

Employing local cellulose fibre to reinforce the wearing course of asphalt pavement

ABSTRACT

The current state of road technology is incapable of alleviating the exponentially increasing traffic volume, that resulting in premature fatigue, cracks, accelerated ageing, permanent deformation, hydroplaning, as well as skidding. As a matter of fact, the wearing course on asphalt pavement is implied to use cellulose fibre as reinforcement. Cellulose fibre is derived from natural oil palm waste. This invention comprises formulation to maximise stability by using gap graded gradation and matrix of locally available sandstone aggregate. This study evaluates the optimum binder content of the mixture. Several asphalt specimens were produced by using 60/70 grade bitumen at bitumen content ranging from 5% to 7% with an increment of 0.5% by aggregate weight and with fibre at 0%, and 0.4% of aggregate weight added by dry process. Parameters evaluated were Voids in Mix, Voids Mineral Aggregate, Voids Filled with Bitumen, Specific Gravity, Resilient Modulus and Binder Drain Down Test. From the results, it suggests that optimum bitumen content with fibre inclusion is 6.5% of aggregate weight were comparatively has superlative result complying the standard. It was discovered that there was a substantial shift in the characteristics of the asphalt, resulting an improved pavement strength.