VHF 104
Very High Frequencies Analyzer

MATERIALS CHARACTERIZATION AT ITS BEST!

VHF 104 is an innovative Dynamic Mechanical Analyzer that offers a direct experimental method to measure the materials' viscoelastic properties over a very high frequencies range from 100 Hz up to 10 kHz.

Such a test requires only a few minutes, while traditional approach using DMA low frequency test on several temperature stages, requires a few hours test and a calculation through WLF law.

VHF 104 allows optimizing the laboratory's productivity in meeting the requirements of industrials who wish to rapidly analyze large number of formulations of materials.

Main assets

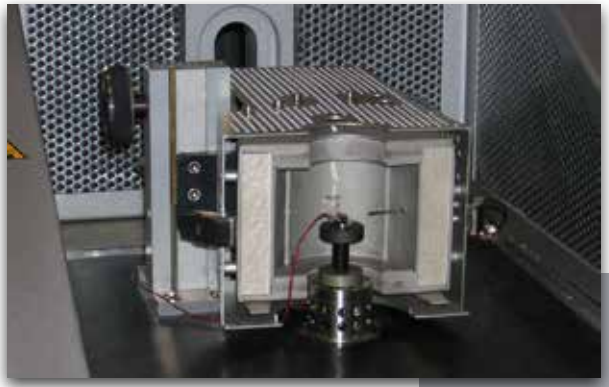
- High frequency range: 100 Hz up to 10 kHz
- Temperature range: -50°C up to 110°C
- Strain range: up to 30%
- Tension-compression mode
- Shear mode
- Short test duration (about 5 minutes)

Main uses

- Elastomer high frequency testing
- Porous materials acoustic properties

Method principle

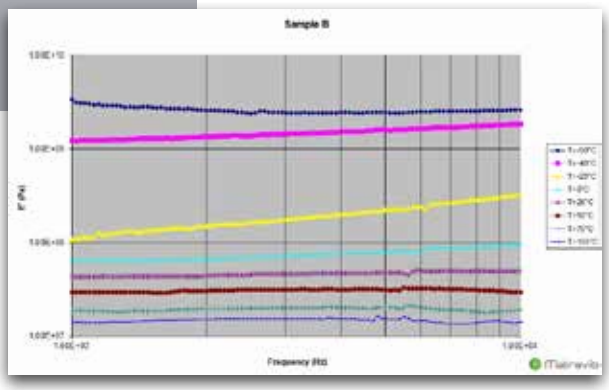
A sinusoidal excitation is applied to a specimen of material submitted to a free mass at the other extremity.
Accelerations at both extremities of the specimen are measured. Their transfer function allows to calculate directly the viscoelastic properties of the material over a wide frequency domain (up to 10 kHz).



Composition

VHF 104 consists in a mechanical cabinet including:

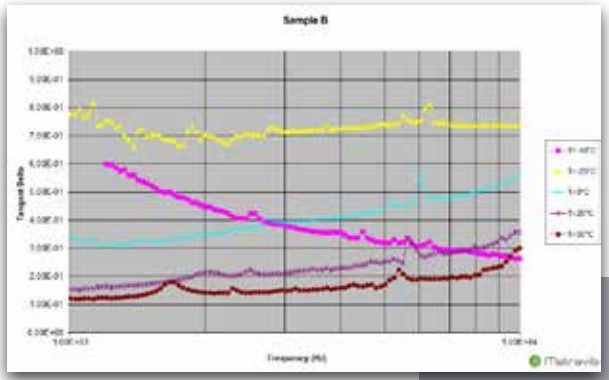
- test frame including electrodynamic shaker
- power amplifier
- electronic interface
- tension-compression specimen-holder
- shear specimen-holder (option)
- thermal chamber (option)
- cryogenic source (option)



Main technical specifications

- Frequency range: 100 Hz up to 10 kHz*
- Strain range: 10E-6 up to 30%*
- Temperature range: room temperature
- Temperature range/ option 1: room to 110°C
- Temperature range/ option 2: -50°C /room

*usable frequency range may depends on specimen geometry and material's nature



Data comparison with conventional DMA

Tests performed with the **VHF 104** reveal a very good cross checking with conventional DMA.
Beside **VHF 104** data are compared with data measured by a METRAVIB **DMA+150**; the **DMA+** test has been performed over a frequency range from 5Hz up to 200Hz; the same frequency sweep has been applied over 20 temperature stages. Using the FTS function of DYNATEST software, the WLF principle has been applied to extrapolate the data to a larger frequency range (0.1 Hz up to 5 kHz). The resulting master curves are compared to direct measurements obtained with the **VHF 104** in a much faster test: 5 minutes instead of a couple of hours.