Thermal Shrinkage Tester

TST 510 Thermal Shrinkage Tester determines the thermal shrinkage and/or the shrinkage force, which is built up in yarns or tapes being heated to a preset defined temperature for a specified period of time.

TST 510 also offers the possibility of dynamic tests, during which the behaviour of the yarn is observed being exposed to a temperature ramp. After cooling the samples down to ambient temperature, a measurement of the residual shrinkage or shrinkage force is also possible.

With TST 510 up to 10 samples can be tested for thermal shrinkage and/or shrinkage force simultaneously in one test run.

The specially designed oventype heater avoids ambient influence; together with the high resolution length measuring sensors and load cells, it guarantees for stable testing conditions and highest accuracy and reproducibility of results.

After sample loading, the test is performed fully automatically, controlled by the computer without any operator influence. During the test, the shrinkage behaviour of the yarn is graphically displayed on the connected PC .

User friendly software allows for various standard settings as well as for individual configuration of the testing procedure. The software offers numerous possibilities for thorough results analysis.

TST 510 conforms to ASTM D4974, D5591 and EN 13844.

Features

- Highly efficient and automatic testing of up to 10 samples in one test run.
- Simultaneous testing of either percent shrinkage or shrink age force on different samples during one and the same test cycle
- Set temperatures or temperature ramps
- Individually programmable test cycles
- Graphic real time monitoring of the test procedure.

Scope

Automated determination of thermal shrinkage and shrinkage force according to ASTM D4974, D5591 and EN 13844.

Method

Up to 10 samples are heated to a certain temperature for a specified period of time or they are exposed to a temperature ramp. Either the samples' changes in length and/or the forces built up in the samples are monitored via the connected computer.

Since the instrument is computer controlled, all test parameters are easily set and stored corresponding to different tested materials. Therefore once the test configuration is set, the operator just needs to prepare the samples onto the measuring sensors and the whole test takes place automatically.

This is time saving and since any operator influence on the test is avoided, reproducible and most accurate test results are obtained.

Furthermore, the operator can easily program the TST 510 to perform testing sequences according to individual requirements. This includes settings such as temperature ramps with hold times, tests with different pretension weights during the test cycle and much more.

Technical specifications

Testing temperature
From 45°C to 300°C

Range of shrinkage length
From -80% to +500%

Pretensioning
With pretension weights, from 0 to 500 cN possible

(depending on linear density of sample)

Accuracy:
- Force:<0.2% (at 50% full scale)
- Temperature (% of set temp.):

  45°C - 200°C: ± 1%

  201°C - 300°C: ± 1.5%
- Shrinkage length: ± 0.1%

Range of shrinkage force:
From 1 to 2000 cN

(other ranges on request)

Calibration: with 1.00 N weight

Resolution:
- Force: 0.1 cN
- Temperature (display): 0.1° C
- Shrinkage length: 0.1% (internally:0.02%)

Temperature distribution:
The temperature's distribution

over the 10 testing positions

within the oven-type heater is

better than 1%.

Control system:
Personal computer with comfortable WINDOWS® based software for application and evaluation of results

Power supply:
220 V, 10 A, 50 Hz;

approx. 1800 W

(other voltages on request)

Dimensions:
Height: 115 cm

Width: 70 cm

Depth: 120 cm

Weight: approx. 190 kg

Options
- Support for heavy yarns when pretension weights > 1 kg are used.
- Calibration weight 9.00 N for heavy yarns.
- Additional pretension weights