Abstract

Currently, government sets infrastructure sectors as one of the priorities to boost the economic growth, and one such strategy is road construction. Consequently, the road material plays significant role. Hence as an alternative aggregate, the combination of Bantak and Clereng at 40% : 60% will satisfy the needs of pavement properties designs particularly for the AC-WC. Apparently Bantak has a high porosity and excessive abrasion value.

The investigation is stressed by using Cooper Method in determining its aggregate gradation. Cooper's formula is added *F* variable which stands for filler content percentage in mixture. Some of porosity voids are assumed to be filled by the amount of the filler. The specimens will be assessed by using Marshall Test and the Indirect Tensile Strength (ITS). The variations of the Cooper power gradations noted as the n are selected as 0.3, 0.4, 0.45, 0.5, and 0.6. Exponent numbers of n-Cooper's method indicates the fineness of the aggregate gradation. The higher the value of n, the coarser the aggregate gradation is.

In general, the strength frequently denotes as quality in many engineering. However, this is not necessarily the case for hot mix asphalt. Extremely high stability often is obtained at the expense of lowered durability. The n=0.45 in condition of 5.7% OAC shows significance result of density, VMA, VFA, VIM, Stability, Flow and MQ as 2.32 Kg/Cm^3, 15.5%, 71.1%, 4.53%, 2039.4 Kg, 3.3 mm and 619.61 Kg/mm respectively that satisfied the desired properties. The selection of n=0.45 concerns to avoid the probability lack of durability and inefficiency of asphalt use. The highest of ITS is n=0.3 as 844 kPa and the lowest is n=0.6 as 758 kPa. The higher value of ITS might resist to horizontal stress and strain. Comparing to the Marshall analysis indicated by the MQ value, a stiff mixture might lead to further durability risks. It might be concluded that n=0.45 is the best fit for all criteria and considered as the best aggregate gradation for use in dense graded particularly for the AC-WC with Bantak and Clereng as the materials.