

**COMPARATIVE STUDY OF PHYSICO-CHEMICAL
PROPERTIES OF PB 86 AND RRIC 121 CLONES OF
*Hevea brasiliensis***

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ABSTRACT

Natural rubber (NR) is a widely used biopolymer, but the variability of its properties is a great disadvantage. The purpose of this study was to investigate the characteristics of physico-chemical properties of latex and coagulated rubbers (unfractionated unbleached crape rubber) prepared from selected rubber clones planted in Sri Lanka. The clone, PB 86 was selected for this study and RRIC 121 clone was used as the control. Properties of NR latex, raw rubber, latex film and gum rubber compound were determined accordance with International Organization of Standards (ISO) specifications. Concentrated latex and unfractionated-unbleached crape rubber from these clones were obtained and latex films and gum rubber compound were prepared respectively. Significant variations ($p < 0.05$) of latex, raw rubber, latex film and gum rubber compound properties among clones were found. Dry rubber content, total solid content and non-rubber content were high in control latex samples. A correlation between Mooney viscosity and Wallace plasticity index (P_o) was also found. They were high in PB 86 clone. The increase in Mooney viscosity values was consistent with the increase in P_o values. The Plasticity retention index (PRI) value was also high in PB 86 clone. Physico-mechanical properties of the samples: compression set and hardness values were high in RRIC 121 and rebound resilience was high in PB 86 gum rubber compound. It can be concluded that satisfactory physico-mechanical properties were obtained in PB 86 clone that was chosen in the study. Further, the tensile properties PB 86 fulfills the specification for ISO 37: 2011 whereas those of clone RRIC 121 were found to be lower.

Keywords: gum rubber compound, Natural rubber, raw rubber properties, physico-mechanical properties, rubber clone