

A MULTIPLE REGRESSION MODEL FOR DEVELOPING A RAP BINDER BLENDING CHART FOR STIFFNESS PREDICTION

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ABSTRACT

The increase in the use of Reclaimed Asphalt Pavement (RAP) makes it necessary to focus on the interaction between the old and the virgin binders represented by the so-called blending chart. Different types of linear binder blending chart are currently available to predict the characteristics of the final blend. This study constitutes part of a wider research campaign whose aim it is to provide prediction models for the rheological properties of RAP, taking into account a selection of variables that cause its heterogeneity. The objective of this paper is to provide a multiple regression model at medium and high temperatures for the prediction of the complex modulus and phase angle of binder blends. The models consider more than one variable at the same time: the type of virgin and aged binders, the percentage of aged binder, the loading frequency and the temperature. Thus, within a specific validity range based on the extreme values defined by the experimental domain, it is possible to predict the rheological properties of the binder blends, and to carry out a sensitivity analysis on the effects of each parameter.