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Investigation into the Suitability of Aggregates for Use in Superpave Design Method

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Abstract : Super pave is the short form of Superior Performing Asphalt Pavement and represents a basis for specifying component materials, asphalt mixture design and analysis, and pavement performance prediction. This new technology is the result of long research projects conducted by the strategic Highway Research program (SHRP) of the Federal Highway Administration. This research was aimed at examining the suitability of Aggregates found in Kano for used in super pave design method. Aggregates samples were collected from different sources in Kano Nigeria and their Engineering properties, as they relate to the SUPERPAVE design requirements were determined. The average result of Coarse Aggregate Angularity in Kano was found to be 87% and 86% of one fractured face and two or more fractured faces respectively with a standard of 80% and 85% respectively. Fine Aggregate Angularity average result was found to be 47% with a requirement of 45% minimum. A flat and elongated particle which was found to be 10% has a maximum criterion of 10%. Sand equivalent was found to be 51% with the criteria of 45% minimum. Strength tests were also carried out, and the results reflect the requirements of the standards. The tests include Impact value test, Aggregate crushing value and Aggregate Abrasion tests and the results are 27.5%, 26.7% and 13% respectively with a maximum criteria of 30%. Specific gravity was also carried out and the result was found to have an average value of 2.52 with a criterion of 2.6 to 2.9 and Water absorption was found to be 1.41% with maximum criteria of 0.6%. From the study, the result of the tests indicated that the aggregates properties have met the requirements of Super pave design method based on the specifications of ASTMD 5821, ASTM D 4791, AASHTO T176, AASHTO T33 and BS815.

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