ABSTRACT

The palm coconut (Elaeis guineensis, jacq) is one of non migas commodity which exported as primary or secondary product. In Indonesia, the oil palms production has increased annually. Now days Indonesia has produce 11.1 million ton per year and it is announced as second position as the greatest exporter of oil palms. It is predicted that on 2010 Indonesia will become the greatest exporter with capacity up till 12.3 million ton per year. From the total production of oil palms, 60% of it was exported in the primer form and 40% left was intermidiate product.The added value of palm oil can be improved by converting to surfactant. The demand of surfactant in the world in 2004 was 11.28 million ton per year with more as increament 3% annually and Indonesia it self still import the entire surfactant demand ± 45.000 ton. Type of surfactant that can be produced from palm oil is polyoxyethylene mono-digliserid (POE-MDG).

The aim of the research is to find out the optimum condition in glycerolysis. In addition, to study the parameters ethoxylation expecially ratio of MDG : polyethelene glycol (PEG) to characteristic (physical and chemical properties) of POE-MDG and getting surfactant have high surface activity.

Glycerolysis of oil palms used MgO as catalyze and solvent n-butanol.The process was conducted in variation of temperature, ratio of glycerol : oil and ratio of n-butanol : oil. MDG product from glycerolysis process, then was ethoxylated to obtain the surfactant (POE-MDG). Ethoxylation process of MDG was conducted by adding MgO catalyze, which conducted in variation of MDG : PEG (polyethylene glycol) ratio.

Optimum condition of the glycerolysis was the ratio of glycerol : oil = 3.5; temperature 70^0 C, pressure 1 atm, speed of agitation 400 rpm, MgO concentration 4% from total weight, and reaction time 4 hours , with the conversion reaction of 0.7726. MDG : PEG = 4 is optimum ratio of ethoxylation process, which reashed out temperature 180 ^{0}C, pressure 1 atm, speed of agitation 400 rpm, MgO concentration 2% from total weight and reaction time 120 minutes, with acquirement of POE equal to 9.20%. Result test of physical properties show that the ratio assign value surface tension of 22,2026 dyne / cm with viscosity 412.73 Cp and density 1.128 gr / cm^3. Based on the Forrier Transform Infra Red (FTIR)'s gave some peaks which show the presence of C-O-O ; C-O-C; and C-OH boundings, at the wave number of 1743.65 cm^{-1} ; 1242.16 cm^{-1}, and 1458.18 cm^{-1}, respectively. The bounding show of compound of fatty acid etoxylate was present.From emulsion stability test indicated that the surfactant POE-MDG has emulsifying effect.

Key words: palm oil, glycerolysis, ethoxylation, polyoxyethylen.