TYRE DUST MANAGEMENT BY INCORPORATING TO A TYRE TREAD COMPOUND

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ABSTRACT

Pneumatic tires are in high demand in the automotive industry. Pneumatic tires are rubber tires filled with compressed air that enhances the tires loading capacity and improves the overall performance of the vehicle. The disposal problem of waste rubber is predominant and has become a potential problem worldwide. Tyre buffing dust is a major rubber waste in tire companies. So for the company CEAT Kelani International Tyres pvt (Ltd.) also buffing dust became a major waste material & an environmental hazardous matter when it disposes.

This research aimed to investigate the possibilities of buffing dust, how to use the wastes of tire buffing dust in an efficient way to do the waste management in the company & to reduce the material cost for the ingredients. A series of tests were carried out by changing the quantity of adding buffing dust. Addition of buffing dust was done by reducing the overall raw materials check whether how showing the original properties of a tread compound. Incorporation of buffing dust was done for four stages as 5 phr, 10 phr, 15 phr and 20 phr.Laboratory testings were done to evaluate the properties related to standard tread sample. Incorporation of buffing dust was carried out under three replicates separately for 5phr, 10phr, 15phr & 20phr ones in four days. Experimental design used was Complete Randomized Design (CRD) and data were analyzed using Minitab 16 statistical software. The average of standard tread samples for the performance characteristics were, Tensile strength- 185kgcm^{-2}, Elongation at break- 506, Modulus- 92 kgcm^{-2}, Hardness-62 shore A, Abrasion Loss- 31.2 cm^{3}.When consider the average values of the buffing dust incorporated samples most properties have maintained 5phr and 10phr while some properties by 15phr.

When considering the material cost it get reduce from Rs.337.97 to Rs.312.38 when incorporating buffing dust from 5phr-15phr.

Key words: Tread Compound, Buffing dust, Waste management