Abstract

Base Oil plant from Jatropha Oil (Jathropa Curcas) by using esterification process has the capacity 40000 ton / year. Base Oil widely used in industrial lubricants. Locations plant in Pasuruan, East Java, selected based on the availability of raw materials. Plant operated for 330 days / year.

Manufacturing base oil consists of three phases namely degumming process or neutralization, hydrolysis, and esterification. Phase I, jatropha oil by degumming process at a temperature of 70 °C with the addition of H₃PO₄ to be separated gum from oil. Phase II, Oil hydrolyzed to convert triglycerides into fatty acids which took place at a temperature of 250 °C and a pressure of 30 bar. In this reaction obtained at 99% conversion. Phase III, the results of hydrolysis in fatty acid esterification to convert into base oil TMP ester by reacting the fatty acid with TMP (Tri Methyl Propane) using ZnCl₂ as catalyst. This reaction takes place in batch operation with temperature and pressure respectively 240 °C and 10 bar.

To reach the base oil production capacity above, this requires a major feedstock Jatropha oil 113 792 kg / day. Needs auxiliaries, namely H₃PO₄ 113.792; TMP 16154.75; ZnCl₂ 3126.79 each in kg / day. Needs of the utility plant, which is 375 sanitary water, water coolers 0.00724; make up water 687.21 each in m³/day.

Keyword: Base Oil, Jatropha, esterification, ester TMP.