

Catur Harsito, NIM: I0410014, 2017. **Pengaruh Penambahan Antifoam Terhadap Kualitas Lapisan dan Sifat Fisik Cat Berbasis Air dengan Pewarna Alami.** Pembimbing I: Prof. Dr. techn. Suyitno, S.T., M.T. Pembimbing II: Dr. Eng. Syamsul Hadi, S.T., M.T. Tugas Akhir Program Sarjana Teknik Mesin. Universitas Sebelas Maret Surakarta.

Abstrak

Penelitian ini bertujuan untuk mengetahui pengaruh penambahan antifoam terhadap kualitas lapisan dan sifat fisik cat berbasis air dengan pewarna alami. Bahan baku yang digunakan pada penelitian kali ini adalah kayu secang, kayu tingi dan air sebagai pelarut. Produksi pewarna dilakukan dengan cara ekstraksi pewarna menggunakan reaktor dengan kapasitas 25 L yang kemudian pewarna diubah menjadi serbuk dengan menggunakan proses *spray drier*. Pengujian FT-IR dilakukan untuk mengidentifikasi gugus fungsi senyawa kimia pada hasil *spray drier* (serbuk). Pengujian *UV-Vis* dilakukan untuk menguji sifat serapan terhadap warna yang tampak. Pencampuran cat dilakukan dengan menggunakan *magnetic stirrer*. Dari pengujian FT-IR teridentifikasi gugus fungsi =C-H, C-O-C, C-OH, C=C dan C=O pada serbuk pewarna Brazilein. Hasil uji *UV-Vis* menunjukkan warna merah dari secang dengan puncak serapan terdapat pada 400-600 nm. Penambahan *antifoam* berpengaruh pada pengurangan cacat *crater*. Persentase cacat *crater* terendah adalah 0,09% pada variasi *antifoam* 4%. Penambahan *antifoam* 4% menghasilkan cat dengan viskositas 3583,3 mPas, daya tutup 8,40 m²/kg, padatan total 53,9%, waktu kering sentuh 25,41 menit, kering keras 48,56 menit dan tingkat *glossy* 75,3 GU. Kualitas cat berbasis air dengan pewarna alami telah memenuhi Standar Nasional Indonesia.

Kata kunci: *Spray drier, Brazilein, Crater, Cat, Water-Based*

Catur Harsito, NIM: I0410014, 2017. **Effect of Addition Antifoam on Layer Quality and Physical Character of Water Based Paint with Natural Dyes** . Counselor I: Prof. Dr. Techn. Suyitno, S.T., M.T. Advisor II: Dr. Eng. Syamsul Hadi, S.T., M.T. Final Project Undergraduate of Mechanical Engineering. Sebelas Maret University Surakarta.

ABSTRACT

The objective of this research is to know the effect of addition antifoam on layer quality and physical character of water based paint with natural dyes. The raw materials used in this were sappan wood, ceriops tagal, and water as solvent. Production of dyes was done through dye extraction by using reactor with the capacity of 25L. Then, the produced dyes were transformed into powder with spray drier process. FT-IR test was conducted to identify the functional groups of chemical compounds of the yielded powder. Next, UV-Vis test was also held to examine the absorptive properties toward visible colors. The paint mixture was done with magnetic stirrer. Based on the FT-IR test, the functional groups =C-H , C-O-C , C-OH , C=C and C=O were identified on the powder of the natural dyes of Brazilein. The result of the UV-Vis test shows that the absorption peak of red color generated from sappan wood was found at 400-600 nm. The supplementation of anti foam had an effect on the crater defect reduction. The lowest percentage of crater defect was 0.09% at the anti foam variation of 4%. The supplementation of anti foam as much as 4% produced paint with the viscosity of 3583.3 mPas, surface coverage of 8.40 m²/kg, total solidity of 53.9%, touch-dry time of 25.41 minutes, hard-dry surface time of 48.56 minutes, and glossy level of 75.3 GU. The quality of water-based paint with natural dyes fulfilled the Indonesia National Standard.

Keywords: *Spray drier, Brazilein, Crater, Paint, Water-Based*