Distributeurs
Verson Vlies Courcier Sarl
VVC.fr
ZA des Wattines, 5
Pavé d'Halluin
F-59126 LINSELLES
T : 03.20.46.59.66
F : 03.20.03.17.38
info@vvc.fr

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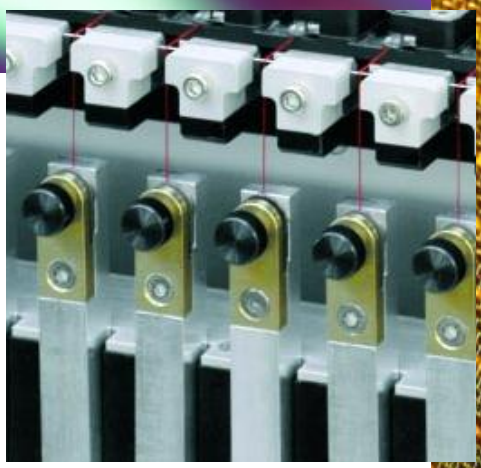
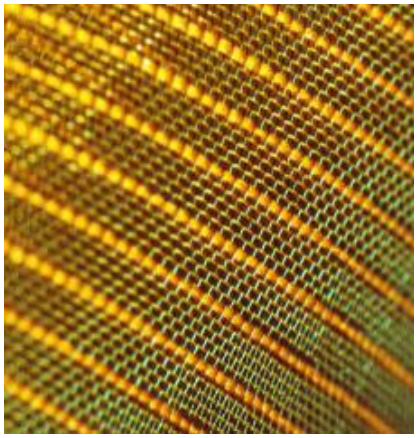
textile testing technology



FIBRESTRESS

Bending-Abrasion and Cyclic Stress Tester for Fibres and Yarns



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Bending-Abrasion and Cyclic Stress Tester for Fibres and Yarns FIBRESTRESS

During the fibre **bending-abrasion test**, the fibre sample is cycled back and forth over a wire or thin pin under given tension and defined angle, e.g. 90°. In this test, the number of cycles up to fibre breakage is the measured variable. Concerning fibres for apparel textiles, the test provides a measure for the tendency to pilling of the woven- or knitted fabric: The smaller the cycle number to break occurrence, the lower is the **tendency to pilling**, since the pills that develop during textile wear would be shed within a short period. With this test, for example, Polyester fibres that show little or no pilling have a life span of less than 1000 load cycles, whereas fibres with poor pilling characteristics can reach up to 100 000 cycles.

The opposite is desired for fibres used for carpets: **Fibres** for **carpet piles** must be highly resistant to bending stresses in order to avoid premature breakage during heavy wear of the carpet.

The bending-abrasion test is also suitable for staple fibre yarns concerning the stability of their structure or resistance to stress during subsequent processing, e.g. for warp yarn in weaving. With flax fibres, the fibres increasingly divide into small single fibrils when subjected to the bending-abrasion test, which provides information concerning processing properties.

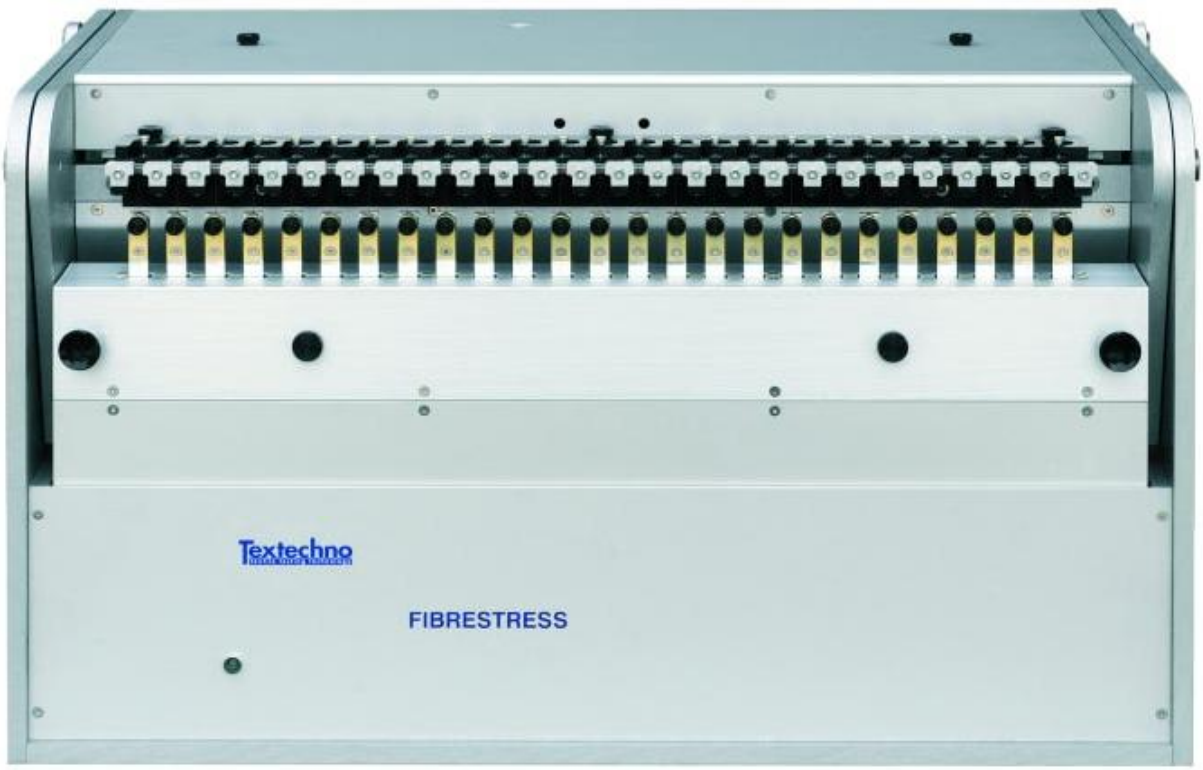
Finally, in the area of **hair care** products, conclusions can be drawn regarding the influence of the treatment media concerning hair characteristics, such as elasticity or brittleness, by subjecting the treated human hair to the bending-abrasion test and analysing the results.

A further test method in addition to the bending-abrasion test, which is also cyclic, is the **cyclic stress test**. Here, the fibre or yarn is subjected to an alternating change between tension and full relaxation. The measured variable is again the number of load cycles up to break occurrence. Such cyclic stress tests also supply valuable information regarding the fibre or yarn properties during processing, performance characteristics, e.g. for carpets, or the effects of special treatments in the case of human hair.

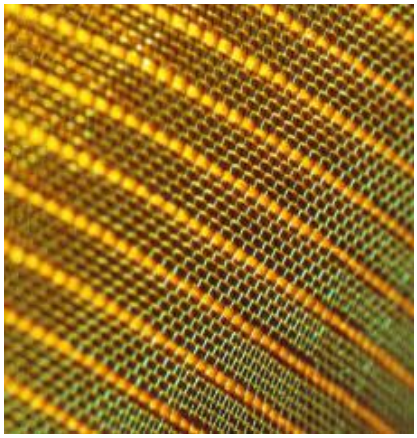
FIBRESTRESS Type F

This equipment has been designed for bending-abrasion tests on fibres with a linear density within the range of 0.3 – 20 dtex. For the test, one of the fibre ends is held by a clamp and the other end loaded with a pre-tensioning weight. The fibre is bent at a 90° or 110° angle around a wire, which brings about the abrasion stress.

The clamp cycles in a horizontal direction, pulling the fibre backwards and forwards over the wire. A sensor registers the occurrence of fibre breakage, and the appropriate cycle number count up to that moment is recorded. The equipment features a clamping strip with 25 positions for the simultaneous testing of 25 fibres.



Bending-Abrasion Test



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FIBRESTRESS Type C

This equipment uses an identical method as the Type F for bending-abrasion tests on fibres with a high linear density and yarn segments within the range of 3 – 100 dtex. Due to the higher sample count, the equipment has heavier pre-tensioning weights that are guided within vertical channels. If necessary, the weights can be secured against any tendency to self-twist.

In addition to the bending-abrasion test, the FIBRESTRESS Type C can also be used to carry out cyclic stress tests. Here, the reciprocating arrangement of the clamping strip is converted from its position of horizontal movement into a position with vertical motion. The fibre length must be measured in such a way that, with each downward movement of the clamp, the weight comes into contact with the sensor where upon the fibre is relaxed. If fibre breakage occurs, the weight is no longer raised during the following upward movement of the clamp and the cycle number is recorded. As an option, there is the additional possibility of recording any lengthening of the fibres during the test as a function of the cycle number.

FIBRESTRESS Type C/H

The construction of this model for the testing of human hair is mainly identical to the FIBRESTRESS Type C. Here, the ends of the hair segments to be tested are fitted with clamping tubes, which are fastened into the clamps of the tester and to the tensioning weights. This eases treatment of the test samples with liquid media prior to the testing.

Cyclic Stress Test

Technical data

Sample holder:
Clamping strip with 25 positions, reciprocating movement, either horizontal or vertical plane (only Type C and C/H).

Cycle frequency of clamping strip movement:
0 – 4 Hz (0 – 240 strokes per minute).

Wrap element for the bending-abrasion test:
Wire diameter 0.02 – 0.5 mm,
other diameters on request.

Bending angle for the bending-abrasion test:
Adjustable, either 90° or 110°,
other angles on request.

Tensioning weights:
70 mg – 10 g (Type F),
6 g – 70 g (Type C, C/H),
other weights on request.

TESTCONTROL:
Dimensions, weight:
Height 350/650 mm, width 640 mm,
depth 380 mm, approx. 40 kg.

PC system for controlling the test process and for the evaluation of the measured data, connected via serial interface.

The above technical contents can be subject to changes by Textechno.

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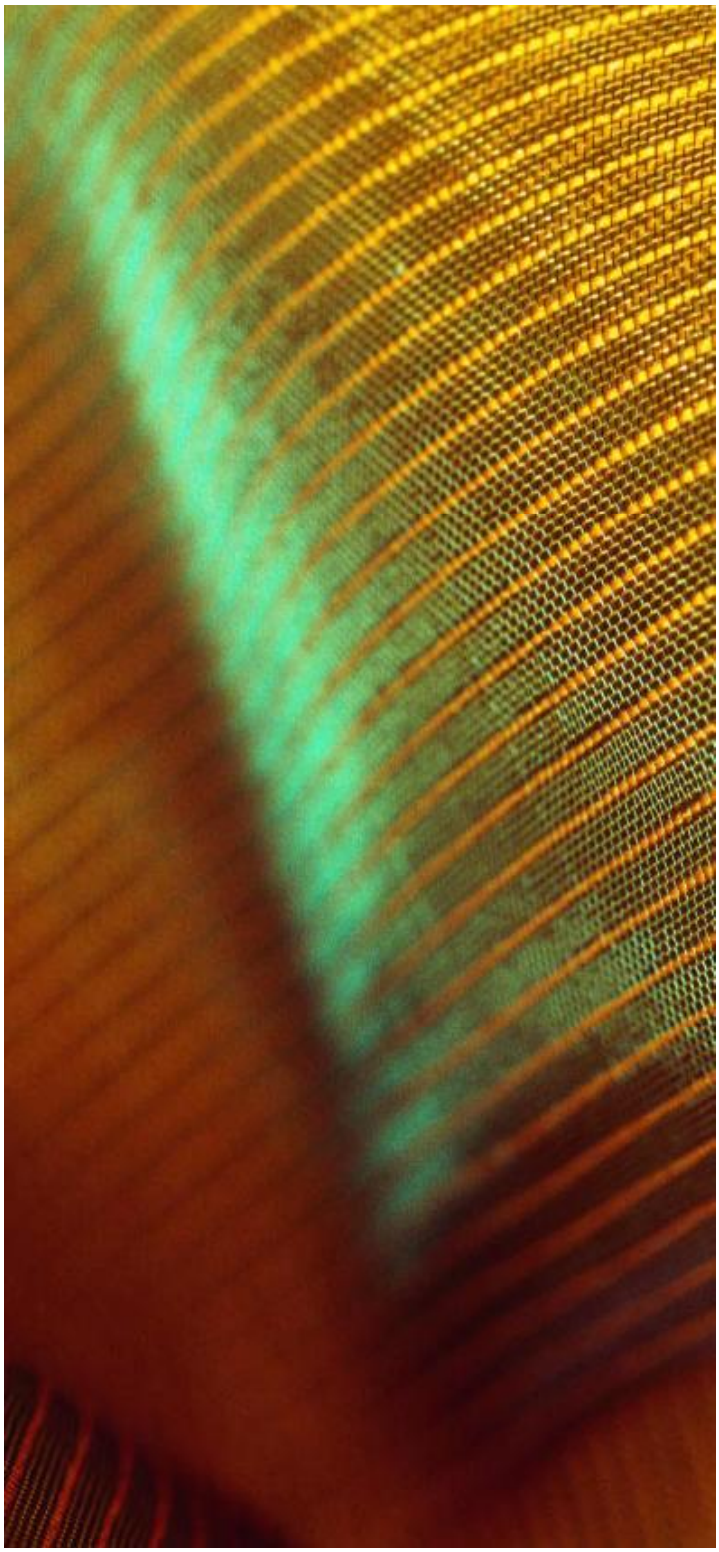

TEXTECHNO
Herbert Stein GmbH & Co. KG
Dohrweg 65
D-41066 Mönchengladbach
Germany
Tel +49 (0) 21 61-65 99-0
Fax +49 (0) 21 61-65 99-10
info@textechno.com
www.textechno.com