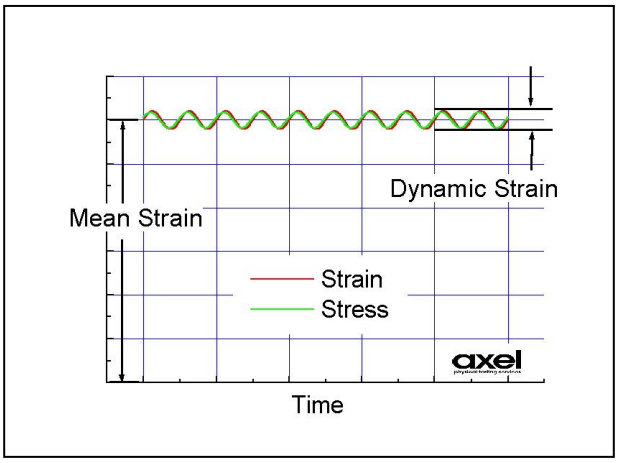
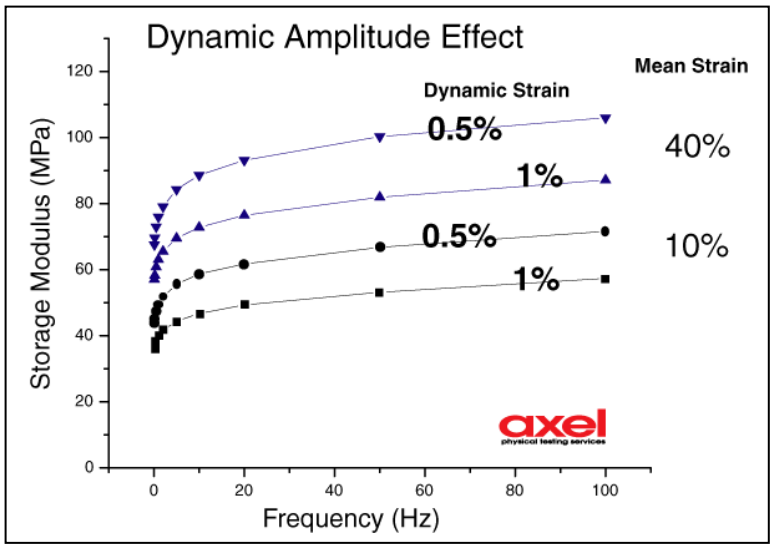
Dynamic and Visco-Elastic Elastomer Testing Services

1. Dynamic Elastomer Characterization by Forced Vibration (0.1 Hz to 200 Hz. typical)

Elastomeric components often experience dynamic sinusoidal loading superimposed on a larger mean strain. This is common for mounts, bushings and body seals. The response to the dynamic loading is such that higher frequencies result in higher stiffness values. However, for many engineering elastomers, the effects of mean strain amplitude and dynamic sinusoidal amplitude may be greater. At these frequencies, the elastomer is assumed to behave much like a spring and a dashpot.



Test specimens are stepped to a mean strain and held. Sinusoidal vibrations are super-imposed on this mean strain and the stress reaction is measured. From this, the dynamic modulus, storage modulus and loss modulus of the material is determined.



Multiple mean strains, strain amplitudes and sinusoidal frequencies are typically observed. Frequencies are run from low frequencies to high frequencies. Amplitudes are run from smaller amplitudes to larger amplitudes. Mean strains are run from lower strains to higher strains. There is a time delay between each sinusoidal excitation to reduce dynamic heating effects.

This test can be performed either on material test specimens (see below, under 'Strain Condition'), or on parts, such as bushings or seals. Typically, dynamic material testing data in Simple Tension is supplemented by stress relaxation data in Pure Shear and Equal Biaxial Extension. For this, see # 3 below.

Typical Frequencies: 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, 100, 200 Hz.
Typical Mean Strains: 0.05, 0.10, 0.25, 0.50, 0.75
Typical Dynamic Amplitudes: 0.005, 0.01, 0.02
Strain Condition: Simple Tension, Planar Tension (Pure Shear), Simple Shear, or Simple Compression

The delivered test data set includes: mean strain, dynamic strain amplitude, sinusoidal frequency, stress amplitude, storage modulus, loss modulus and loss angle.

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General Pricing for Dynamic and Visco-Elastic Elastomer Characterization

1. Dynamic Elastomer Characterization by Forced Vibration (0.1 Hz to 200 Hz. typical)

- 3 Tests total
- 5 to 10 Mean Strain Levels
- 3 Amplitudes
- 11 Frequencies (between 0.1 Hz and 200 Hz)

A) At laboratory temperature of 23ºC **$4350**
B) At non-laboratory temperature from –40ºC to 200ºC **$6625**

January 2026. Pricing subject to change.

Notes:

a. The data is delivered via e-mail in an ASCII format.
b. These are typical dynamic and visco-elastic experiments. Feel free to request a proposal for other interests or specifications, or for custom part testing.
c. Customer data and materials will be retained for 1 year after initial data delivery.

Purchase Order, VISA, MasterCard, AMEX, and Discover Card are accepted methods of payment.
Terms: NET 30 Days after Delivery of Data.