

## **SINTESIS ASAM ETOKSI LIGNOSULFONAT DARI LIMBAH BATANG TEMBAKAU SEBAGAI SURFAKTAN**

Faris Hermawan  
12/331362/PA/14625

### **INTISARI**

Sintesis asam etoksi lignosulfonat dari limbah batang tembakau untuk digunakan sebagai surfaktan telah dilakukan. Tujuan penelitian ini adalah mengisolasi lignin dari batang tembakau dan memanfaatkannya sebagai bahan pembuatan surfaktan.

Isolasi lignin dari batang tembakau dilakukan dengan cara refluks menggunakan larutan NaOH dan Na<sub>2</sub>S. Lignin selanjutnya dialkisasi dengan dietil sulfat, dilanjutkan dengan sulfonasi menggunakan NaHSO<sub>3</sub>. Produk isolasi dianalisis dengan spektrofotometri FT-IR, sedangkan alkilasi dan sulfonasi dianalisis dengan spektrofotometri FT-IR dan SEM-EDX. Uji karakteristik surfaktan dilakukan dengan uji penentuan konsentrasi kritis misel (KKM) dengan metode turbidimetri, pengukuran kestabilan busa, uji penentuan kestabilan emulsi dan indeks emulsi dengan cara penggojokan.

Hasil penelitian diperoleh lignin berupa padatan berwarna coklat dengan randemen sebesar 16,5%. Hasil alkilasi diperoleh etoksi lignin berupa padatan berwarna coklat kehitaman dengan randemen 83%, adapun pada proses sulfonasi diperoleh asam etoksi lignosulfonat berupa padatan berwarna coklat dengan randemen 70%. Uji kestabilan busa menunjukkan volume busa paling tinggi didapat pada konsentrasi 15 g/L dan busa stabil hingga 60 menit. Nilai KKM sebesar 1,6 g/L, indeks emulsi campuran air-surfaktan-minyak goreng sebesar 68%, sedangkan indeks emulsi campuran air-surfaktan-bensin sebesar 10% dan stabil dalam 4 hari.

Kata kunci: surfaktan asam etoksi lignosulfonat, alkilasi, sulfonasi, uji surfaktan.

## **SYNTHESIS OF ETHOXY LIGNO SULFONIC ACID FROM TOBACCO STEM WASTE AS SURFACTANT**

Faris Hermawan  
12/331362/PA/14625

### **ABSTRACT**

Ethoxy ligno sulfonic acid from tobacco stem waste is used as surfactant has been synthesized. The aims of this research are isolating lignin from tobacco stem and converting the isolated lignin to ethoxy ligno sulfonic acid which could be used as surfactant.

Lignin was isolated from tobacco stem with reflux method using NaOH and Na<sub>2</sub>S, then the isolated lignin was reacted with diethyl sulfate to do the alkylation reaction and with NaHSO<sub>3</sub> to do the sulfonation reaction. All of the synthesized products were analyzed using FT-IR spectrometer and SEM-EDX. Characterization of the surfactant was done by determining the critical micelle concentration (CMC) using turbidimetry method, measurement of foam stability, determination of emulsion stability and emulsion index.

It was obtained a brown solid that is predicted as lignin. The yield of tobacco stem isolation was 16.5%, the yield of alkylation was 83% and the yield of sulfonation was 70%. The result of foam stability assay showed that the highest foam volume was achieved at surfactant concentration of 15 g/L which was stable up to 60 minutes. The CMC value was 1,6 g/L. Emulsion index of water-surfactant-frying oil mixture was 68%, meanwhile the emulsion index of water-surfactant-gasoline was 10% and both stable for 4 days.

Key words: ethoxy ligno sulfonic acid surfactant, alkylation, sulfonation, surfactant assay