

NON-ENZYMATIC DEPROTEINIZATION OF NATURAL RUBBER LATEX

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Natural rubber latex (NRL) is a preferred raw material for latex product manufacturers. However, presence of non-rubbers especially allergenic proteins has inhibited its use in several products and applications. In this study, natural rubber latex was treated with aluminum hydroxide dispersion to bind both extractable (EP) and rubber bound proteins in the latex. The treated latex has superior performance compared to the concentrated latex commercially being used. The advantages include ultra low allergenicity with improved color, absence of rubber odor, improved physicochemical properties, improved gas (air and helium) retentions etc. The future potential of the treated latex is also discussed.

Keywords: Aluminium hydroxide, Deproteinization, Natural rubber latex

INTRODUCTION

Natural rubber latex (NRL) contains a small amount of non-rubbers, which include a variety of proteins that have played a role in the biosynthesis and stabilization of rubber latex. The latex of *Hevea brasiliensis* is a complex colloidal dispersion of polyisoprene rubber particles and non-rubber components in an aqueous phase. Some adverse effects of these non-rubbers are well documented. These non-rubber constituents continue to play a role in the processing behavior, long-term stability, and catalyzing the crosslinking reactions of the rubber through free radical and ionic mechanisms resulting in covalent bonds. The protein sheaths, which may be amphoteric in nature, facilitate the movement of

curatives into latex particles by providing an intermediate transport mechanism from the water phase to the rubber phase. The removal of the non-rubbers in treated NRL slows down the maturation process, resulting in a longer "pot life."

Aluminum hydroxide-treated natural rubber latex

Aluminum hydroxide treatment found to remove the proteins found in the regular natural rubber latex. For removing the proteins, a dispersion of aluminum hydroxide is introduced in to the latex at the processing stage. The aluminum hydroxide binds with the non-rubber particles, which are subsequently removed during centrifugation.