

MECHANICAL PROPERTIES OF POROUS ASPHALT MODIFIED WITH ROAD TYRE RUBBER USING THE DRY PROCESS

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ABSTRACT

The addition of recycled rubber from used tyres to bituminous mixtures for road pavements could be a useful way of reducing the quantities of wastes dumped in tips. It also represents an opportunity to modify and improve the performance characteristics of bituminous concretes.

The paper discusses the results of a laboratory study, which analysed the potentials of crumb rubber from road tyres as a component of bituminous mixtures, using the dry process. Two types of porous asphalt, namely an open graded friction course and a skid resistance asphalt concrete, over the control mixtures without rubber, were formulated by means of the Marshall methodology. The mixtures were then mechanically evaluated by means of the confined Static Creep test, the Indirect Tensile Fatigue Test (ITFT), the Indirect Tensile Strength test (ITS) and the Cantabro test.

Results of this study indicate that the tyre rubber could have a positive influence on the mechanical characteristics, depending on the grading and volumetric properties of the mix being studied: an increase of the fatigue life, a better permanent deformation resistance at high temperatures, as well as an improved behaviour with respect to the ageing degradation and to the water damage.

KEY WORDS: Rubber, dry process, porous asphalt, mechanical properties.