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Predicting the Complex Modulus for PAV Aged Asphalt Binder Using a Master Curve Approach for Sasobit Modified Asphalt Binder

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Abstract: This study is focused on the prediction of the asphalt binder complex modulus at various temperatures and various loading frequencies. The master curve approach was used to predict the asphalt binder behavior for a wide range of temperatures and loading frequencies by applying the time-temperature superposition principle for pressure ageing vessel (PAV) aged asphalt binder mixed with different percentages of sasobit asphalt modifier. The complex modulus was measured using the dynamic shear rheometer (DSR) with a wide range of loading frequencies (0.1 Hz-10 Hz) and a wide range of testing temperatures (16 oC-31 oC). The results showed an increase in the complex modulus with increasing the loading frequency as well as with increasing the sasobit percentage. However, the results showed a decrease in the complex modulus with increasing the testing temperature. The use of the master curve approach showed a high degree of accuracy in predicting the complex modulus for the asphalt binder.