

## Potential of Polysorbate20 surfactant for enhanced oil recovery

### Abstract :

Surfactant for enhanced oil recovery (EOR) has been applied for many years, particularly in the 1970's and 1980's when the technology was put on a sound scientific basis. Unfortunately, the economic reality of the process performance in field trials has precluded widespread deployment of this technology. Many surfactants have been evaluated for their ability to recover incremental oil and this study is focusing on Polysorbate20 as a candidate for this EOR application. This laboratory study aims to determine the characteristics of Polysorbate20 surfactant, in particular for its capabilities to create low interfacial tensions (IFT) with n-alkane hydrocarbons. Certain formulated surfactant and cosolvent exhibit low interfacial tension (IFT) values of 0.01 dyne/cm or less versus n-octane. This surfactant was tested for EOR using coreflood tests on Berea sandstones. Laboratory tests had confirmed that the useful property which is to reduce the IFT by using Polysorbate20 formulations can be largely independent of both salinity and temperature. Preliminary studies also suggest Polysorbate20 has only modest adsorption between 0.10 to 0.11 mg/g onto crushed sandstone and between 15.33 to 17.62 mg/g onto kaolinite clay.