

EXPLORATORY STUDY TO EVALUATE THE PROPERTIES OF RUBBERISED ASPHALT MODIFIED USING THE WET AND DRY PROCESSES

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ABSTRACT

An exploratory laboratory study was undertaken to measure the effect of Crumb Rubber Modifier (CRM) on asphalt properties, modified by the incorporation of CRM using the wet and dry processes. The study commenced with achieving a basic understanding of the net effect of CRM addition on binder properties, in which Brookfield viscosity, penetration and softening point data showed the practicable maximum levels of CRM modification. This was followed by a study of mixture properties with neat and CRM-modified binders, adopting Stone Mastic Asphalt (SMA) and Dense Bitumen Macadam (DBM) wearing course mixtures. The measured properties included volumetric parameters, stiffness modulus, durability and permanent deformation.

For the dry process, roadbase and wearing course DBM and wearing course SMA mixtures were used in the study. CRM was incorporated into the mixture at various levels by replacing equivalent amounts of aggregate particles from the mix, whose particle size distribution resembled that of the added CRM.

Results obtained from this study showed that tyre rubber modification in the dry process had an adverse effect on mixture properties, in contrast to the wet process in which there were no detrimental effects.

KEY WORDS: Rubberised asphalt, wet & dry process, mechanical properties.