



The Performance of Asphalt Concrete Mixture and Fiber Reinforcement Using Seawater Immersion Model to Indirect Tensile Strength

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Abstract :The objective of this research was to analyze the indirect tensile strength of the asphalt concrete mixture with fiber reinforcement that was immersed on the sea water. The method of research was an experimental testing on the mechanical properties of fibers and indirect tensile strength of the mixture with a variation of length were 5 mm, 6 mm, 8 mm, 10 mm, 12 mm, 14 mm and the variation of fiber content for each composition was respectively 0.2%, 0.4%, 0.6%, 0.8%, 1.0% and 1.2% with the optimum diameter of fiber was 0.3 mm. Each composition of the mixture was tested for each variation of length and fiber content with the optimum asphalt content of 5.9%. The seawater-immersed fibers with the immersion duration of 3 weeks gave high tensile strength and strain. The 0.3 mm diameter fibers with 3 weeks immersion had a maximum stress = 130.45 N / mm², and maximum strain of 14.24% while those in control had a maximum stress = 13.71 N / mm² and maximum strain of 13.89%. While the indirect tensile strength (ITS) test results on five variations of length and percentage of fibers in the asphalt concrete mixture, the 0.6% fiber content composition provided ITS value of a maximum stress = 26795.84 kPa and maximum strain in the fiber length of 8 mm was 0.01486 and an elastic modulus was 2318478.25 kPa. The composition yield a Poisson ratio = 0.44. The Poisson number is an indicator of the ductility of a mixture.

Keywords: elastic modulus, indirect tensile strength, strain

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