Influence of organic wax on bitumen characteristics

Abstract

The study investigated effect of organic wax Sasobit wax (S) on the characteristics of bitumen 80/100-penetration grade. The consistency of bitumen is measure of its susceptibility to temperature change and resistance to flow which affects ability and resistance to deformation of the mixture. Approach: This study reviewed the bitumen modification process in relation to Warm Mix Asphalt (WMA) technology, using S as a modifier. The study investigated the penetration, softening point and viscosity measurements of modified bitumen 80/100-penetration grade (binder), using the Brookfield viscometer. The binders mixed with various percentage of the wax S 1-5% were investigated. Results: Results from the study showed an increase in softening point, decrease in penetration with an increase in S. The viscosity of binder also decreases at higher temperatures while at midrange temperatures the viscosity increases with an increase in additive. Conclusion: This study has provided a valuable data on the effect of additive S on increasing the kinematic viscosity of binder at low temperature and decreasing the dynamic viscosity at high temperature, been attributed to the presence of S wax with high hydrocarbons molecular content in the binder. Also increasing the additive decreases penetration and increases softening points, The study recommends the use of 2% S for modification of PEN 80/100.