INVESTIGATE THE CAPABILITY OF MANUFACTURING PNEUMATIC TIRE TREAD COMPOUND MADE WITH DIFFERENT RSS & BR BLENDS

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ABSTRACT

There are many factors which affect the performance of the tyre tread compound in a pneumatic tyre manufacturing process. In this study, it was focused on an existing issue which has led to higher complicated processing problems and it takes comprehensive cost due to the use of high amount of BR. Therefore, there is need to find out a suitable blending ratio of RSS and BR, which can minimize the BR usage, maintain/enhance the properties with compare to the 50/50 blending ratio of the tyre tread compound. The performances of newly developed rubber blends were analyzed by preparing different ratios of RSS and BR with the volume ratios of 100/0- (BR00), 85/15-(BR15), 70/30-(BR30), 60/40-(BR40), 50/50-(BR50) , 40/60-(BR60), and 25/75-(BR 75). Each blend was processed into sheeted form by following standard manufacturing procedure. The effects of blend ratio on processing characteristics are Tensile strength, Modulus, Elongation at break, Hardness and Abrasion resistance. Further, performance characteristics *viz* Mooney viscosity (Mu), Highest torque (ML), Lowest torque (MH), Scorch time, and Cure time were evaluated and compared with current blending ratio (50/50).The results of the study revealed that the blends of BR 0, BR 15, BR 30 and BR 40 treatment levels shown the better performance with compared to the control sample (BR 50). Moreover, the compounds made from blends of BR 30 and BR 40 treatment levels are better with compared to the control sample within the track of specifications. Finally, it can be concluded that BR 30 treatment level have better potential with improved properties & cost effective out of these two treatment levels.

Key words: Polybutadiene rubber, Blend, Ribbed smoke sheet, Curing characteristics, Processing characteristics, performance characteristics