

**Tearing Tester  
FX 3750 ELMENDORF-TESTER**



## SCOPE

The TEXTEST Tearing Tester FX 3750 ELMENDOF-TESTER is a microprocessor controlled falling-pendulum instrument with digital display for determination of the average force required to propagate a single-rip tongue-type tear starting from a cut in paper, cardboard, plastics, non-wovens and woven fabrics.

The instrument covers an extremely wide measuring range extending from very low values to unusually high tearing forces. Therefore, it is perfectly suited as an

## FUNCTION

The instrument computes the average tearing force of a cut specimen from the energy loss of a falling pendulum. This test very well simulates the practical case where a test specimen is exposed to a sudden heavy load which causes the test specimen to tear, propagating an existing cut, such as a seam or a button hole.

The instrument digitally displays the average tearing force of a single test specimen in one out of seven switch selectable units of measure, rounded to the nearest three digits. The displayed test result automatically considers the selected pendulum weight and the number of test specimens, thus eliminating the need for retroactive conversion.

Test results falling into a portion of the measuring range which is declared invalid by some or all test standards cause an audible alarm and are clearly identified by a colored LED display.

Instead of a slave pointer, the instrument employs a digital optical encoder for measurement of the pendulum movement. This eliminates the usual friction, adjustment and maintenance problems and significantly improves the measuring accuracy of the instrument.

The instrument features an *automatic calibration* function which compensates for the pendulum friction and for any leveling error of the instrument. This further improves the measuring accuracy and eliminates the need for precise leveling of the instrument. Therefore, the instrument requires no spirit level.

The empty pendulum is completely balanced, so that the test result is solely determined by the weight of the pendulum weight(s) used. This eliminates the need for special calibration check weights. The periodic calibration check is reduced to a simple determination of

universal instrument for measurement of *all* kinds of test specimens, from fine to heavy duty materials.

The instrument works in accordance with AFNOR G 07-149, ASTM D 689, ASTM D 1,424, ASTM D 1,922, ASTM D 5,734, BS 4,468, DIN 53,128, DIN 53,862, INDA IST 100.1, ISO 1,974, ISO 4,674, ISO 6,383-2/360A, ISO 9,290, EN ISO 13,937-1, Marks & Spencer P 29 (with modkit FX 3750-M&S), SCAN P 11, SNV 198,482, TAPPI T 414, and other standards.

the weight of the pendulum weights, which can easily be done with any suitable balance.

The instrument is supplied with an ISO conform calibration certificate.

The instrument has been designed for easy handling and for maximum operator safety:

- By means of unique specimen clamps the test specimen is loaded to the instrument quickly and without appreciable force by simply flipping over two levers. This eliminates the cumbersome and sometimes painful tightening of conventional screw-type sample clamps.
- During loading of the test specimen, the movable sample clamp is latched, so it cannot give way and bend the test specimen.
- For the higher measuring ranges two or four pendulum weights are used together on the twin pendulum. Therefore, in spite of the high capacity of the instrument, *none of the pendulum weights is heavier than 6 kgs (13 lbs)!*
- For changing of pendulum weights the pendulum can be locked in the horizontal position, and the pendulum weights can easily be pushed onto the pendulum and locked into place.
- To release the pendulum, *both* hands of the operator are required to prevent any interference with the swinging pendulum.
- In addition, a red safety bar keeps the head of the operator away from the swinging pendulum.

The instrument is equipped with a RS 232 serial data port.

## EVALUATION OF THE TEST RESULTS

The simplest method for evaluation of the test results is to read the test results from the digital display, to write them down and to evaluate them manually.

In order to eliminate all reading, writing and calculating tasks and related errors, the instrument can be connected to the Strip Printer L 5130 MINIPRINT, which documents the test results, including statistical analysis, on a 57 mm (2.25") wide strip of paper (see adjacent picture).

Alternatively, the instrument can be connected to a PC or Laptop computer with the Evaluation Program L 5110 LABODATA III. The PC prints a comprehensive test report, including statistical analysis of the test results (see separate picture). In addition, it stores the test results on the hard disk and performs long-term evaluations based on various selection criteria.

Up to five different TEXTEST instruments can be connected to the PC at the same time. The test results from these instruments can be processed *simultaneously* and documented together on the same test report. Thus, the Evaluation Program L 5110 LABODATA III turns the PC into a complete data processing system for the testing laboratory.

## TECHNICAL SPECIFICATIONS

- Individual measuring ranges (full scale):  
with weight set FX 3750-PAP:  
with weight set FX 3750-TEX:  
with weight set FX 3750-TEX plus FX 3750-TX+:
- Usable measuring ranges:
- Total usable measuring range:
- Displayed unit of measure:
- Measuring accuracy:
- Resolution:
- Number of test specimens:
- Maximum test specimen thickness:
- Tear length:
- Cut length:
- Data port:
- Power requirements:
- Dimensions (w x d x h):
- Net/gross weight:

The instrument is supplied with a die for *die* cutting of test specimens, a template with knife and cutting board for *cutting* of test specimens, a knife gauge, and an ISO-

TEARING STRENGTH	
ELMENDORF METHOD	
ID:	_____
Speci mens:	1
Range:	30000 cN
Instrument:	FX 3750
S/n:	346
Date:	23. 6. 2006
Time:	14: 47
Operator:	_____
1:	15100 cN
2:	16500 cN
2:	del eted
2:	14700 cN
3:	15000 cN
4:	13800 cN
5:	14700 cN
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Avg:	14700 cN
Min:	13800 cN
Max:	15100 cN
CV :	3.5 %
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Test report, printed with the Strip Printer L 5130 MINIPRINT (original size).

200, 400 and 800 cN  
1,600, 3,200, 6,800 and 13,600 cN  
1,600, 3,200, 6,800, 13,600 and 30,000 cN  
20 - 80 % of each full scale range  
1.4 cN through 24,000 cN (0.003 through 53 lbs)  
mN, cN, N, g, kg, oz and lbs (switch selectable)  
better than  $\pm 2$  % of the displayed value  
0.09 °  
1 through 29  
2.5 mm  
43 mm  
20 mm  
RS 232 C, asynchronous, bi-directional  
100 through 240 V, 50 through 60 Hz, 40 W  
35 x 65 x 62 cm  
50 / 61 kgs.

conform calibration certificate. The pendulum weights are *not* included with the base unit and must be ordered separately.

## **ACCESSORIES**

### **FX 3750-PAP Pendulum Weight Set "Paper"**

Set of 3 pendulum weights for measurements on paper, plastics and non-wovens.

- Measuring ranges: 200, 400 and 800 cN.

### **FX 3750-TEX Pendulum Weight Set "Textiles"**

Set of 4 pendulum weights for measurements on fabrics.

- Measuring ranges: 1,600, 3,200, 6,800 and 13,600 cN.

### **FX 3750-TX+ Pendulum Weight Set "Textiles+"**

Set of two augment pendulum weights for measurements on high-tenacity fabrics. Works only in conjunction with the FX 3750-TEX Pendulum Weight Set "Textiles"

- Measuring range: 30,000 cN.

### **FX 3750-M&S Modkit "Marks & Spencer P 29"**

Modkit for tests in accordance with the Marks & Spencer Standard P 29. Comprising a knife, knife gauge, specimen template, and die.

### **L 5130 Strip Printer MINIPRINT**

For documentation and statistical analysis of the test results from various TEXTEST instruments on a 57 mm (2.25") wide paper strip.

### **L 5110 Evaluation Program for PC LABODATA III**

Program for documentation, statistical analysis, storage, and long-term evaluation of the test results from various TEXTEST instruments by means of a PC.