

**ELECTRIC ARC FURNACE SLAG IN HIGH MODULUS
ASPHALT CONCRETE FOR WEARING-COURSE LAYER: MIX
DESIGN AND MECHANICAL PROPERTIES EVALUATION**

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ABSTRACT

In the last years, the decrease of good quality aggregates available within a reasonable transportation distance, the transportation costs and the problems relating to the resource conservation and to the environmental impact have attracted the attention to the use in road construction of alternative materials. Among these, the Electric Arc Furnace (EAF) slag is arousing great interest, but there is still a lack of understanding the benefits in terms of performance due to its use rather than traditional aggregate, especially in high modulus asphalt concretes (HMAC). The aim of the research is to evaluate mechanical properties of EAF slag HMACs for wearing course layers, versus the traditional aggregates, providing also specifications for mix design procedures for the addition of EAF slag. At first, some mixtures, varying the typology (EAF slag instead of basalt) and/or the dosage of the components, were made. Traditional tests, as Marshall and Indirect Tensile Strength Test, and Indirect Tensile Stiffness tests, with the N.A.T. apparatus, were executed. At last, in order to evaluate the performance by the definition of the rupture domains, triaxial tests with the UNIBAS M.P.T. device were made. Finally the Authors achieved the evaluation of performance of EAF slag HMACs for wearing course layers, furnishing important references for mix design procedures for the addition of EAF slag.

KEY WORDS: High modulus, EAF slag, hard and soft bitumen, environment.