

USE OF ELECTRIC ARC FURNACE SLAG IN THIN SKID-RESISTANT SURFACING

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ABSTRACT

One of the major by-products of the steel production industry is Electric Arc Furnace (EAF) slag. In the field of research and development and in cooperation with the laboratory of EGNATIA ODOS SA, the current study focuses on the mechanical properties of electric arc furnace slag, as used in the thin surfacing of Egnatia Odos highway. The in-situ measurements refer to two highway segments constructed in July 2007 and August 2008. The data collected is compared to the initial results of the mixture studies and the behavior of the wearing course is examined in the time span of 24 months, subject to normal traffic and environmental weathering. The data obtained refers to three types of measurements, skid resistance, macro texture depth and permeability. The results show minor differences in between initial and later measurement. The data is also compared to skid-resistant layers with natural hard aggregates which were constructed at the same time period and were subject to identical environmental and traffic conditions on the Egnatia Odos highway. Comparison is made to a study on the P.A.TH.E highway with similar skid resistant wearing courses of asphaltic concrete. Both results show the suitability of EAF slag aggregates to fully satisfy the technical specifications. The comparison to wearing courses made with natural hard aggregates highlights the superiority of artificial aggregates, primarily due to their enhanced mechanical properties.

KEY WORDS: By-products, slag, hard aggregates, wearing course, SRV