

Alkali-Free Surfactant-Polymer (SP) Flooding for Heavy Oil

Description: Increase oil production of heavy oil reservoirs while minimizing operational issues using alkali free surfactant-polymer flooding.

Application: Heavy oil reservoirs where thermal methods are not applicable. From Primary to Tertiary recovery.

Results: Oil recovery of a Canadian Heavy oil greater than 90 % ROIP (after polymer flooding) has been obtained at lab scale with the injection of a surfactant-polymer (SP) slug.

Issues

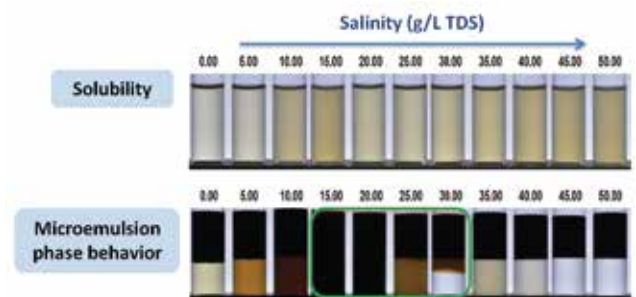
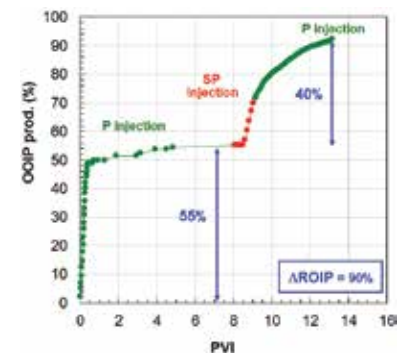
- ▶ Chemical EOR is far to be a mature technique for Heavy and Extra-Heavy oil
- ▶ In-situ Surfactant generation with Alkali is attractive but raises scaling, corrosion and logistics concerns
- ▶ Heavy oil mobilization and transport in the reservoir by mean of SP/ASP are challenging to predict by numerical simulation

Need

- ▶ Surfactant/polymer formulation ensuring good mobility control and low interfacial tension.
- ▶ To be able to perform relevant economical feasibility assessments by reservoir simulation

Objective

- ▶ To develop SP solutions for selected representative cases
- ▶ To improve the predictivity of simulations models for mobilization and transport of heavy oil
- ▶ To determine, on selected representative cases, if secondary or post-polymer flooding SP injections are viable
- ▶ To improve Polymer Flooding.



Reference: SPE 165234, SPE 169715, SPE 169697