

## **PENGARUH HIDROGEN PEROKSIDA TERHADAP PEMBENTUKAN EPOKSIDA PADA LATEKS RENDAH PROTEIN**

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### **ABSTRAK**

Epoksidasi karet alam terdeproteinasi (EDPNR) dibuat dengan mereaksikan lateks dengan hidrogen peroksida sebagai donor oksigen dan asam format sebagai katalis. Sebelum reaksi epoksidasi, lateks diberi perlakuan pendahuluan berupa deproteinasi. Bahan baku lateks yang digunakan memiliki spesifikasi DRC 30% untuk reaksi epoksidasi dan deproteinasi. Tahapan deproteinasi menggunakan metode kimiawi dengan senyawa urea 0,1%, SDS 1% dan etanol 0,025 % direaksikan pada waterbath shaker selama 1 jam, lalu disentrifugasi 2 kali. Hasil deproteinasi dianalisa kadar proteinnya dengan mikrokjeldahl. Kemudian, sampel diepoksidasi dengan reaksi epoksi waktu 4 jam; suhu 50 C dengan reagen variasi volume  $H_2O_2$  75 ml, 100 ml, 125ml, 150 ml, dan 175ml terhadap 100 gram bahan baku lateks serta ditambahkan asam format dengan volume 15 ml. Produk akhir epoksi dianalisa dengan karakterisasi FTIR dan FTIR kuantitatif untuk diketahui mol epoksi yang terbentuk dan dilihat morfologinya dengan optilab. Hasil menunjukkan deproteinasi lateks mampu menurunkan kadar protein sebesar 97,23%. Epoksida yang terbentuk pada volume 75 ml  $H_2O_2$  dengan kadar epoksi 35,59% dan terus meningkat signifikan. Hasil tertinggi pada variasi volume 125 ml  $H_2O_2$  pada kadar epoksi 40,50%. Penambahan volume  $H_2O_2$  diatas 125 ml menyebabkan reaksi pembukaan cincin epoksi akibat reagen berlebih sehingga kadar epoksi menurun. Morfologi karet pada variasi volume  $H_2O_2$  tidak terlihat adanya perbedaan disebabkan karena terbukanya struktur partikel karet sehingga karet tidak lagi menggumpal meskipun reaksi epoksidasi telah berjalan. Deproteinasi karet alam memungkinkan bahwa waktu reaksi epoksidasi masih dapat dilanjutkan diatas empat jam dengan hasil epoksi yang terus meningkat.

Kata kunci : Epoksidasi, Deproteinasi, Hidrogen Peroksida, Ring opening

## **EFFECT OF HYDROGEN PEROXIDE ON FORMATION OF EPOKSIDE AT LOW PROTEIN LATEX**

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### **ABSTRACT**

Epoxidation of latex prepared by reacting the latex with hydrogen peroxide as an oxygen donor and formic acid as a catalyst. Before the epoxidation reaction, latex pretreated by deproteinization. latex raw material were used has a specification DRC 30% for the epoxidation reaction and deproteinization. The deproteinization run using chemical methods with urea compound 0.1%, SDS 1% and 0.025% ethanol reacted in water bath shaker for 1 hour, then centrifuged 2 times. Deproteinazation products analyzed for protein content by mikrokjeldahl. Then, the sample were epoxidized with epoxy reaction time of 4 hours; temperature of 50 C with the reagent variation volume of H<sub>2</sub>O<sub>2</sub> 75 ml, 100 ml, 125ml, 150ml, and 175ml of 100 grams of raw materials latex and formic acid is added with a volume of 15 ml. Epoxy final product was analyzed by FTIR and FTIR quantitative characterization for the unknown mole of epoxy that forms and views its morphology with optilab. Results showed deproteinized latex reducing levels of protein by 97.23%. Epoxide group formed in the volume of 75 ml H<sub>2</sub>O<sub>2</sub> with epoxy content of 35.59% and continues to increase significantly. top results in variations in the volume of 125 ml H<sub>2</sub>O<sub>2</sub> at the rate of 40.50% epoxy. The addition volume above 125 ml H<sub>2</sub>O<sub>2</sub> causing epoxy ring opening reaction due to excess reagent so that the epoxy levels decreased. Morphology rubber on volume variation H<sub>2</sub>O<sub>2</sub> does not look any difference due to the opening of the rubber so that the rubber particle structure no longer form a clot though epoxidation reaction has been running. Deproteinized natural rubber allows that the epoxidation reaction time can be continued over four hours with epoxy results continue to rise

**Keywords :**Epoxidation, Deproteinization, Hydrogen Peroxide, Ring opening