

Effect of Rubber Tyre and Plastic Wastes Use in Asphalt Concrete Pavement

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Abstract : Asphalt concrete pavements have a short life cycle, failing mainly due to temperature changes, traffic loading and ageing. Modified asphalt mixtures provide the technology to produce a bituminous binder with improved viscoelastic properties which remain in balance over a wider temperature range and loading conditions. In this research, 60/70 penetration grade asphalt binder was modified by adding 2, 4, 6, 8, and 10 percent by weight of asphalt binder following the wet process and the mineral aggregate was modified by adding 1, 2, 3, 4, and 5 percent crumb rubber by volume of the mineral aggregate following the dry process. The LDPE modified asphalt binder Rheological properties were evaluated. The laboratory results showed an increase in viscosity, softening point and stiffness of the binder. The modified asphalt was then used in preparing asphalt mixtures by Marshall Mix design procedure. The Marshall stability values for mixes containing 2% crumb rubber and 4% LDPE were found to be 30% higher than the conventional asphalt concrete mix.

Keywords : crumb rubber, dry process, hot mix asphalt, wet process

Conference Title : ICCCE 2015 : International Conference on Civil and Construction Engineering

Conference Location : Cape Town, South Africa

Conference Dates : November 05-06, 2015