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Enhancing Recovery by reducing Surfactant adsorption on oil wet carbonate reservoirs.

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Abstract:The objective of this investigation is to reduce surfactant adsorption from limestone surface by Ethelene Oxide (EO) to improve oil recovery. EO as a nonionic surfactant with low critical micelle concentration has been injected along with SDS (sodium dodecyl sulphonate), to increase hydrphilicity. That led to desorb SDS from oil wet surfaces like saturated limestone reservoirs.

Critical Micelle Concentration (CMC) of SDS was found to be 500ppm by conductivity test, which was chosen to reduce interfacial tension between oil and brine. Three layer emulsion with SDS was observed wettability of limestone from emulsion tests. It has been flooded after water injection under core flooding. SDS was observed to adsorb onto limestone surface through core analysis. For reducing this effect, EO was introduced with different concentrations to alter the hydrophilic properties of SDS. The recovery of crude from core has improved upto 65% of pore volume by desorbing SDS.

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