Abstract

Basil M Soudy

Measurement Method of Broadband Dynamic Characteristics of Viscoelastic Material for Compliant Coating

An improved method to measure the dynamic viscoelastic properties of elastomers is proposed. The method is based on the analysis of forced oscillation of a cylindrical sample loaded with inertial mass. No special equipment instrumentation other than the ordinary vibration measurement apparatus is required. Typical measurement of the viscoelastic properties of a silicone rubber Silastic® S2 were measured over the wide frequency range from 10 Hz to 3 kHz under the action of wide region of deformation from 10-4% to 5%. It was shown that modulus of elasticity and loss tangent fall on the single curves when the ratio of load mass to sample mass changed from 1 to 20.