Anti-stripping technology in Road Materials – A Way to Sustainable Infrastructure

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Abstract

Moisture damage in bituminous surfaced pavements is a serious problem on many roads in Uganda. This damage affects the cost of transportation leading to difficulty in implementing Government's Poverty Eradication Action Plan. Use of anti-stripping additives has globally been practiced to abate this damage. However, in tropical Africa use of conventional anti-stripping additives (ASAs) has not been widely exploited. A 600 meter test road was surfaced with bitumen mixed with an aggregate having different ASA formulations, on top of a stabilized base and the pavement were monitored for performance. Bitumen was evaluated based on classical rheological and quality tests. The aggregate used was a granitic gneiss with predominance of quartz, feldspars and mica and possibly prone to stripping. Initial evaluation of mixtures indicated a significant increase in stripping resistance when additives were added to the aggregate prior to mixing. After 4 months of service, it was observed that although stabilization of the lateritic gravel base resulted in higher strength with 1% cement than with 2% lime, the stripping results were not affected by this difference. The stiffening effect in bituminous mixtures by the mineral additives after 4 months of service is indicated by density results. Much as the formulations of ASAs were effective in abating stripping, it was not yet possible to discern differences in effectiveness of the different formulations of ASAs used in this study.