

The Effect of Ethylene Propylene Diene Monomer on the Rheological Properties of Bitumen

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Abstract : This study aimed to investigate the mechanical and high-temperature rheological properties of Ethylene Propylene Diene Monomer (EPDM) modified bitumen. To achieve this, the neat binder was modified with EPDM additive in different percentages: 2% to 5%. The neat and modified binder were subjected to conventional and rheological tests, including penetration and softening point tests, as well as evaluations of their rutting performance and high-temperature viscosity characteristics. Additionally, the mixing and compaction temperatures for hot mix asphalt production were identified using a rotational viscometer. The findings indicated that EPDM is a highly effective bitumen modifier, with the high temperature performance class of the neat binder improving by 3 grades according to the Superpave asphalt grading system.

Keywords : polymer, bitumen, rheology, EPDM, dynamic mechanical analysis

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