

Abstract

A good adhesion between the aggregate and bitumen is a key ingredient for good performance of a bituminous pavement. Motivated by the studies on increase of adhesion through crack initiation and arrest, the behaviour of adhesion and bond strength between aggregates and bitumen film is studied at various thickness and deformation rates. In this study, three types of samples are prepared. Type 1 and Type 2 samples are of unknown thickness of discontinuous and continuous bitumen emulsion films respectively. Type 3 samples are of known thickness of discontinuous paving grade bitumen film. The *peak stress*, *toughness* and *deformation at peak load* are calculated from the load-deformation data obtained from tensile testing of the samples in the Universal Testing Machine. The percentage area coverage, total area coverage and the total perimeter of the discontinuous film of bitumen over the aggregate surface is found using image processing. The present study shows that *peak stress* and *toughness* increases with the increase in deformation rate and decreases with the increase in thickness of discontinuous film.

Key words: Aggregates, Bitumen, Discontinuous bitumen film, Deformation rate, thickness