

ABSTRACT

THE EFFECT OF ADDITION OF INHIBITOR COMPOUNDS FROM STARFRUIT LEAF EXTRACT AND NALCO 72990 AS SCALE INHIBITORS OF CALSIUM SULFATE (CaSO_4)

By

MIFTAHUDIN ROMLI THOHIR

Scale has become a serious problem in industry, especially in oil and gas industries. Therefore, in this study, it has been carried out the addition of inhibitor compounds from starfruit leaf extract and NALCO 72990 to reduce the negative impacts caused by the scaling of calcium sulfate. The addition of scale inhibitors of calcium sulfate (CaSO_4) used *seeded* and *unseeded experiment* methods on CaSO_4 growth concentrations of 0.15, 0.2, and 0.25 M and various concentrations of inhibitor at 50, 150, and 250 ppm.

Based on qualitative analysis using Scanning Electron Microscopy (SEM), it shows that the morphology of CaSO_4 crystal without inhibitor is greater than the presence of inhibitor. Whereas quantitative analysis using a Particle Size Analyzer (PSA), it shows that the particle size distribution of CaSO_4 crystals is smaller with the addition of inhibitor. The optimum concentration of starfruit leaf extract in inhibiting of formation of CaSO_4 scale is at a concentration of 250 ppm to CaSO_4 growth solution at 0.15 M. The inhibitor effectiveness (%) to inhibit scale formation in the *seeded* and *unseeded experiments* is 22.86 and 17.27 %, respectively. While, at the addition of 250 ppm NALCO 72990, the inhibitor effectiveness (%) to inhibit scale formation is 100 %.