

Mix design for central plant recycling of hot mix asphalt

Hot mix recycling is one of the techniques commonly adopted for recycling of bituminous pavement due to its inherent advantages. The present methods in practice use prefixed amount of old materials. However from point of material recycling, more amount of material needs to be used. Also some of the methods use penetration while deciding the binder proportions. Hence an attempt has been made in this work to improve the existing mix design methodology. In the proposed methodology no constraint is put on any material quantity. Also viscosity is being used while deciding binder proportions. Hence the proposed methodology is rational yet simple. Also Linear Programming has been used in formulation of this new methodology. The various parameters considered are viscosity, bitumen content in recycled mix and material properties. The formulation can take care of objectives like cost minimization, material usage maximization etc. Various samples were casted with proportions arrived at by using LP model. These samples have been tested for its performance. The performance based tests that have been carried out are fatigue test and creep test. For comparison, samples casted using fresh mix have been tested. The results of these tests have shown that recycled mix designed by using proposed method are comparable to that of fresh mix.