

**EFFECT OF PREVENTOL ON PHYSICAL
PROPERTIES OF CREPE RUBBER COAGULATED
USING FORMIC ACID AND OXALIC ACID**

A dissertation submitted to the
Faculty of Animal Science and Export Agriculture
Uva Wellassa University
In partial fulfillment of the requirements for the award of
Bachelor of Science in Palm & Latex Technology and Value Addition

By
THIMBIRIPOLAGE SAMEERA JAYARATHNA

**Palm & Latex Technology and Value Addition Degree Programme
Faculty of Animal Science and Export Agriculture
Uva Wellassa University of Sri Lanka**

2014

ABSTRACT

The properties of the raw rubber directly affect to the manufacturing process and the quality of the end product. The raw rubber properties are varied with the microbial activities during the manufacturing process. But, preventol BIT 20 D is used as an eco friendly, biodegradable, long term and reliable preservative agent against the microbial activities in the painting industry, building industry presently. Therefore, preventol may be effective in controlling the microbial activities in crepe rubber too. Meantime, formic acid (CH_2O_2) is used as the common coagulant in the crepe rubber manufacturing process. But, oxalic acid ($\text{C}_2\text{H}_2\text{O}_4$) may also show the similar performance together with a whitish color in the crepe rubber manufacturing process. Therefore, a study was conducted to disclose the effect of preventol under two different coagulants (formic acid and oxalic acid). The experiment was carried out as factor factorial complete randomize design with four treatment combinations with three replicates in each.

Then, the raw rubber properties and mechanical properties were assessed against the different treatment levels. The results revealed that Plasticity Retention Index (PRI) and Volatile Matter Content (VMC) of preventol applied samples had negative significant difference with preventol not applied samples (control). But, the obtained value was higher than the recommended minimum PRI value of crepe samples having both oxalic acid and formic acid with preventol. Further, formic acid with preventol gave higher PRI value than the oxalic acid with preventol. Moony viscosity and stress relaxation do not significantly differ with the controls (with or without preventol) of both formic and oxalic acid coagulants. Tear strength, tensile strength, hardness, abrasion and rebound resilience of preventol applied samples had the positive significant different with control samples. Aged tensile strength and tear strength of preventol applied samples should be higher values when compared these with the aged control samples at both formic and oxalic coagulants. And also, there was no any significant difference between both formic and oxalic coagulant types for tear strength, tensile strength, volatile matter content. Therefore, it can be said that preventol can be used as a preservative agent against the microbial attraction for crepe rubber with some improvements in the mechanical properties.