

Emodumeter™

For the determination of the resonant frequency of materials.



Applications

- Freeze Thaw Analysis
- Young's Modulus Determination
- Damping
- Coefficient Analysis

Features & Benefits

- Conforms to ASTM C-215 and C-666.
- The only method of calculating the following material parameters non destructively:
 - Young's Modulus of Elasticity,
 - Modulus of Rigidity,
 - Poissons Ratio,
 - Damping Constant.
- Available for specimen sizes up to 6 inches (150mm) cross section dimension and from 1.75 inches (45mm) to 28 inches (700mm) in length.
- Automatic identification of the resonance frequency. Large easy to view display for data analysis of time domain and frequency spectrum signals.
- Data can be stored and uploaded to a PC for further analysis and inclusion in reports.
- Fast and easy to use system.

Product Information

Principle

The principle used in the Emodumeter™ is based upon the determination of the fundamental resonant frequency of vibration of a specimen generated by an impact and sensed by an accelerometer. The frequency spectrum is computed and displayed by the meter.

System

The Emodumeter™ MK II has an automatic feature that computes the maximum amplitude, which eliminates cumbersome frequency scanning. Frequencies are automatically shown in the display and a cursor allows the user to move along the frequency spectrum. Also the time

domain signal and the frequency spectrum can be stored and uploaded to a PC for further analysis and inclusion in reports.

Resonance Frequency

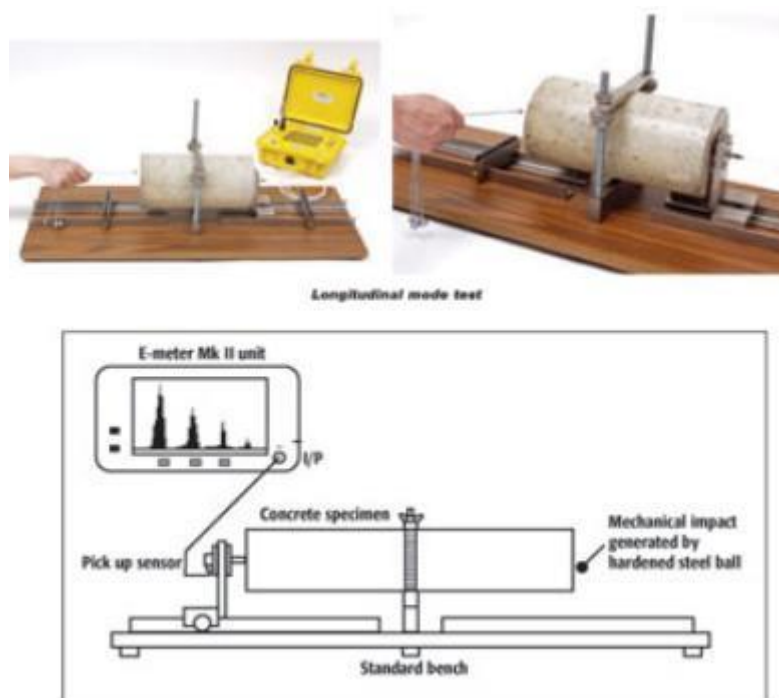
The Emodumeter™ MK II performs a Fast Fourier Transform that allows the identification of the resonance frequency in the Frequency Spectrum.

Durability of Concrete

The determination of flexural resonance is very important when studying the degradation of concrete under accelerated freezing and thawing cycles and aggressive environments on concrete specimens.

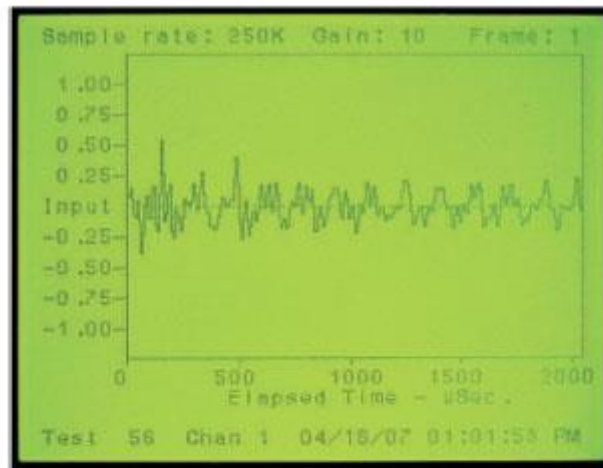
The advantage of resonance methods are:

1. Tests can be repeated over a very long period on the same specimen; the number of test specimens required is therefore greatly reduced.
2. The results obtained with the resonance method on the same specimen are more reproducible than those obtained with destructive tests and groups of specimens.

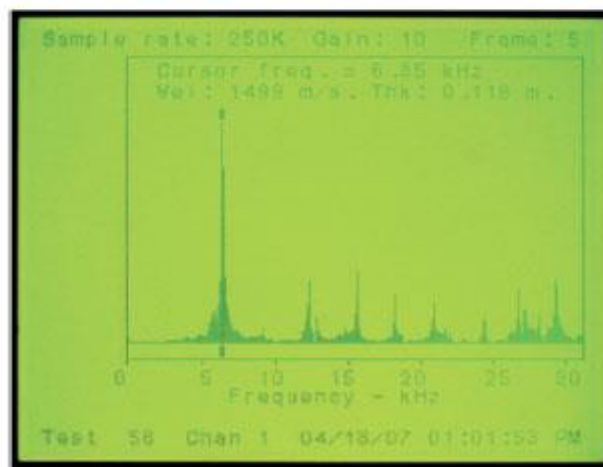


For the determination of the resonant frequency of materials, the Emodumeter™ measures the resonant frequencies of the three different modes of vibration Longitudinal, Transverse (Flexural) and Torsional.

From these the following material characteristics can be calculated Young's Modulus of Elasticity, Modulus of Rigidity and Poisson™ Ratio.



E-meter Mk II time domain signal allows to visualize the vibration of the specimen



E-meter Mk II frequency domain spectrum

Specifications

Frequency range:	from 10 Hz to 40 kHz
Sampling frequency:	10, 20, 40 or 80 kHz
Frequency resolution:	from 4.9 to 78.1 Hz
Record length	1024 or 2048 points
Output bias level:	9.2 V
Accelerometer sensitivity:	9.60 mV/g (0.979 mV/m/s ²)
Battery:	12 Volt. 4-10 hours - continuous use
Display:	320 by 240; backlit for daylight use
Storage:	200 plus readings
Software:	Windows compatible 9x/me 32MB Ram
Impactors:	Set of 6 hardened steel balls.
Operating Temperature Range:	0°C to 40°C

