

# THE TEMPERATURE DEPENDENT GENERALIZED KUHN MODEL FOR ASPHALT CONCRETE

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In this paper, the Generalized Kuhn Model [1] is briefly reviewed and its ability to describe asphalt concrete's viscoelastic behavior is demonstrated. This is accomplished by the capacity of the new model to fit and predict the loss tangent versus frequency as well as the complex shear modulus versus frequency experimental results with a very good accuracy.

The viscoelastic model is then appropriately modified to account for temperature effects in asphalt. Since asphalt is considered as a thermorheologically simple material, the temperature dependence is modeled by the time temperature superposition principle. A novel methodology of introducing time temperature superposition principle through internal variable formulation is presented.

The model predictions – loss tangent versus frequency for different temperatures and loss tangent versus temperature - show very good correlations with experimental results.

## References:

[1]. V.P. Panoskaltis et al. "The Generalized Kuhn Model of Viscoelasticity," submitted for publication (2006).

**Keywords:** viscoelastic, asphalt, thermorheologically, frequency, loss tangent