

## The corrosion characteristics of carbon steel in CO<sub>2</sub>-saturated single and mixed alkanolamine solutions

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The gas processing plants using alkanolamines have encountered the corrosion problem resulting in unscheduled downtime, production losses and decrease in equipment life. Although it is impossible to eliminate it, it can be minimized by investigating its characteristics and mechanism. Compared with single component system, the corrosion characteristics in mixed alkanolamine system were not observed, though it can enhance CO<sub>2</sub> absorption ability. In this study, the corrosion of carbon steel in single and mixed alkanolamine system was investigated by electrochemical measurement techniques using polarization resistance and Tafel extrapolation method. The experiments were conducted with carbon steel (15.8 mm diameter) in CO<sub>2</sub>-saturated solutions at 35–65°C. The corrosion-product layers formed on carbon steel were analyzed by X-ray diffraction (XRD). The effects of alkanolamine concentration and the addition of other alkanolamine on the composition of layer and corrosion rate were compared.