INVESTIGATION OF ASPHALT RECOVERY PROPERTIES IN FATIGUE TEST WITH SINGLE REST PERIOD

I. Isailovic, A.Cannone Falchetto, M.P.Wistuba
Technische Universität Braunschweig, Department of Architecture, Civil Engineering and Environmental Sciences - Pavement Engineering Centre (ISBS), Braunschweig, Germany.

ABSTRACT
This paper presents an investigation on the recovery of mechanical properties of hot mix asphalt (HMA) using dissipated energy approach. Different types asphalt mixture for surface course AC 11 D S were prepared in order to determine the influence of material aging, bitumen content, polymer modification and compaction energy on material ability to recover its initial characteristics. Recovery of material mechanical properties is observed during a single rest period, introduced into tension compression cyclic fatigue tests under stress control. The analysis of the experimental results reveals that there is a significant influence of the duration of rest period on recovery capability. A plateau phase is achieved when the duration of the rest period does not have any impact on asphalt recovery properties. Asphalt aging plays an important role in reducing the effects on material recovery. The degree of compaction used in this research seems to have no influence on material ability to restore its initial properties. Mixtures prepared with additionally 0.5 % bitumen by mass show the best recovery characteristics compared to other variations. The newly defined Recovery Index introduced in this research effort represents a good and promising indicator for assessing the recovery properties of HMA. It can be successfully used for further pre-selection of pavement materials in order to achieve the optimal pavement lifespan.