

Additives for Steam Foams



Description:

Surfactants are used as additives to generate steam foams in thermal EOR. Steam foams improve the combinations of additives for steam foams.



Application:

SAGD and continuous or cyclic steam injection.



Results:

Thermal stability of specific surfactants has been demonstrated up to 280°C in anaerobic conditions. Optimized formulations exhibit remarkable foam stability and mobility reduction up to 250°C.

Proposed Workflow

1 Using high temperature, high pressure and anaerobic conditions, various surfactants are screen-tested for thermal stability of chemical structures.



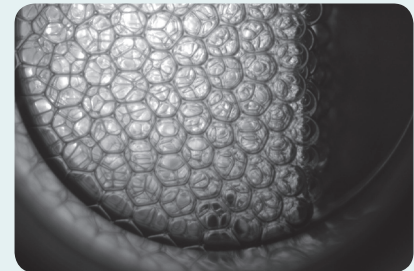
2 Surfactants are combined to optimize foam stability of formulations as a function of foam half life time and resistance to oil up to 200°C and 30 bars.



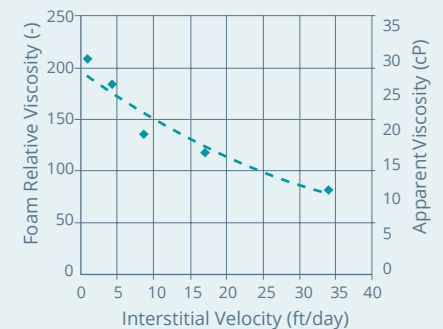
4 Coreflood experiments are carried out to check mobility reduction factor in native cores and in the presence of crude oil.



3 Customs high pressure/ high temperature sapphire view cell and sandpack setups are utilized to measure foam life time and mobility reduction at reservoir pressure and steam temperature.



High temperature foam obtained with optimized formulation at 200 °C



Interstitial Velocity (ft/day)
Steam Foam viscosity measured in coreflood experiment at 220°C in native core and in the presence of 12% residual oil saturation.

References: SPE16729, SPE35692, SPE170129, SPE174469, SPE179806, SPE181160, SPE190455, SPE191190.

An Alliance between:

