

## **CRACKING OF ASPHALT MIXTURES CONTAINING BOTTOM ASH WASTE LINKED TO VISCO-ELASTIC DAMAGE MECHANICS ANALYSIS**

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### *ABSTRACT*

Bituminous mixtures undergo cracking, either top-down or bottom-up, as a consequence of the repeated application of traffic loads, thermal cycling or a combination of the two mechanisms. Cracking is considered as one of the major distress modes in asphalt pavements.

This study presents a method to characterise crack resistance of asphaltic mixtures containing waste materials using a semi-circular bending (SCB) fracture test. Three different bituminous mixtures containing incinerator bottom ash waste and one control mix, containing limestone, were tested under cycling SCB loading conditions at 5°C and the results were interpreted using Paris Law. The same mixtures were also tested under controlled stress creep conditions at the same temperature.

This paper examines the link between the time dependant index from creep tests with the n parameter from the Paris Law model, based on visco-elastic continuum damage mechanics analysis and linear elastic fracture mechanics principles.

*KEY WORDS:* Cracking, Bottom ash, Visco-elasticity, SCB, Paris Law, Creep.