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## The Effect of water salinity on silica dissolution rate and subsequent formation damage during chemical EOR process

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During chemical EOR process, silicate scale has significant impact on the well productivity, rod pumps and other surface facility. The formation of silicate scale is a complex process involving silica dissolution, polymerization and subsequent precipitations. This paper presents the results of static and dynamic experiments that describe the effect of injection water salinity on silica dissolution rate and subsequent impact on formation permeability. Various synthetic brine salinities were utilized to determine the change in the silica dissolution rate using sandstone core samples. Results from static experiments indicated that 6.5% of the original silica was dissolved with the highest brine salinity of 60,000 ppm. Additional results demonstrated that the silica dissolution ratio has a significant effect on the initial core permeability. Using 60,000 ppm brine and 2.5% alkali, the initial permeability was reduced from 25.3 mD to 20.3 mD. The corresponding permeability reduction ratio for this case was 19.76%, which is equivalent to silica dissolution rate of 15.99%. Finally, it is found that the brine salinity and pH has a pronounced impact on silica dissolution rate during chemical EOR process.

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