

FATIGUE PERFORMANCE CHARACTERIZATION OF WARM-MODIFIED BITUMINOUS BINDERS

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ABSTRACT

This paper presents results of an investigation to evaluate the effect of Sasobit and Rediset WMX and LQ on the fatigue performance of bituminous binders. This study adopts a Time Sweep (TS) test method to study this phenomenon under controlled strain and stress modes using a Dynamic Shear Rheometer. Fatigue life is defined using the traditional approach based on number of cycles and reduction in initial stiffness. To accurately predict the fatigue life of unmodified and WMA-modified binders, the viscoelastic continuum damage (VECD) approach and Energy approach have been also adopted. It was found that WMA additives had a superior performance in terms of fatigue life. Results from the Energy and VECD approaches have been shown to correlate well with the traditional approach. VECD can be used to model the fatigue behaviour of WMA binders and predict the response of materials under different loading history.