

ABSTRACT

UTILIZATION OF BETEL NUT SEED EXTRACT AS INHIBITOR OF CALCIUM CARBONATE (CaCO₃) SCALE FORMATION WITH *UNSEEDED EXPERIMENT METHOD*

By

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In this research, it has been conducted addition of betel nut seed extract on the calcium carbonate (CaCO₃) scale using *unseeded experiment* method at various concentrations of growth solutions from 0.050 to 0.100 M. The various concentrations of inhibitor added were around 50 to 250 ppm. The results based on data analysis using Microsoft Excel that indicate the optimum concentration of inhibition in inhibiting formation and growth of CaCO₃ 0.050 M scale is 250 ppm with percentage of inhibitor ability 20%. This is supported by qualitative analysis using Scanning Electron Microscopy (SEM), which generally showed a significant difference in the surface morphology of CaCO₃ scale. The quantitative analysis using a Particle Size Analyzer (PSA) showed that the distribution of particle size of CaCO₃ crystals with the addition of inhibitor is smaller than without the addition of inhibitor based on the median and the average value. Particle size of CaCO₃ scale without the addition of inhibitor has the median value of 0.30 μm and average value of 1.28 μm. After the addition of inhibitor, it has the median value of 0.22 μm and average value of 0.98 μm.

Keywords : CaCO₃, Inhibitor, Betel Nut.