MECHANICAL CHARACTERIZATION

Dynamic Mechanical Analyser (DMA)

TA Instruments
RSA-G2

RSA-G2 is an advanced platform for mechanical analysis of solids. It is capable of applying a variety of deformation types and collect material parameters, providing a wealth of information about material performance characteristics.

The RSA-G2 imposes a mechanical deformation to a specimen and measures the resulting stress response.

Thanks to its advanced design, characterized by separated motor and transducer, the instrument provides very accurate measurements of stress and strain.

The RSA-G2 features a variety of sample clamps that provide multiple modes of deformation.

The instrument is provided by a convection oven for precise and accurate temperature control that allows to perform:

- Test at room temperature
- Test at isothermal temperature
- Test in temperature ramp
- Test in air or in inert atmosphere, as argon or nitrogen gas

It is possible to characterize different materials, plastics or metals, performing tailor-made tests to investigate mechanical properties and simulate the exercise conditions.

Materials

Plastic and Rubber

- Rigid plastics
- Flexible plastics
- Elastomers
- Fibre
- Films

Metals

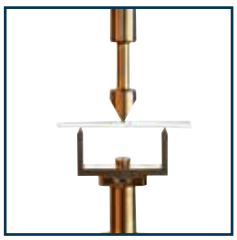
- Thin metallic samples
- Flexible samples
- Metallic foils

Specifications

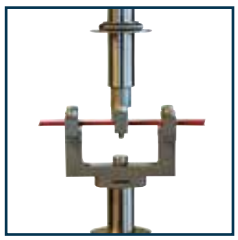
- **Minimum force**
  0.0005 N
- **Maximum force**
  35 N
- **Force resolution**
  0.00001 N
- **Dynamic displacement**
  ± 0.000005 to ± 1.5 mm
- **Displacement resolution**
  1 nm
- **Modulus range**
  10^3 to $3 \cdot 10^{12}$ Pa
- **Modulus precision**
  ±1%
- **Frequency range**
  2.10^{-5} to 100 Hz
- **Temperature range**
  Room temperature to 500° C
- **Heating/Cooling rate**
  0.1 to 60°C/min
- **Isothermal stability**
  ± 0.1°C

Investigated properties

- Modulus of Elasticity
- Complex Modulus
- Storage and Loss Moduli
- Damping properties
- Compliance
- Frequency effects
- Creep and recovery
- Stress Relaxation
- Temperature-time superposition
- Glass transition
- Orientation effects
- Stress-Strain curves
- Dynamic Fatigue
- Toughness
- Viscoelasticity of materials
- Thermal transitions

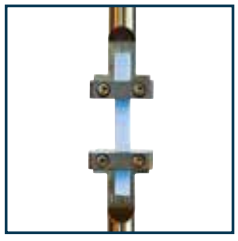


BENDING



DUAL AND SINGLE CANTILEVER

COMPRESSION



TRACTION