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Comparison of Rheological Properties for Polymer Modified Asphalt Produced in Riyadh

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Abstract : Flexible pavement made with neat asphalt binder is not enough to resist heavy traffic loads as well as harsh environmental condition found in Riyadh region. Therefore, there is a need to modify asphalt binder with polymers to satisfy such conditions. There are several types of polymers that are used to modify asphalt binder. The objective of this paper is to compare the rheological properties of six polymer modified asphalt binders (Lucolast7010, Anglomak2144, Paveflex140, SBS KTR401, EE-2 and Crumb rubber) obtained from asphalt manufacturer plants. The rheological properties of polymer modified asphalt binders were tested using conventional tests such as penetration, softening point and viscosity; and SHRP tests such as dynamic shear rheometer and bending beam rheometer. The results have indicated that the polymer modified asphalt binders have lower penetration and higher softening point than neat asphalt indicating an improvement in stiffness of asphalt binder, and as a result, more resistant to rutting. Moreover, the dynamic shear rheometer results have shown that all modifiers used in this study improved the binder properties and satisfied the Superpave specifications except SBS KTR401 which failed to satisfy the rutting parameter ($G^*/\sin\delta$).

Keywords : polymer modified asphalt, rheological properties, SBS, crumb rubber, EE-2
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