

## **Investigation of Applicability of Coconut Shell Powder as a Filler in Natural Rubber Composites**

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Applicability of coconut shell powder(CSP) as a filler in natural rubber(NR) based composites was investigated. Incorporation of CSP into NR composites was done in two different forms; crude CSP, purified CSP, either with or without a coupling agent(silane). Two series of NR compounds containing 80phr of filler were prepared. The compounds of the first series was prepared by varying the carbon black content from 0-80pphr with no CSP present. In the second series the ratio of carbon black/CSP was varied from 80/0 to 20/60. The first series used as the reference series. NR composites filled with different forms CSP separately were compared with equivalent composites filled with carbon black. The processing characteristics and the curing behavior of the composites were determined by Gottfert rheometer. The mechanical performances of the vulcanisates were determined by analyzing their tensile strength, tear strength, hardness, resilience and abrasion resistance. Replacement of carbon black with CSP in NR compounds was found to improve certain properties like hardness, elongation and resilience of resultant vucanisates when present in low concentrations. Overall performance of purified CSP was found to be better than that of crude CSP. The use of silane as a coupling agent slightly improved the properties of the vulcanistes.