PRODUCTION OF BIOETHANOL FROM MOLASES USING FERMENTATION PROCESS AND ADDITION STEARIC ACID

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ABSTRACT

Solid bioethanol is the liquid bioethanol fuel added into solid oil material residue known as stearit acid. Molasses as the raw material in this experiment is used because the sugar content of 40-55%, makes not complicated production process.

This experiment consisting of three stages are fermentation stage, distillation with moleculer sieve stage and mixing of the stearic acid. The first stage is fermentation with 3 variables, H_2O content of 17%, 59% and 72% with addition yeast Saccharomyces Cerevisiae of 0.115%, urea of 0.25% and NPK of 0.03% at a temperature of 30°C, 1 atm of pressure, for 3 days and pH of 5. At second stage, the fermentation results are distilled with moleculer sieve at a temperature of 78°C, pressure of 1 atm and for 5 hours. A good result of the distillating is reached at variable moisture content of 72% and then added stearic acid with 5 variables, 300g, 375g, 450g, 525g and 600g at 75°C temperature conditions, pressure of 1 atm and for 15 minutes.

The ethanol content from fermentation processes at the three variables of moisture content are 0%, 7% and 8% volume whereas the ethanol content from the distillate are 0%, 56% and 95%. The heating value of 95% ethanol content at 5 variables of addition stearic acid are 10268.04 kcal/kg, 10475.50 kcal/kg, 10700.91 kcal/kg, 10925.11 kcal/kg and 11170.52 kcal/kg. The best long ignition of solid bioethanol reached at the additional of 600 g stearit acid is 8’40”, while the long ignition for the spiritus and the charcoal briquettes are 7’3” and 4’5” respectively.

Keywords: Molasses, Fermentation, Stearic Acid, Solid Bioethanol