

Characterization of the Viscoelastic Behavior of Polymeric Composites

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Abstract : Dynamic mechanical analysis (DMA) is one of the most used experimental techniques to investigate the temperature and frequency dependence of the mechanical behavior of viscoelastic materials. The measured data are generally shifted by the application of the principle of the time- temperature superposition (TTS) to obtain the viscoelastic system's master curve. The aim of this work is to show the methodology to define the horizontal shift factor to be applied to the storage modulus measured in order to indicate the validity of (TTS) principle for this material system. This principle was successfully used to determine the long-term properties of the Sheet Moulding Compound (SMC) composites.

Keywords : composite material, dynamic mechanical analysis, SMC composites, viscoelastic behavior, modeling

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