

REJUVENATION OF BITUMINOUS MIXTURES CONTAINING RECLAIMED ASPHALT WITH USED VEGETABLE OIL

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ABSTRACT

This paper presents a laboratory study into used vegetable oil (UVO) as a rejuvenator of bituminous mixtures incorporating reclaimed asphalt pavement (RAP). The work focussed on the effect that adding UVO to mixtures containing RAP had on material workability and mechanical performance. Furthermore, the effect of hot storage on material workability and stiffness was also investigated. Two materials, a binder course and surface course, and two RAP sizes, i.e. coarse and fine, were used in the study. Percentages of RAP incorporated into the mixtures were 20, 40 and 60 % by weight of the total mixture. In order to rejuvenate the mixtures, UVO was added at percentages varying from 0.1 to 0.9 % by weight of the total mixture. Results indicated that workability was not significantly affected by the incorporation of UVO. The large increase in stiffness due to the incorporation of high percentages of RAP into the mixtures was, however, significantly reduced by the incorporation of UVO. As regards hot storage, workability of selected mixtures with high percentages of RAP decreased sharply after 24 h storage at 160 °C as a result of severe hardening of the binder. For shorter storage time, i.e. 6 h, mixtures with selected amounts of RAP and UVO behaved similarly to those without RAP.

KEY WORDS: Reclaimed asphalt, used vegetable oil, rejuvenation.