

DTI 500



Filament characteristics like orientation, dyeability, shrinkage and recovery are important quality parameters, but usually their determination is time consuming and expensive. These characteristics are straight connected to variations of the draw tension or draw elongation which correspond to shrink force and shrinkage - but measured on a running yarn. That means faster measurement, information about variation and more useability of the results.

DTI 500 is designed to determine the draw tension on the workflow immediately after the filament leaves production. In this way, the time of response to irregularities in the process and therewith the production of low quality lots is reduced to a minimum.

DTI 500 stands out for modern, automatic, high

performance filament testing. Out of the results of the draw tension test, orientation irregularities, shrinkage and the future dyeability can be judged quickly and easily in a reliable way .

By the measurement of draw elongation, **DTI 500** enlarges once more the application range for process control and development.

Wide varieties of different filaments are easily and rapidly tested, since the varying test parameters are easily changeable and storable in the internal computer according to any requirements of the tested filaments.

For most user friendliness, the **DTI 500** features automatic string up and sample removal as well as a powerful software together with the integrated computer.

Scope:

Draw tension is a property of yarn (dynamic shrink force test) which reflects the orientation of polymer molecules. Malfunction in the process will result in variations of the orientation.

With the draw elongation test, the shrinkage can now also be measured now dynamically on the running yarn.

Orientation is related to the yarn's dyeability and other processing properties. Therefore draw tension data are used to evaluate these properties and to predict possible irregularities and problems in further processing steps.

By measuring the draw tension only moments after bobbins have left the spinning machines, irregularities of the filament due to production are determined in a fast and efficient way.

That way, necessary corrections in the production process can be carried out soonest possible after their appearance. Previous installations show that on the basis of draw tension results, producers have strongly reduced the time consuming tensile test by using the **DTI 500** for the routine control.

If draw ration 1.0 is selected, the instrument also allows to determine the shrink force within flat yarn or within texturized yarns - besides the draw force of POY yarns.

Method:

Draw tension measurement: During the course of a cycle the **DTI** periodically measures the tension produced in a sample yarn which is heated to a certain temperature and drawn to a certain percentage. **ASTM D 5344**

Draw elongation measurement:

During the test, **DTI 500** periodically controls and records the draw ratio so that the preset tension remains constant. The variation of the draw ratio corresponds therewith directly with the draw elongation or in other words with the variation of the dynamic shrinkage at a certain pretension.

Non routine tests:

For product development and detailed process studies, you can perform non routine tests with the measurement during the course of ramps, e.g. tension vs. different yarn speeds and draw ratio or elongation at different tensions (dynamic tensile test).

The **DTI 500** features automatic string up and sample removal.

Sample feeding:

Automatic string up and sample removal

Accuracy:

Draw ratio: $\pm 0,02\%$
 Draw force: $\pm 0.1 \text{ g}$
 Temp.: 1% of actual temperature

Denier range:

10 - 510 den (11 - 560 dtex)
 (up to 1300 den, 1430 dtex on request)

Tension (force) range:

0 to 800 g

Power supply:

220 V / 50 Hz or 110 V / 60 Hz,
 1500 W

Dimensions:

Height: 178 cm
 Width: 85 cm
 Depth: 62 cm
 Weight: 220 kg

Control system:

Totally computer controlled with integrated monitor
 Windows - NT®, XP®

Data base:

For long term evaluations, statistics, graphical result interpretation and fast SQL - data base access

Testing speed:

Up to 360 m/min

Testing time:

approx. 30 s / test

Temperature:

110 - 280°C (other temperatures on request)

Draw ratio:

0.500 - 36.000 x via electronic servo motors

Air supply:

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

Options:

- Serial port communication with external source
- SESS automatic bobbin changer
- Bar code sample identification