Rheological properties of crumb rubber-modified bitumen containing antioxidant.

ABSTRACT

Rheology has become a useful tool in the characterization of the bitumen performance on the pavement. Visco-elastic properties of crumb rubber modified bitumen with antioxidants (CR30) were determined by the means of rheological measurement. This measurement led to a better knowledge of bitumen behavior that occurs when subjected to different thermal and mechanical conditions, as seen during road construction and services in the field. Dynamic Shear Rheometer (DSR) was used to characterize the rheology of the binders before and after oven aging. The binders were aged for 3 and 9 days. Results of a compatibility test showed that the addition of CR30 modified bitumen is compatible with the base bitumen. The results of unaged samples indicated that the addition of 1% CR30 and 5% CR30 modified binders caused an increase in G* value as a result of the rheological changes. Results showed that aging has significant influence on bitumen rheology, by increasing complex modulus and decreasing phase angle.

Keyword: Bitumen; Rubberized bitumen; Aging; Rheological characterization.