

## عنوان مقاله:

Evaluation of Long Term Ageing of Asphalt Mixtures Containing EAF and BOF Steel Slags

## محل انتشار:

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## خلاصه مقاله:

This study was conducted in order to evaluate the effects of long term ageing on toughness and resilient modulus of asphalt concrete mixtures containing Electric Arc and Basic Oxygen Furnace steel slags. After initial evaluation of the properties of steel slags using X-ray Diffraction and Scanning Electric Microscope, eleven sets of laboratory mixtures were prepared. Each set was treated replacing various portions of limestone coarse aggregates of the mixture ( $\geq 2.36$  mm) with steel slags. The main laboratory program consisted of the determination of resilient modulus at three testing temperatures of 5, 20 and 40°C (ASTM D4123) and indirect tensile strength of the samples at 20°C. In order to evaluate the long term performance of mixtures containing slags, the specimens were subjected to ageing according to AASHTO PP2 standard method. Results showed that the peak tensile strength, area up to peak tensile strength and total dissipated energy density of the specimens containing Electric arc furnace slag were greater than the control mixtures. Fracture energy was almost the same for both mixes containing basic oxygen furnace slag and limestone. Results also indicated that the resilient modulus of mixtures increased along with an increase in slag contents in asphalt mixtures. The ratio of aged to unaged resilient modulus of the specimens decreased upon increasing slag contents. It was concluded that mixtures containing electric arc furnace slag exhibited less susceptibility to ageing compared with mixtures containing basic oxygen furnace slag and limestone. At 50°C, the highest ratio belonged to control mixtures, which might indicate that at lower temperatures, the susceptibility to ageing of the control mixtures were more pronounced

## کلمات کلیدی:

EAF and BOF slag, resilient modulus, IDT, fracture energy, ageing

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/406433>



