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**LABORATORY EVALUATION OF DENSE ASPHALT
MIXTURES MODIFIED WITH ADDITION OF RUBBER**

J. L. Fernandes Jr. *

Professor, University of Sao Paulo (EESC-USP)

S. A. M. Bertollo

Ph.D. Student, University of Sao Paulo (EESC-USP),
sandra.bertollo@bol.com.br

L. L. B. Bernucci

Professor, University of Sao Paulo (POLI-USP), liedt@usp.br

E. de Moura

Ph.D. Student, University of Sao Paulo (POLI-USP), edmoura@usp.br

* Department of Transportation, Av. Trabalhador Saocarlense, 400
CEP 13566-590, Sao Carlos, Sao Paulo, Brazil, leomar@sc.usp.br

ABSTRACT

This paper presents the findings of a laboratory study that aimed to evaluate the effects of recycled tire rubber content and gradation on the properties of dense asphalt mixtures. It was considered two ranges of rubber particle sizes, which substituted part of mineral aggregates in the mixture gradation. The rubber modified asphalt mixtures (“dry process”) were compared to a control mixture without rubber. For the evaluation of mechanical properties, the asphalt mixtures were submitted to three laboratory tests: dynamic indirect tension for the determination of the resilient modulus; tensile strength under indirect tension; and resistance to rutting in a wheel-tracking device. The results show that smaller rubber particles increase the resistance to rutting. The rubber modified asphalt mixtures presented smaller values of resilient modulus and tensile strength than the control mixture. The tests results showed that the size and percentage of rubber affected the mixture properties: the higher the rubber size and the rubber content, the smaller the resilient modulus; the higher the rubber content, the smaller the tensile strength. The rubber gradation had no influence on the tensile strength values. The use of tire rubber in the asphalt paving industry can contribute to minimize the problems related to the disposal of used tires and, at the same time, improve some engineering properties of asphalt mixtures.

KEYWORDS: asphalt mixtures; tire rubber; dry process; mechanical properties.