

ABSTRACT

Increased vehicle numbers in Indonesia are the reason for this research, based on the census conducted by the Central Statistics Agency (BPS), the data obtained shows that the population of all vehicles in Indonesia rose to 133,617,012 units from 126,508,776 units in 2018 [1]. The purpose of this research is to utilize used oil into diesel fuel using HCl and NaOH, determine the effect of a mixture of HCl and NaOH solutions, the comparison of acid levels between before and after the used oil refining process, and to determine the effect of using clay in the used oil precipitation process. Used oil can be reprocessed into fuel with a purification process with the aim of separating base oil and additives and residues [2] both physically and chemically. This research was conducted through three main stages, namely (1) precipitation, (2) filtration, (3) chemical and physical treatment. The treated oil was then tested for specifications including specific gravity, kinematic viscosity, and calorific value. The results of the specification testing are: (1) the specific gravity value obtained is best or close to the characteristics of diesel fuel (0.815-0.870), namely in the variation of 4% HCl and NaOH and the variation of 6% HCl and NaOH with the value obtained is 0.84 (2) the kinematic viscosity value obtained is best or close to the characteristics of diesel fuel (2,000 mm²/s-5,000 mm²/s), namely at a percentage of 4% HCl and NaOH with a value of 2,721 mm²/s (3) the heating value obtained is best or close to the characteristics of diesel fuel (43,000 mj/kg-45,900 mj/kg), namely at a percentage of 4% HCl and NaOH with a value of 45,870 mj/kg.

Keywords: Base Oil, Hydrochloric Acid, Sodium Hydroxide, Specific gravity, Kinematic Viscosity, Calorific Value.