

Mechanical performance of dense-graded asphalt mixture incorporating steel fiber

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ABSTRACT

Dense graded asphalt is usually used for highways, main roads, industrial and distributor roads due to their densely packed constitution. In order to improve more on its durability, stability and service life various additives are introduced and among them are steel fibers. Steel fiber has been reported that it increases the mechanical performance of asphalt mix. This paper reports on a comprehensive study on the mechanical properties of dense-graded asphalt AC10 incorporating steel fibers. Mechanical properties studied include abrasion resistance, stability, density, stiffness, resilient modulus and dynamic creep of asphalt mixtures. The tests carried out are Abrasion test, Marshall Stability, resilient modulus and dynamic creep. Steel fiber content used was 0%, 0.2%, 0.4% and 0.6% of the asphalt mixtures. The laboratory results showed that steel fiber addition into DGA AC10, improve all the mechanical properties covered in this investigation except the stiffness. Although the addition of steel fiber reduces stiffness properties that makes it revealing to the deflection, the modified samples still shows improvement in abrasion, stability, density, resilient modulus and dynamic creep.

KEYWORDS

Dense-graded asphalt; Highway engineering; Roads engineering; Mechanical properties

ACKNOWLEDGEMENTS

The authors would acknowledge Malaysian Higher Education and Universiti Malaysia Pahang for funding this research under UMP Internal Grant number PDU203206.