"Precise, reliable, easy to use and based on the Industry Standard GrindoSonic® Technology for Non-Destructive Testing."

GrindoSonic® MK7

Shop floor Quality Control
Non-Destructive Testing (E- and G-Modulus, Poisson, Damping...)
In-depth material analysis (for R&D)

GrindoSonic®: measuring 'ELASTIC' properties of materials

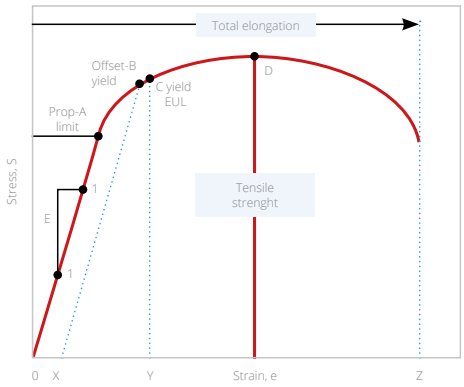
Elasticity

Deformation under externally applied load and return to original shape once the load is removed.

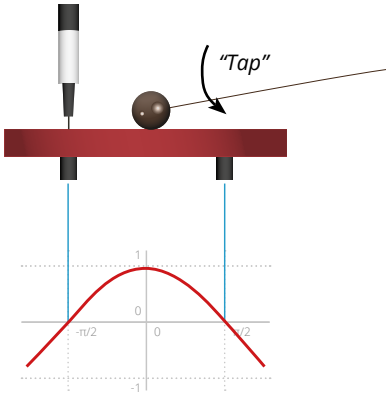
Strain (deformation)

Linearly proportional to applied stress (load) - the material is linearly elastic.

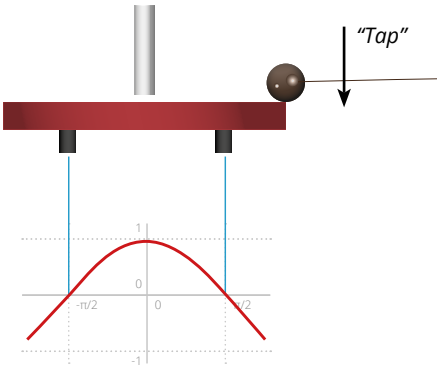
Robert Hooke's law: $\frac{\text{Stress}}{\text{Strain}}$ = constant ~ Modulus of elasticity = E-Modulus



In engineering, structures are designed to function at low stress levels to avoid permanent deformation.



Piezo-electric probe



Accoustic vibration measurement

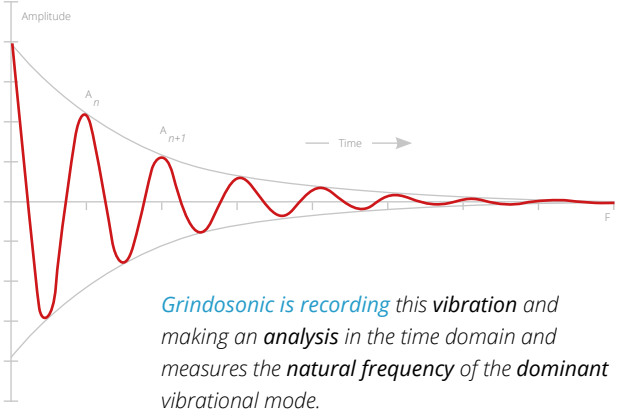
Measurement technique, "Tap & Read"

- Measuring with GrindoSonic is surprisingly **simple**
- As soon as switched on, it is **ready** to operate
- The measurement itself is executed in just a few seconds, just Tap and Read

The GrindoSonic® has been designed to measure elastic properties of a wide range of materials.

Impulse Excitation Technique:

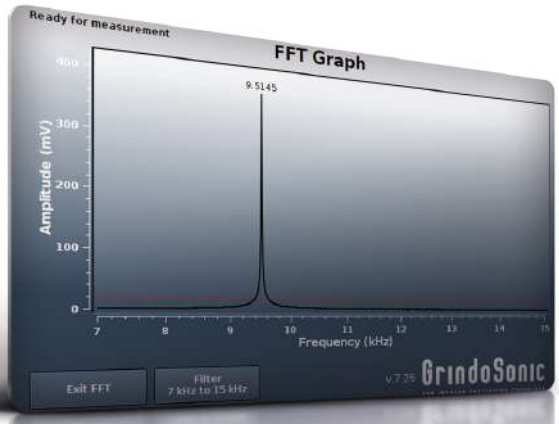
- The sample is subjected to a small **deformation** by means of a **mechanical impulse**
- Immediately, the object will act as a spring-mass system and produce a **decaying mechanical vibration**
- The **frequency** of this vibration depends on the **mass** of the object and its **stiffness**, which is determined by its **shape** and **dimensions** and the **modulus of elasticity** of the material
- Speed of wave measurement as material parameter
- GrindoSonic analyses the damping of the natural frequency and displays the value in 2 options (Logarithmic Decrement or Specific Damping Capacity (SDC))



*Grindosonic is recording this **vibration** and making an **analysis** in the time domain and measures the **natural frequency** of the **dominant** vibrational mode.*

FFT “Fast Fourier Transform” / Spectroscope

- Spectrum visualization between 20 Hz and 150 KHz
- Extreme high resolution of up to 1 ppm (1 in 1.000.000)
- Noise level adjustment
- Sample size and frequency adjustment
- Normalisation function to rescale low energy
- Position, velocity and acceleration spectra

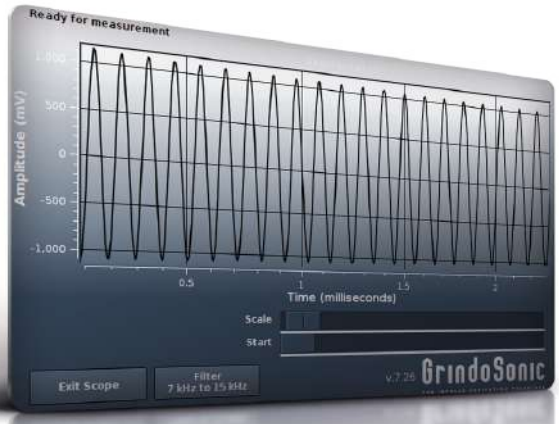


E-G and Poisson Ratio calculation

- Automatic calculation of E- and G-Modulus and Poisson ratio
- Measurement of honing stones, bars, cylinders, grinding wheels, ...
- USB memory stick connection
- Full spectrum and time domain data storage (.csv format)

Wave form visualization / oscilloscope

- Adjustment in scale and time
- Full wave form storage (.csv)
- Time domain visualization of measurements



Filter band instrumentation

- Eight high order hardware analog precision band pass filters to avoid mirroring
- Software filter band selection
- Optional software programmable gain instrumentation amplifier

“Universal instrument for industrial Quality Control, material characterization and research purposes.”

The GrindoSonic system is based on the Impulse Excitation Technique, which has been approved by international standards such as ASTM E1876, ASTM C1259, ASTM C1548, ASTM C215, EN 843-2, EN ISO12680-1, EN 14146 and many more.

GrindoSonic® MK7

GrindoSonic® MK7, the instrument for Non-Destructive measurements of Material Characteristics based on Impulse Excitation Technique (IET).

The core apparatus measures various natural vibration frequencies on a wide range of test objects through the use of the Impulse Excitation Technique (IET).

Highlights

- Non-Destructive measurements of elastic properties of materials
- Extremely rapid and simple: just a light tap is needed and the result is displayed within a fraction of a second
- Measurements of E- and G-Modulus and Poisson's ratio
- An alternative to destructive testing as excellent correlations exist between breaking load and natural frequency
- Production process monitoring for launch and QA-QC
- Widest range of materials: ceramic, wood, composites, brick, concrete, ...
- Widest range of sizes from less then 100 mg to 100 ton
- Suitable for industrial and laboratory use
- Frequency analysis
- FFT calculation for detection of multiple vibrational modes
- Selection of zones of interest by waveband filtering
- Oscilloscope function for time domain analysis
- Graphic visualisation of frequency domain

Technical information

- Frequency range 20 Hz - 150 KHz
- Reference accuracy better than 0.005%
- Resolution up to 1/1.000.000 (1 ppm)
- Vibration detector
- Acoustic detector
- Supply 100 - 240 VAC / 50-60 Hz

Options

- Waterfall 3D plot
- Software programmable gain instrumentation amplifier

Applications

- Abrasives and grinding
- Building materials
- Geology
- Ceramics
- Friction materials
- Composite and plastics
- Metals and alloys
- Cement and concrete
- Refractories
- Wood and timber
- Glass
- ...

"The solution for shop floor Quality Control, NDT for E- and G-Modulus and in-depth material analysis for R&D."

GrindoSonic
THE IMPULSE EXCITATION TECHNIQUE

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