5 Int. Macromolecular Coll. Gra
Set. 20-24, 1992

SENSITIZER ON RADIATION VULCANIZATION OF NATURAL RUBBER LATEX

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National natural rubber latex (60 % DRC) was vulcanized by gamma rays from ^{60}Co (dose rate of 1,5 kGy/h) in the absence and the presence of sensitizer. The oxidation reactions occur during natural rubber latex irradiation in presence of air. IR spectra showed the formation of -C=O (1770 cm^{-1}). The effect of sensitizers was studied relating to maximum tensile strenght. The vulcanization dose was 200 kGy and the maximum tensile was 22 MPa for natural rubber latex.

The sensitizer reduced the irradiation dose for vulcanization. Three sensitizer systems were studied: a) CCl_4 / potassium laurate (surfactant agent); b) n-butyl acrylate / KOH; c) n-butyl acrylate / KOH / t-butyl hydroperoxide (co-sensitizer). Both n-butyl acrylate and t-butyl hydroperoxide tend to destabilize natural rubber latex. The most effective stabilizer is OH.

The vulcanization dose and maximum tensile strenght for each sensitizer were: 40 kGy/19 MPa; 15 kGy/20 MPa and 9 kGy/26 MPa respectively. The sensitizing efficiency of n-butyl acrylate / KOH / t-butyl hydroperoxide was so high that vulcanization dose decreased 10 times and the maximum tensile strenght increased a little when we compared with latex without sensitizer. Cross linking degree obtaining by CCl_4 testing was the same for each sensitizer and it was about 4. Surgical gloves made by this process will be showed.

Work supported by CNPq and Fábrica de Látex São Roque.