عنوان مقاله:

Effects of Waste Fibers Stabilizers on the Draindown andMoisture Damage Sensitivity Properties of SMA Mixtures

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خلاصه مقاله:

Waste fibers produced from manufacturing processes are a byproduct commonly deposited in storing yards and/or landfills and thus results in many serious environmental problems in Iran. If these waste materials could be advantageously put to practical use in any application, it would reduce the burden on the environment and landfills. This paper compares the performance of the stone matrix asphalt (SMA) mixes containing commonly used cellulose fibers (here jute) with SMA mixtures made with the various waste fibers. Three types of waste fibers from automotive carpet manufacturing process namely: two synthetic fibers (acrylic and polyester) and one cellulose fibers (viscose) were considered. The performance tests including, draindown, Marshall stability, Marshall stability ratio, tensilestrength, tensile strength ratio, compressive strength and loss of compressive strength were carried out on the SMA mixes. Also, toughness, percentage of toughness loss and cohesion and internal friction angle were calculated. Testresults showed that the cellulose fibers do better than those of synthetic in stabilizing the binder content of the SMA mixtures. Results of Marshall, indirect tensile strength and cohesion and internal friction angle test, revealed that the addition of synthetic fibers improved these parameters and also increased toughness of the SMA mixes. In addition, SMA mixtures containing the synthetic fibers, particularly those of acrylic, have better resistance to moisture damage than control mixtures.

کلمات کلیدی:

Fibers stabilizers, iIndirect tensile strength, compressive strength, toughness, cohesion and internalfriction angle