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**DEVELOPMENT AND PROPERTY EVALUATION OF
GRANULAR NATURAL RUBBER FOR
VALUE ADDED APPLICATIONS**

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Abstract

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1.4.4 Market

Thesis submitted in partial fulfilment of the requirements for the Degree of Master of Science of the Faculty of Applied Sciences, University of Sri Jayawardenapura, Nugegoda, Sri Lanka.

By

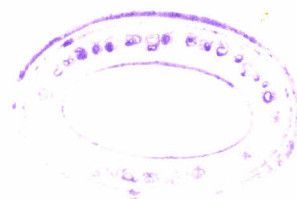
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ABSTRACT

A method for the preparation of granular rubber using a styrene/acrylic co-polymer as the encapsulating agent is described. Two types of lattices, a 1:1 blend of compounded latex & low ammonia TMTD/ZnO stabilised centrifuged latex and low ammonia TMTD/ZnO stabilised centrifuged latex, were used. The method consists of encapsulating the lattices with styrene/acrylic co-polymer by varying the percentages (i.e. 10%, 30% and 50%), followed by coagulation with alum. The reagglomeration of rubber particles was prevented by adding a partitioning agent. The resulting granules were vacuum pumped and air dried. Based on the percentage of polyisoprene content granular rubber with polyisoprene content of over 50% were selected for further study. The two types of granular rubber samples were formulated to the ACS-1 formula, and their rheological and technological properties were evaluated. Also the two virgin granular rubber samples were blended with different proportions of RSS-SLR 20 and formulated to ACS-1 and rheological and technological properties were determined. Analysis of rheological behaviour of the vulcanizates with LATZ and compounded latex have shown that as the percentage of granular rubber of the blends increases the rate of vulcanization increases. The results show that physical properties such as tensile strength, tear strength and abrasion volume, improve by the incorporation granular rubber from LATZ and compounded latex and with a blend of above granular rubber with RSS-SLR 20. This suggests that the presence of compounded latex in the medium improves the reinforcing effect introduced by the acrylic polymer when incorporated into the elastomer.



It could therefore be suggested that when compounded latex is present in latex medium, the encapsulation process is taking place with already partially crosslinked or chemical incorporated rubber particles. Once the encapsulation process takes place it could be difficult the chemical ingredients to react with the rubber particles forming strong crosslinks. Hence the physical properties of the systems with the compounded latex tend to show improved properties.

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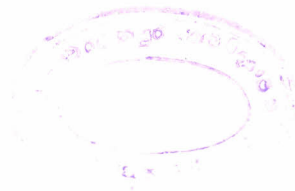
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