Foaming effects on binder chemistry and aggregate coatability using Foamed bitumen

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ABSTRACT. Foaming effects on binder chemistry were investigated using two bitumens from different sources with similar grades. Infrared spectroscopy techniques were done on neat and foamed bitumen samples. Aggregate particle coating with foamed bitumen was studied using Rice density and surface energy concepts. Infrared spectra results showed that foaming does not change the bitumen chemistry. Rice density tests showed that the aggregate size mainly influenced binder coating of aggregate particles, bitumen was mostly concentrated within the fine fraction where foamed bitumen was used. Surface energy results revealed that foamed bitumen possesses higher coating attributes than neat bitumen. Film thickness results implied that aggregate size and surface area, expansion ratio and binder viscosity influences binder thickness.

KEYWORDS: Foamed bitumen, Ageing, Surface energy, Aggregate coating, Rice density, Theoretical binder film thickness.
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