



Percent shrinkage and shrinkage force at specified temperatures are two dominant quality parameters of technical and industrial yarns, plastic tapes as well as filament and spun yarns for textile applications.

The Thermal Shrinkage Tester **TST 2** determines the thermal shrinkage or the shrinkage force which is built up in yarns or plastic tapes being heated to a preset defined temperature for a specified period of time. After cooling the samples down to ambient temperature, a measurement of the residual shrinkage or shrinkage force is also possible.

With the **TST 2** up to 2 samples can be tested in one test run.

Individual combinations of simultaneous tests are possible:

- shrinkage and shrinkage force (1 sample each)
- shrinkage (1 or 2 samples)
- shrinkage force (1 or 2 samples)

Optional tests:

- percent shrinkage versus time
- shrinkage force versus time
- percent shrinkage versus temperature
- shrinkage force versus temperature

User friendly software on a connected PC allows automatic numerical evaluation and graphical presentation of the results. The specially designed oven eliminates ambient influence.

High resolution length measuring sensors and load cells, together with the precise temperature control of the heater, guarantee stable testing conditions and very accurate and reproducible results.

After loading the samples the test is performed fully automatically controlled by a computer, without any influence of the operator.

Scope:

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

Since the instrument is computer controlled all test parameters are easily set, corresponding to different tested materials, and stored.

The oven movement takes place automatically and is controlled by the computer.

Therefore, once the test configuration is set the operator just needs to prepare the samples onto the measuring sensors and push the START button.

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

Beside the measurement of shrinkage and/or shrinkage force at a given temperature, further valuable information can be gathered from recording the measurable variable versus temperature by heating the sample with a constant rate of temperature increase, starting from an initial low temperature.

In this way, a comprehensive characterization of the thermo-

mechanical properties of the sample is possible.

TST 2 serves for quality control purposes in the production of yarns and tapes as well as a sophisticated tool in research and development.

Method:

Up to 2 samples are heated to a certain temperature for a specified period of time. Either the samples' changes in length or the forces built up in the samples are monitored via the connected computer.

Testing temperature:

From 45°C to 300°C

Heater length:

Length of heater: 250 mm

Temperature distribution:

Constant temperature distribution of $\pm 2^\circ\text{C}$ in at least 80% of the heater length

Shrinkage length:

From 99% to - 500%
Accuracy: $\pm 0,1\%$

Range of shrinkage force:

From 1 to 2000 cN
Accuracy: $< 0,2\%$
(at 50% of full scale)

Max. sample width:

1,3 mm
(5 mm on request)

Pretensioning:

With pretension weights, from 0 to 500 cN possible (depending on linear density of sample)

Resolution:

Force: 1 cN (=0,01N)
Temperature (display): $0,1^\circ\text{C}$
Shrinkage length: 0,1%

Control- and evaluation system:

Personal computer with comfortable WINDOWS® based software for controlling the test procedure and evaluation of test results.

Dimensions:

Height: 320 mm
Width: 480 mm
Depth: 500 mm
Weight: approx. 25 kg

Power supply:

TST 2: 90-240 V / 50-60 Hz, 1700 W

PC: 90-240 V / 50-60 Hz, 600 W

Option:

Fast cooling by means of air pressure (6 bar)

Air supply:

90 psi instrument air, 1,5 scfm (6 bar, 0.6 Nm³/min)

Technical data and pictures are subject to change!

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