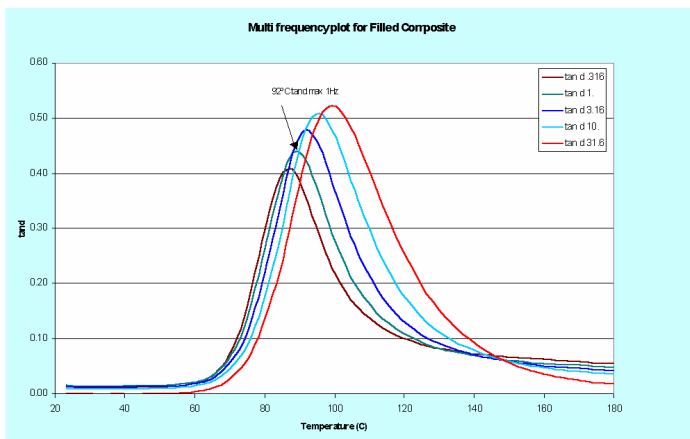


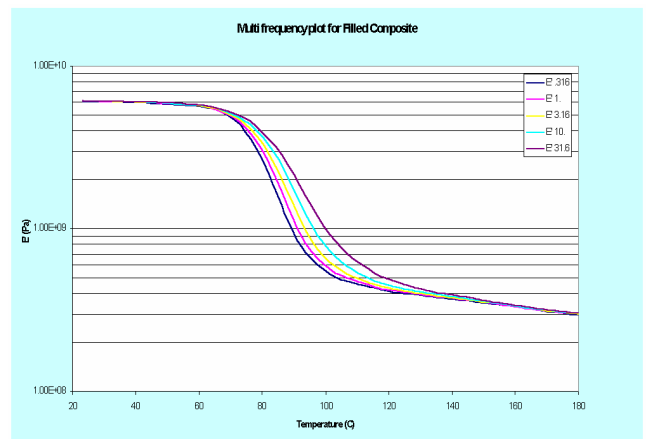


21 Multifrequency Filled Composite Analysis

Instrument: Tritec 2000 Dynamic Mechanical Analyser
Sample: 1.75mm Filled Composite bar
Geometry: Single cantilever bending 1.75mm x 10mm x 10mm
%RMS strain: 0.09
Frequencies (Hz): 0.316, 1, 3.16, 10, 31.6



Tan delta



Modulus

Thermal profile:
3°C/minute to 250°C

Comments:

Multifrequency analysis using a dynamic mechanical analyser allows the user to distinguish between frequency dependent processes and those that are not.

Molecular relaxations e.g. α relaxations (or glass transitions) and β relaxations are always frequency dependent, as illustrated by the α (or glass transition) of the filled composite shown here (Expt.1). Examples of processes that are not frequency dependent are melting, thermal degradation, curing and crystallisation.