LABORATORY: CNR ISPC Stone LAB

NAME OF THE INSTRUMENT

Rheometer-DMA (MCR 702 e MultiDrive Anton Paar)

GENERAL DESCRIPTION:

The instrumentation consists of a Dynamic Mechanical Analysis (DMA) rheometer, model MCR 702e MultiDrive (Anton Paar GmbH, Graz, Austria), equipped with two thermal convection devices (CTD180 HR and CTD600 MRD). The rheometer performs the analysis of the viscoelastic properties of materials. It is coupled with a linear unit to perform dynamic mechanical analysis (DMA) in bending, tension, or compression modes, creep tests, relaxation tests, and thermomechanical analysis. The instrument is also equipped with two thermal devices to perform the analyses in different ranges of temperature and relative humidity.

TECHNICAL DESCRIPTION MCR 702e MultiDrive:

- Dimensions of 444mm x 753mm x 586mm (W x H x D)
- Weight of 56 kg
- Operation with compressed air with recommended pressure of 6 bar (min. 5 bar, max. 10 bar)
- Air consumption without accessories 2.4 m^3N/h, complete with accessories 5.4 m^3N/h
- AC power supply 100 to 230 V
- Frequency from 50 to 60 Hz
- Torque range from 0.5 nNm to 230 nNm
- Maximum speed of 6000 rpm for high shear applications
- EC motor operation in combined motor transducer (CMT) mode
- RheoCompass software
- Geometries for DMA analysis of tension, torsion, and bending.

TECHNICAL DESCRIPTION CTD 180 HR:

- Operating temperature range from 5 °C to 120 °C
- Humidity range from 5 % to 95 %.

TECHNICAL DESCRIPTION CTD 600 MRD:

- Operating temperature range from -160 °C to 600 °C

The equipment performs analysis of rheological, viscoelastic, and thermal properties of liquids, solids, powders, polymers, and slurries, as a function of temperature, time, frequency, stress, atmosphere, or combination of these.

FURTHER INFORMATION:

- ASTM E1640-18 Standard Test Method for Assignment of the Glass Transition Temperature By Dynamic Mechanical Analysis
- ASTM D4440-15 Standard Test Method for Plastics: Dynamic Mechanical Properties Melt Rheology

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