M. R. Keymanesh[*]

Assistant Professor, Faculty of Engineering, Payame Noor University, North Tehran, Tehran, Iran.

e-mail:
mrkeymanesh@pnu.ac.ir

M. Mohammad Karimi

Assistant Professor, Department of Civil and Environmental Engineering, Tarbiat Modares University, Tehran, Iran.

e-mail:
mohammad.karimi@modares.ac.ir

A. Taghinezhad Omran

Faculty of Engineering, Payame Noor University, North Tehran, Tehran, Iran.

e-mail:
aliomran@student.pnu.ac.ir

Evaluation of the Effect of Aging on the Long-Term Performance of WMA Containing High Percentage of RAP Based on the Results of SCB Test at Intermediate Temperature

With regards to the increase in stiffness for the asphalt mixture containing RAP, the improvement of rutting is predictable, but with increasing aging level and increasing stiffness in mixtures containing high percentages of RAP, problems such as cracking at low and intermediate temperatures is formed in the long-term. In this study, the long-term fracture performance of WMA mixtures containing high percentage of RAP at $25^0 c$ was evaluated using a SCB test. To conduct the research, different amounts of RAP (0, 50, 75, and 100%), a rejuvenator, Zycotherm as WMA additive and 85/100 asphalt binder were used. To apply different levels of aging, the samples were kept in the oven for 3, 5, 7 and 9 days at 85^0 C. The results showed that with increasing the amount of RAP and the aging level of the samples, the P_{cr} and the K_{IC} increased, but the U decreased. Also, in order to compare the long-term performance of asphalt mixtures containing different percentages of RAP, the area under the J_c - aging is determined and it was concluded that in the long-term, samples without RAP show 8, 34, and 52% more resistance to cracks than samples containing 50, 75, and 100% RAP.

Keywords: WMA, RAP, Failure, Aging, SCB test.