

**THE EFFECT OF CHARACTERIZATION AND
MECHANICAL PROPERTIES OF COFFEE POWDER FILLED
NATURAL RUBBER COMPOSITES**

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ABSTRACT

THE EFFECT OF CHARACTERIZATION AND MECHANICAL PROPERTIES OF COFFEE POWDER FILLED NATURAL RUBBER COMPOSITES

Coffee is one of the most consumed beverages in the world and is the second largest traded commodity after petroleum. Coffee contains a natural fibre which can reduce the usage of carbon black in rubber composites. The coffee was crushed and sieved to obtain more fine particles. This modification has made it possible to be used as reinforcing filler in natural rubber as low cost and environmentally friendly alternatives filler. The characterisation and mechanical properties of natural rubber filled coffee powder were studied with varied filler loading from 0 phr to 40 phr filler loading. The rubber, coffee powder and other compounding ingredients were compounded by using internal mixer and two roll mill for homogenous process. In this researched, reinforcement of NR with coffee powder at various filler loading was studied in order to determine the optimum coffee powder filler loading. The cure time of rubber compound was determined by using Moving Die Rheometer. For mechanical properties, hardness testing, tensile testing, abrasion testing and swelling testing has been conducted and the result showed that coffee powder filled natural rubber provided improvement to the composites.