

ABSTRACT

THE INFLUENCE OF REACTANT MOL H₂SO₄ RATIO AND SULFONATION REACTION TIME TO THE CHARACTERISTIC OF METHYL ESTER SULFONAT (MES) PRODUCT FROM MEDIA OF ETANOLISIS PKO (*PALM KERNEL OIL*) BY PRODUCT

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Methyl Ester Sulfonat (MES) is one of anionic surfactant that has a function as an active material to lowering the surface tension of solution which is made through sulfonation process by using chemical reagent that contains a sulfate or sulfite cluster. MES is produced from media of crude PKO (lower layer) by product that is the etanolysis PKO (*Palm Kernel Oil*) reaction result. The aims of this study are to find out the methyl ester reactant mol and H₂SO₄ ratio and the sulfonation optimum reaction time to produce the best characteristic of MES and to find out the interaction between methyl ester reactant mol and H₂SO₄ ratio and also sulfonation reaction time to the characteristic of MES that is resulted. The research method was a complete randomized block design (CRBD) in factorial with 3 replications. The first treatment factor was the reactant mol comparison between Methyl Ester and H₂SO₄ 80% with the ratio 1:1, 11 (K1), 1:1, 25 (k2), 1:1, 43 (K3), and 1:1, 67(K4) those all are equal with ratio of methyl ester to

H₂SO₄ 0,9(K1),0,8 (K2),0,7 (K3), and 0,6 (K4). The second treatment factor was the sulfonation time, they were 30 minutes (W1), 50 minutes (W2), 70 minutes (W3) and 90 minutes (W4). Then the data was continuing processed with the orthogonal polynomial comparison with 1% and 5% real degree. The results of this research showed that as bigger as the H₂SO₄ reactant mol ratio along with reaction sulfonation time will decrease the characteristic of MES that is 61,033% emulsion stability and it can increase acid number about 4,863 mg KOH/g in 1:1,67 reactant mol ratio and 90 minutes reaction time. The best characteristic of MES was produced in reactant mol ratio 1:1,67 with 50 minutes of sulfonation reaction time that produced emulsion stability was 67,467%, the density number was 0,914, acid number was 4,133 mgKOH/g, and index refraction number was 1,4333 and also the visual color of MES was yellow and a slightly gel was produced.

Key words: Methyl ester sulfonat(MES), reaction time, ratio of reactants mol