

Thesis Title A Study of Processing Aid Action in Rubber
Processing
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ABSTRACT

The present works involved the study of the effects of 12 processing aids on the mixing process of natural rubber and carbon black. The objective was to understand the mechanism of processing aid action on the mixing process. The knowledge obtained might be used to design and develop other efficient and cheap processing aid for rubber mixing. The study was made in 78 ml. internal mixer. The effect of mixing parameters (temperature, rotor speed) were also studied.

The results obtained showed that good processing aids for mixing of rubber with carbon black should be capable of reducing the viscosity of rubber by 20%. As the results, Black Incorporation Time (BIT) was reduced by 20%, Torque at BIT by 25%, mixing time by 25% and final mixing torque by 25% when using 5 phr of processing aids. Optimum temperature for mixer, was 65-70 °C and optimum rotor speed was 60-70 rpm. Besides, it was also found that processing aids could help improve the quality of the extrudates.

The results of the present study suggested that good processing aids should process the ability to reduce the elasticity of the rubber, for efficient incorporation of carbon black as well as the viscosity, for good dispersion and distribution of the filler.