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Filler for Higher Bitumen Adhesion

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Abstract : Moisture susceptibility of bituminous mixes directly affect the stripping of asphalt layers. The majority of relevant test methods are mechanical methods with low repeatability and consistency of results. Thus, this research aims to evaluate the physicochemical interactions of bitumen and aggregates based on the wettability concept. As such, the surface energies of components at the interface are measured by contact angle method. That gives an opportunity to investigate the adhesion properties of multiple mineral fillers at various percentages to explore the best dosage in the mix. Three types of fillers, such as hydrated lime, ground lime and rock powder, are incorporated into the bitumen mix for a series of sessile drop tests for both aggregates and binders. Results show the variation of adhesion properties versus filler (%).

Keywords : adhesion, contact angle, filler, surface energy, moisture susceptibility
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