CONTROLLING THE MATURITY OF PRE-VULCANIZED NATURAL RUBBER LATEX USED FOR SUPPORTED GLOVE MANUFACTURING

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ABSTRACT

Pre-vulcanized natural rubber latex is the major raw material used for production of industrial supported gloves. A process by which crosslinking of the rubber takes place inside particles dispersed in the aqueous serum of the latex can be defined as the latex pre-vulcanization. This latex is subsequently used for dipping to make latex dipped products. Desired crosslinking density of maturation level is needed for manufacturing relevant product. In Industry level when supported glove manufacturing, time taken for the maturation is additional cost and also need to wait until it gets required maturity level for the production. Use of latex compound too early or too late would result in under-curing and over-curing respectively. Due to over maturation of compounds there is high wastage of old compound. In order to overcome that problems inhibition of vulcanization at required level is important. Pre-vulcanization inhibitors (PVI) was used in this study to inhibit the maturity. Even though the salicylic acid and the benzoic acid are named as PVI they did not inhibit the maturity of NR pre-vulcanized latex. CTP (N-(cyclohexylthio) phthalimide) which is commonly used in dry rubber industry, has successfully inhibited the maturity maximally for 5 days at the 0.8, 0.9 and 1.0 phr. After 5 days, the pre-vulcanized latex was started to mature gradually. A type of liquid dithiocarbamate accelerator (DTC730) was used as the accelerator in this study. Glove samples were dipped and the abrasion was tested after 156, 204 and 252 hours after adding CTP at 0.8, 0.9 and 1.0phr level. According to the results, best abrasion resistance among dipped gloves were recorded after 156 hours at 0.8 phr level of CTP.

Key Words: Pre-vulcanized natural rubber latex, maturation, pre-vulcanization inhibitors.