



Effect of surfactants on gypsum scale inhibition by polymeric inhibitors

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ABSTRACT

The inhibition of gypsum precipitation by homo- and copolymers has been examined in aqueous solution. It has been found that polymer performance as gypsum inhibitor depends upon polymer architecture. The influence of surfactants containing different functional group on gypsum inhibition has also been investigated. Inhibition data on the evaluation of surfactants suggest that compared to polymers, surfactants perform poorly as gypsum inhibitors. Results on the impact of cationic surfactant (e.g., cetyltrimethyl ammonium chloride, CTAC) suggest that CTAC exhibits an antagonistic effect on the efficacy of polymers. It has also been found that cationic polymer (e.g., diallyldimethyl ammonium chloride) shows much stronger antagonistic effect than CTAC on the performance of polymers used as gypsum inhibitors. The antagonistic behavior shown by cationic surfactant and cationic polymer on the performance of polymers has been explained in terms of cationic–anionic interactions.

Keywords: Gypsum; Scale; Inhibition; Polymers; Surfactants

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