



Evaluation of a polyether-based polycarboxylate as precipitation inhibitor for calcium carbonate and calcium sulfate

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ABSTRACT

A potential polymeric scale inhibitor, acrylic acid–succinic anhydride–methallyl methoxy polyethylene glycol (AA–HPEL), was synthesized by radical polymerization. The inhibition ability of new antiscalant to calcium carbonate and calcium sulfate are better than current commercial inhibitors which are listed in this paper. The static inhibition rate on calcium carbonate and calcium sulfate can reach up to 93.6% and 100% at dosage levels of 8 and 5 mg/L, respectively. Influences of the solution property (temperature, ions concentration and pH value) on inhibition efficiency were also researched. Scanning electron microscopy and X-ray diffraction analyses were used to investigate the impact of the scale inhibitor on the calcium scales crystal.

Keywords: Copolymer; Scale inhibitor; Calcium carbonate; Calcium sulfate

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