REDUCTION OF STRESS WHITENING IN POLYPROPYLENE HUB CAP

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 and Latex Technology and Value Addition

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2018

ABSTRACT

High impact polypropylene copolymers have better balance between impact and stiffness because of incorporation of elastomers. But it creates stress whitening on polymer surface. Polypropylene copolymers show stress whitening than Polypropylene homo polymers. Stress whitening occurs on polymeric surface after an impact or pressure or tension is applied to a plastic material, but it does not show immediately after the force. In this study, Stress whitening occurs on polypropylene hubcap surface and HDPE (High Density Polyethylene) and LLDPE (Linear Low Density Polyethylene) used to making plastic composites. There was no stress whitening during the production, it shows after assembling. Polypropylene hub caps were prepared by addition of 5% to 20% level of HDPE and LLDPE. Bending test was done successfully for all samples to determine the maximum pressure can be absorbed by hubcap. Tensile specimens were prepared using injection molding and tensile test (kg/cm^2) was done to identify ultimate tensile strength and elongation at break. Hardness (Shore D) was checked of all prepared tensile specimens and compared with current product. Dimensions (mm) was checked of all prepared hub cap and compared with current product. Finally dynamic test (EN 12530) was done for tyres after assembling all samples of hubcaps. The improvement in absorb pressure, tensile strength, and hardness as well as dimensions are documented and discussed for Polypropylene composites. According to the results LLDPE added samples have better properties than HDPE added samples.

Key words: Stress whitening, polypropylene hubcap, Bending test