

ABSTRACT

The National Research Agenda (2009) is implied the improvement of bio-fuel including biodiesel. Recently, Indonesia as one of the biggest rubber producer (3,414 million ha in 2007) and South Sumatera Province contributes 19.15 % of the total area. The rubber plantation has a big potency to produce biodiesel. There is rubber plantation in Muara Enim Regency, South Sumatera Province that is not used properly yet. It becomes a big potency to utilize the rubber seed for biodiesel production to increase the economic value of the raw material (rubber seed).

The research objectives are to study the utilization of rubber seed for biodiesel production, particularly to obtain the effect of temperature, mixing velocity and catalyst percentage to the density, viscosity and total conversion of biodiesel. The biodiesel characteristic test was conducted to know if the rubber seed biodiesel fulfill the biodiesel standard. The performance engine test was also performed to obtain if B10 and B20 fulfill the diesel engine performance.

There are several steps of biodiesel production process: rubber seed preparation, rubber seed oil extraction, degumming, esterification, transesterification, separation and biodiesel purification. Temperature of 40, 50, and 60°C, mixing velocity of 200, 300 and 400 rpm, and catalyst percentage of 0.5, 0.75, 1% are set as independent variables. Density, viscosity and total conversion are defined as dependent variables.

The biodiesel process production reached the optimum condition (highest total conversion) at temperature, mixing velocity, and catalyst percentage of 50°C, 300 rpm and 0,5% respectively. The biodiesel characteristic test revealed that the rubber seed biodiesel fulfill the Biodiesel SNI No. 04-7182-2006 refers to ASTM D 6175 & EN 14214. The engine performance test showed that B10 and B20 give good performance as well as given by diesel (B0).

Key words : rubber seed, biodiesel