

HST-BW-500 Computer controlled dynamic mechanical torsional braid analysis apparatus

Technical attachment



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I 、 Introduction

HST-BW-500 Dynamic mechanical torsional braid analysis apparatus adopts computer-controlled digital technology. The test principle of the instrument is based on torsional braid analysis in free decay vibration in polymer material testing, referred to as: TBA. TBA is a technique for measuring the dynamic modulus and mechanical loss of a material under torsional vibration load and its relationship with temperature. It's a method that uses the least sample and has the highest measurement sensitivity among all test methods.

Using computer digital measurement and control technology and large storage data storage and data processing technology, transform the traditional TBA test operation and data processing, which are laborious and labor-intensive, into automated and procedures. This allows researchers to easily determine the visco-elasticity of the material at different temperatures.

For example: glass transition, secondary transition, sample melting, product transformation, viscous flow and etc. Predict the six mechanical values of the material and study the Polymer curing, cross-linking and degradation.

II 、 Main technical parameters and accuracy

- (1) Test temperature range: $-120^{\circ}\text{C} \sim 500^{\circ}\text{C}$
- (2) Constant heating rate: $2 \pm 1^{\circ}\text{C}/\text{min}$
- (3) Time measurement: 0.01~9999.99S
- (4) Relative swing measurement: $30^{\circ} \sim 60^{\circ}$
- (5) Measurement display: θ 、P、 Δ 、 $G'1/P2$
- (6) Equipment dimension: (L*W*H) 340*500*1100mm Packed dimension: 450*600*1350mm
- (7) Equipment weight: 33kg Packed weight: 55kg
- (8) Voltage: 220V

III、 Accuracy level: Level 1

IV、 Main structural composition

The instrument host is a stainless steel test chamber fixed on the main frame. Its outer layer has an electric heating layer and a low-temperature cooling tube, and the outermost layer is a heat preservation layer. A starter driven by a stepper motor is inserted into the upper end of the test tube, and its main gear meshes with the pinion on the motor. The lower end of the starter is a torsion bar with a small opening, and a 200mm long glass fiber braid is clamped in the opening. The lower end of the twist braid is clamped into the opening of the lower swing rod. The lower end of the lower swing rod has an inertial disc meshing device with positioning teeth, which can be magnetically meshed with the disc, there is a magnetic locator at the bottom of the disc, which is attracted by the positioning adjuster at the bottom. When the distance is adjusted to 2 to 3 mm, it is the best positioning distance, there is a set of photoelectric angle detectors inside the edge of the disc to detect the amplitude of the swing angle of the twist braid.

The measurement and control system consists of three channel thermocouple temperature sensor and photoelectric angular displacement sensor, four-channel A/D conversion, high and low temperature heating, cooling control system, test CD suction lift, angular displacement, test start-up servo electric motor control.

In addition to conventional configuration, the computer system is also equipped with A/D, I/O conversion, PWM output peripheral interface board and also equipped with control and data processing software.

V、Main configuration

1、Host machine	1
2、Sample braid	20
3、Test software	1 set
4、Brand computer	1
5、Liquid nitrogen	1
6、Liquid nitrogen refrigeration system	1
7、Tools	1
8、Operation instruction、Acceptance、Packing list	

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