THE COMBINED EFFECTS OF AGING AND MOISTURE CONDITIONING ON THE INDIRECT TENSILE STRENGTH, FLOW AND FRACTURE ENERGY OF WARM MIX ASPHALT

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ABSTRACT
In the last decade, some limited studies on the combined effects of aging and moisture conditioning for asphalt binders and asphalt mixtures have been carried out. This paper presents a new approach to evaluate the combined effects of these two parameters on the stiffness properties of warm mix asphalt (WMA). Two asphalt binders, different compaction temperatures and a chemical warm asphalt additive named Rediset, were selected for fabrication of WMA samples. The combined effects of aging and moisture conditioning on the stiffness properties of asphalt mixtures were quantified from the indirect tensile strength (ITS) test. The effects of compaction temperatures and warm additive contents on the ITS, flow and fracture energy of WMA were investigated, as well. The test results showed that aging and moisture conditioning exerted opposing effects on the stiffness properties of WMA. Compaction temperature and test temperatures were identified as significant factors that affected the stiffness of WMA.