MIX DESIGN AND PERFORMANCE EVALUATION OF CRM-MODIFIED ASPHALT CONCRETE MIXTURES

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ABSTRACT
This study reports the results of experimental tests carried out to define the volumetric composition of Asphalt Concrete (AC) mixtures that allows to include, by the dry process, scrap tire Crumb Rubber Modifier (CRM) as a substitute of 2% to 4% in weight of mineral aggregates. A 0/30 mm gap graded mixture for base layers, modified by introducing CRM, has been designed by using the volumetric method. In order to characterize mixture from a mechanical point of view, we carried out tests for the evaluation of Indirect Tensile Strength (ITS), stiffness modulus and fatigue resistance; volumetric and mechanical performance of the CRM-modified mixture were compared with those of a reference mixtures. The tests proved the CRM-modified mixture has mechanical properties better than those of the reference mixture, especially in terms of fatigue resistance whilst the CRM doesn't interact with bitumen; the fatigue resistance of CRM-modified mixture appears to be better than that of traditional dense asphalt concrete mixtures.

KEY WORDS: Crumb rubber modifier, dry process, mix design.