STUDY OF METHANOLYSIS PROCESS FOR MAKING METHYL ESTER SULFONATE AS EMULSIFIER USING SULFONATING AGENT NaHSO₃

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Abstract

CPO (crude palm oil) processing in Indonesia at present is still limited in making cooking oil and a small portion of oleochemicals products such as fatty acid, fatty alcohol, soap, methyl ester, and stearin. Product diversification efforts are required to increase the economic value so that the palm oil processing become more variety product. The objectives of this research are to obtain the conditions methanolysis processes, specifically temperature and concentration of methanol for making methyl ester sulfonate (MES) with the best characteristic and to know the effect of methanolysis process concern to methyl ester sulfonat (MES) characteristics. This research started by doing methyl ester sulfonation with sulfonating agent NaHSO₃ with mol ratio 1:1.5 sulfonation temperature 109°C for 4.5 hours. And then doing methanolysis for 1 hour with concentration variables are 25%, 35%, 45%, 55% and temperature variables are 40, 50, 60, and 70°C. Furthermore, doing neutralization with NaOH 45% until the pH being neutral. Based on analysis of research result, the best product of methyl ester sulfonate was obtained at 70°C of methanolysis reaction temperature and methanol concentration 55%. In this condition, the characteristics of methyl ester sulfonate are : interfacial tension value 12.11 dyne/cm, emulsion stability 86.19%, and detergency which is indicated by the turbidity level 0.259 A. The MES product will be able to use as emulsifier because it can decrease the interfacial tension of oil-water mixing, increase the emulsion stability, and increase detergency as well.

Keywords: methyl ester sulfonate, methanolysis, emulsifier