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## **Effect on surfactant solution stability of high saline brine water**

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The behaviour of surfactant and polymer solutions intended for tertiary oil recovery was investigated in the presence of various formation waters. The aim of the experimental work was to examine the dilution behaviour of solutions containing the surfactant SURF1 and the polymer POL1 in model formation waters with different salinities. These particular surfactant and polymer were selected based on their suitability for high-salinity environments.

Turbidity, transmittance, and stability tests were performed across a range of concentrations. The results indicate that divalent metal ions have a substantial impact on the solubility and stability of both surfactant and surfactant-polymer solutions. Significant changes in transmittance were observed during dilution at concentrations below 0.16 g/L, while precipitation occurred at higher concentrations. These findings provide valuable insights for optimising surfactant-based enhanced oil recovery (EOR) processes, particularly under conditions involving stratified waters with varying salinities.