EFFECT OF CURING ON THE INDIRECT TENSILE FAILURE ENERGY OF CEMENT-BITUMEN TREATED MATERIALS

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ABSTRACT
Cold recycling technologies allow the use of high percentage of reclaimed asphalt (RA) through mixing at ambient temperature and thus, they represent a sustainable solution for road construction and rehabilitation. Specifically, cement-bitumen treated materials (CBTM) are produced using both bituminous and cementitious binders. Consequently, they require a curing time to reach adequate mechanical properties. This study focuses on CBTM manufactured using bitumen emulsion (2.0% of residual bitumen), cement (1.5% and 2.5%) and 80% of RA. Indirect tensile strength (ITS) was evaluated at times ranging from 1 to 90 days after sealed and unsealed curing. The transverse deformation of the specimens was measured to calculate the failure energy. Results show that ITS and failure energy increase with curing time and are higher in unsealed conditions. The horizontal strain in the early stage depends on the binders’ dosage and curing conditions whereas, in the long term it is similar for all the mixtures investigated.