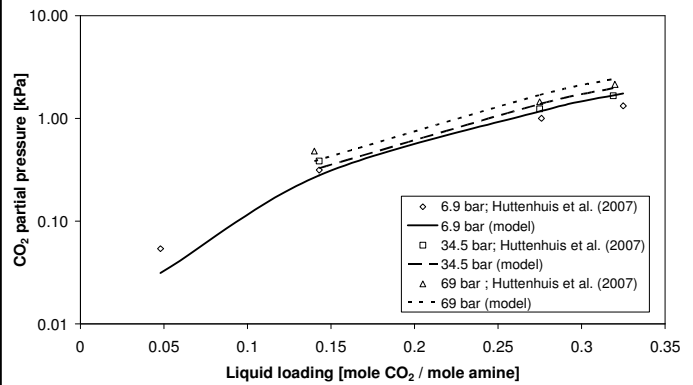


Figure: Influence of methane partial pressure on CO₂ solubility in 35 wt.% MDEA at 10 °C (ref. 1)

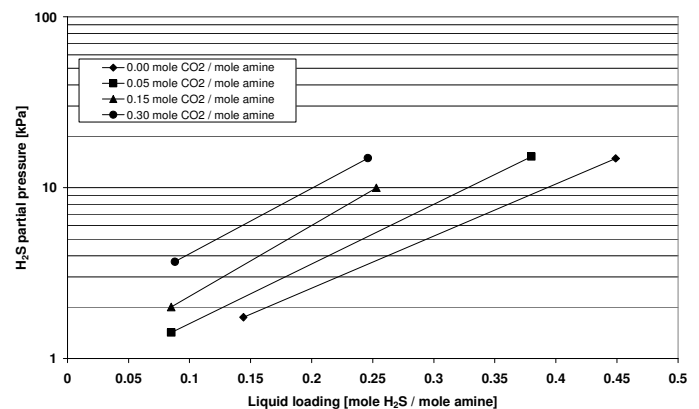


Figure: Influence of the CO₂ liquid loading on the H₂S solubility in 35 wt.% MDEA 298 K and 69 methane partial pressure (ref.2)

Ref.1 P.J.G. Huttenhuis, N.J. Agrawal, E. Solbraa, G.F. Versteeg, Fluid Phase Equilibria 264 (2008) 99-112.

Ref.2 P.J.G. Huttenhuis, N.J. Agrawal, G.F. Versteeg, accepted for publication in Industrial & Engineering Chemistry Research

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