LABORATORY EVALUATION OF THE FINE AGGREGATE ANGULARITY (FAA) TEST

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ABSTRACT
The performance of hot-mix asphalt (HMA) pavements depends on the properties and proportions of the major components, i.e., mineral aggregates, asphalt cement and air voids. The performance of dense asphalt mixtures is influenced mainly by fine aggregate characteristics, such as shape, angularity and surface texture. The Fine Aggregate Angularity test (FAA), adopted by Superpave to evaluate the shape, angularity and surface texture of fine aggregate particles, has left a lot of doubts regarding its suitability. The objective of this work is to verify if the FAA test is really able to classify fine aggregates and identify the good ones to be used in asphalt mixtures. Thus, FAA test, visual analysis of shape, angularity and surface texture, direct shear test with samples of fine aggregates and Marshall test with samples of asphalt mixtures produced with different fine aggregates are performed. The results obtained in the visual analysis indicate that the FAA test is not able to separate the effects of angularity from the effects of shape. The results of the direct shear test demonstrate that a fine aggregate with a higher FAA doesn't present, necessarily, a larger shear strength. The values of the Marshall test indicate that there is no correlation between Marshall stability and FAA values. All the results show that the FAA test is not able to classify fine aggregates appropriately and, therefore, is unable to identify aggregates that provide mixtures with better performance.

KEYWORDS: mineral aggregates; shape, angularity, surface texture; Fine Aggregate Angularity test (FAA); Superpave method; stability of asphalt mixtures.