



DOLOMITE GRESIK AS HETEROGENEOUS CATALYST IN BIODIESEL PRODUCTION FROM *JATROPHA CURCAS* OIL

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ABSTRACT

Some solid base has been widely used as catalysts in many reactions such as potassium-alumina, solid alumina- K_2CO_3 , and strontium oxide. However this catalyst is a synthesis catalyst and has a lack of in the economic terms. One of the natural minerals containing CaO, but rarely used as heterogeneous catalysts is dolomite. Dolomite is very abundance in Indonesia especially in Gresik, East Java. This research was conducted to study the catalytic activity of dolomite Gresik as heterogeneous catalysts in the production of biodiesel from *Jatropha curcas* oil. In this study, CaO solid base catalysts derived from Gresik dolomite were calcined at $850^{\circ}C$. The result of characterization by X-ray diffraction (XRD) showed that the formation of CaO in presence of characteristic peaks of CaO catalysts is at $2\theta = 32,2^{\circ}$; $37,3^{\circ}$; $53,8^{\circ}$; and $64,1^{\circ}$. The basic site tests of catalyst were obtained number of basic sites of 109,9 mmol/g and the range of the basic strength sites of $7,2 < H_{+} < 18,4$. The catalyst activity was tested in the transesterification of *Jatropha curcas* oil and methanol with a molar ratio of methanol/oil 30:1, a catalyst amount of 1 wt% based on the weight of the oil, reaction temperature $65^{\circ}C$, and reaction time for 1, 2, 3, 4, and 5 hours. Methyl ester obtained the highest results on reaction time 5 hours with a yield of 18,0 %.

Keywords: Biodiesel, CaO, catalytic activity, Gresik Dolomite