

ABSTRAK

PEMBUATAN CMC DARI LIMBAH DAUN NANAS DENGAN METODE KARBOKSIMETILASI SEBAGAI PENGEMULSI PEMBUATAN CAT

(Wahyu Utama, 72 Halaman, 10 Tabel, 14 Gambar, 3 lampiran)

Selulosa merupakan senyawa utama penyusun dinding sel tumbuhan yang dapat dimanfaatkan menjadi Carboxy Methyl Cellulose (CMC), turunan selulosa yang biodegradable dan tidak beracun. Umumnya, CMC diproduksi dari bahan baku mahal seperti kapas dan kayu, namun alternatif ramah lingkungan dapat diperoleh dari limbah daun nanas yang mengandung selulosa tinggi (69,5–71,5%). Proses pembuatan CMC meliputi tahap alkalisasi menggunakan NaOH dan karboksimetilasi menggunakan $\text{ClCH}_2\text{COONa}$. CMC banyak digunakan di berbagai industri, termasuk sebagai pengemulsi dalam cat emulsi karena kemampuannya mengikat air dan menjaga kestabilan campuran. Penelitian ini bertujuan untuk memanfaatkan limbah daun nanas sebagai bahan baku CMC, menentukan kondisi optimum produksi CMC sesuai SNI 06-3726-1995, serta mengamati peran CMC sebagai pengemulsi dalam pembuatan cat emulsi. Berdasarkan analisa yang dilakukan di dapatkan kondisi optimum dari pembuatan CMC yaitu pada variasi $\text{ClCH}_2\text{COONa}$ 12 gram dengan waktu reaksi 3,5 jam dengan kode sampel C3 meliputi: pH 7, viskositas 52,60 cP, derajat substitusi 0,88, kadar NaCl 10,28%, dan kemurnian CMC 89,72%. Serta CMC memiliki pengaruh yang sangat signifikan terhadap viskositas, waktu kering dan daya rekat cat yang didapatkan dari hasil analisa bahwa semakin banyak jumlah pengemulsi yang di tambahkan viskositas, waktu kering dan daya rekat juga meningkat.

Kata kunci: cat emulsi, *carboxy methyl cellulose* (CMC), selulosa, daun nanas

ABSTRACT

PREPARATION OF CMC FROM PINEAPPLE LEAF WASTE BY CARBOXYMETHYLATION METHOD AS EMULSIFIER FOR PAINT MAKING

(Wahyu Utama, 72 Pages, 10 Tables, 14 Figures, 3 appendices)

Cellulose is the main compound of plant cell walls that can be utilized into Carboxy Methyl Cellulose (CMC), a biodegradable and non-toxic cellulose derivative. Generally, CMC is produced from expensive raw materials such as cotton and wood, but an environmentally friendly alternative can be obtained from pineapple leaf waste which contains high cellulose (69.5-71.5%). The process of making CMC includes alkalization using NaOH and carboxymethylation using ClCH₂COONa. CMC is widely used in various industries, including as an emulsifier in emulsion paints because of its ability to bind water and maintain mixture stability. This study aims to utilize pineapple leaf waste as raw material for CMC, determine the optimum conditions for CMC production according to SNI 06-3726-1995, and observe the role of CMC as an emulsifier in the manufacture of emulsion paint. Based on the analysis carried out, the optimum conditions for the production of CMC were obtained in the variation of ClCH₂COONa 12 grams with a reaction time of 3.5 hours with sample code C3 including: pH 7, viscosity 52.60 cP, degree of substitution 0.88, NaCl content 10.28%, and CMC purity 89.72%. As well as CMC has a very significant effect on viscosity, dry time and paint adhesion obtained from the results of the analysis that the more the amount of emulsifier added the viscosity, dry time and adhesion also increases.

Keywords: *emulsion paint, carboxy methyl cellulose (CMC), cellulose, pineapple leaf*