PROPERTY VARIATION OF CENTRIFUGED LATEX AT DIFFERENT MATURITY STAGES IN GLOVE MANUFACTURING

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ABSTRACT

Natural Rubber Latex is one of the most important polymer material which is widely used for manufacturing of gloves, balloons and other latex products. Due to the low DRC in NRL (about 33%), it is concentrated up to 60% DRC by using various techniques in order to use it as an efficient raw material. Centrifugation is one way of concentrating NRL. Generally centrifuged latex (CL) is matured for 21 days before using it in the production process of manufacturing house hold gloves. If there is a possibility of using CL for manufacturing gloves before or after 21 days it may be beneficial for the current production process. Therefore, a study was done to identify the changes of both chemical and physio mechanical properties of the centrifuged latex with different maturity periods (5, 15,25,35,45,55 and 65 days). The chemical properties of centrifuged latex, *viz* alkalinity, TSC, DRC, VFA, MST, viscosity and KOH number were measured at different maturity stages. Tensile strength, tear strength, 100% modulus, 300% modulus, elongation at break and aging properties were measured as physical properties by using the compounded latex at different maturity stages in accordance with the standard glove formulation. Each test was replicated 3 times and they were arranged in CRD.

Results indicated that all chemical and physical properties except non rubber content values are significantly different at the different maturity times. Viscosity was decreased with the maturity time, while alkalinity, MST, KOH number and VFA number were increasing. Non rubber content was always bellow the standard range of the centrifuged latex (<2). Further, the results showed that ideal chemical and physio mechanical properties were showed during 15 to 65 days maturity of the centrifuged latex. Therefore, it is not needed to delay the production until 21 days maturity. The tensile strength too was in between 18-22 MPa throughout the study period and it was a better value compared to that of the present house hold glove manufacturing (10 MPa).And also the maximum tear strength has been recorded up to 35 days and this revels that, even after 21 days up to 35 days matured latex can be used for glove manufacturing. Therefore, there is a possibility of using centrifuged latex between 15 to 65 days maturity range for the house hold glove manufacturing.

Key words: Centrifuged latex, Chemical properties, Maturity time, Physio-mechanical properties