ROLE OF MORPHOLOGY IN DAMPING EFFICIENCY

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ABSTRACT

The role of multiphase morphology in damping was explored using interpenetrating polymer networks and latex blends. Several polymer combinations were employed as model materials. These included acrylics and methacrylics, styrenics, polybutadiene, and poly(vinyl methyl ether). The loss area, LA, under the E"-temperature curves was measured on a Rheovibron at 110 Hz. The results were compared to one-phased statistical copolymers.

Several IPN compositions were found which damp more than expected, based on the group contribution analysis found to hold for homopolymers and one-phased statistical copolymers. The damping increases are interpreted in terms of phase continuity and stiffness. In general, high tanδ values would be expected in morphologies where the lower glass transition polymer forms the continuous phase, and the higher glass transition polymer forms the discontinuous phase.

FULL PAPER NOT AVAILABLE FOR PUBLICATION

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