

INVESTIGATION ON THE DYNAMIC PROPERTIES OF ASPHALT MIXTURE INCORPORATING GEOMETRICALLY CUBICAL AGGREGATE

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ABSTRACT

Cubical shaped aggregates are desirable to improve the performance of asphalt mixtures. In this study, geometrically cubical aggregates were produced using the Metso Barmac Rock on Rock Vertical Shaft Impact. These shaped aggregates were substituted at 20, 60 and 100% of normal aggregates. The asphalt mixture performances of mixes incorporating various proportions of geometrically cubical shaped aggregates were then evaluated using the asphalt mixture performance testing machine. The tests were conducted to determine the dynamic modulus ($|E^*|$) and phase angle (δ) of asphalt mixture. The characteristics of rutting resistance evaluated in this study were based on the dynamic modulus test for material stiffness characterization. The results showed that the rut stiffness factor of asphalt mixtures with geometrically cubical aggregates increased, which indicated that the rut stiffness property could be improved by incorporating shaped aggregate. In general, it can be said that incorporation of geometrically cubical aggregate is beneficial as it improves the physical and mechanical characteristics of asphalt mixtures.

KEY WORDS: Geometrically cubical, Confining stress, Dynamic modulus,