

MEASUREMENT OF INTERLAYER BOND STRENGTH THROUGH DIRECT SHEAR TESTS

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ABSTRACT

Asphalt tack coat is a light application of asphalt, usually asphalt diluted with water. It is used to ensure a bond between the surface being paved and the overlying course. Normally hot asphalt cements, emulsified asphalts or cutback asphalts are used as tack coats. The objective of this study was to evaluate the practice of using tack coats through controlled laboratory simple shear tests, and determine the optimum application rate. The influence of tack coat types, application rates, and test temperatures on the interface shear strength was examined. Four emulsions, CRS 2P, SS-1, CSS-1, and SS-1h, were selected as tack coat materials. The residual application rates considered were 0.00 (0.00), 0.09 (0.02), 0.23 (0.05), 0.45 (0.1), and 0.9 (0.2) l/m² (gal/yd²). A simple shear test was performed to determine the shear strength at the interface at two test temperatures, 25°C (77°F) and 55°C (131°F). The results of this study showed that CRS-2P emulsion was identified as the best tack coat type and 0.09 l/m² (0.02 gal/yd²) was determined as the optimum application rate at which a maximum interface shear strength was measured for both test temperatures, 25°C (77°F) and 55°C (131°F).

KEYWORDS: Tack Coat, Emulsion, Asphalt Cement, Simple Shear Test.