

**EFFECT OF MATURATION ON RHEOLOGICAL AND PHYSICAL
PROPERTIES OF NON-MARKING COMPOUNDS**

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ABSTRACT

Silica filled natural rubber based tyres are mainly used where high level of hygiene is required, such as food, pharmaceutical and chemical manufacturing industries. Mixing of rubber with other chemical ingredients and fillers is an obligatory operation in rubber compounding prior to manufacturing of products. In Silica filled grey compounding maturation time plays an influential role on rheological and physical properties of the final compound which affects the production of solid tyres. GBR-354 is the most producing Silica filled compound, showed up many rejections in past history due to variations in physical and rheological properties. In this study the effect of treatment combinations (maturation times - 24, 30, 36, 48 and 72 hours, storage locations - normal storage, laboratory storage and open area storage and testing time intervals - 0 and 4 hours) on the rheological and physical properties of non-marking compounds (NMC) was tested. The experiment was conducted in triplicate. Rheological and physical properties were measured for 30 treatments. The results revealed that the interaction among maturation time, storage location and testing hours affect the rheological and physical properties of the compound, there were not a significant difference among those 30 treatment levels. Therefore there is no need to practice 36 hours maturation time for this compound. Also normal storage location is better to have standard rheological and physical properties. There is no any effect from testing time to the properties. Therefore 24 hours maturation time and normal storage location with 0 to 4 hours testing times are preferred for GBR-354.

Key words: Maturation time, Non-Marking Compound (NMC), Rheological properties, Physical properties