

## **ABSTRACT**

### **STUDY OF TDMACMKR COMPOUND AND GAMBIR EXTRACT AS AN INHIBITOR OF CALCIUM CARBONATE (CaCO<sub>3</sub>) SCALE FORMATION WITH UNSEEDED EXPERIMENT METHOD**

**By**

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This research aimed to study the addition effects of TDMACMKR compound and gambier extracts as inhibitors of calcium carbonate (CaCO<sub>3</sub>) scale formation at different concentrations, to know the effectiveness of TDMACMKR compound and gambier extracts (Padang and Palembang) as inhibitor of CaCO<sub>3</sub> scale formation by analyzing their morphological using Scanning Electron Microscopy (SEM), and particle distribution using Particle Size Analyzer (PSA), and compare the effectiveness of TDMACMKR compound and gambier extracts as inhibitor of CaCO<sub>3</sub> scale formation at the optimum concentration of inhibitor.

The results showed that the TDMACMKR compound and gambier extracts (Padang and Palembang) can be used as inhibitor to inhibit the growth of crystal nuclei crust at optimum concentration of 0.1 M CaCO<sub>3</sub> with the highest percent effectiveness of the inhibitor of TDMACMKR compound with concentration of 150 ppm was 17.91 %, while the gambier extracts (Padang and Palembang) at concentration of 500 ppm were 13.36 % and 17.75 %, respectively. The SEM results showed that the morphology of CaCO<sub>3</sub> scale changes as indicated by the change in the crystal size where it became smaller and closely packed after the addition of TDMACMKR compound and gambier extracts (Padang and Palembang) and the PSA results showed that CaCO<sub>3</sub> particle size distribution obtained without the addition of inhibitor with the mean value of 18.79 μm, after the addition of inhibitor of TDMACMKR the mean obtained was 6.055 μm, while in the addition of gambier extracts (Padang and Palembang) the mean value were 2.996 μm and 3.615 μm, respectively.