

**Dynamic Air Permeability Tester  
FX 3350 AIRBAG-TESTER**



## SCOPE

The TEXTEST Dynamic Air Permeability Tester FX 3350 AIRBAG-TESTER is a new and unique instrument for fast and accurate determination of the average dynamic air permeability of airbag fabrics and of the exponent of the air permeability curve in a selectable test pressure range. These two data describe the air permeability of a fabric in the entire pressure range with a high degree of accuracy. Therefore, they are much more representative for the performance of the fabric in an airbag than the static air permeability, measured with a conventional static air permeability tester.

## FUNCTION

The instrument simulates the conditions in an airbag during the inflation and deflation phase by exposing the test specimen to a sudden blow of air, similar to the one occurring in an airbag.

The test specimen is loaded to the test area of the instrument quickly, and without any strenuous effort, by means of a clamping lever. After start of the test, the storage volume in the test head is loaded to a selectable start pressure, and the compressed air is then released to the outside via an intermediate volume and through the test specimen. After a few seconds the average dynamic air permeability of the test specimen and the exponent of the air permeability curve during the deflation phase are digitally displayed by the instrument.

## 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.

Measurements can be taken on unprocessed fabrics as well as on finished airbags. Therefore, the instrument is best suited for the quality control in weaving mills, finishing mills, and airbag system assembly plants.

By means of the optional Evaluation Program L 5110 LABODATA III and a PC, for R & D work on airbags and on airbag fabrics, the test results can be displayed and printed as curves, including the bi-axial tensile characteristics of the test specimen. The program also provides for means for detailed analysis of the curves.

The change-over of the test heads is simple and takes only seconds. Since each test head covers a certain air permeability range, with the test heads available, the entire range of airbag fabrics can be measured, from extremely dense airbag fabrics to open raw fabrics.

The proper function and calibration of the instrument can be checked in a matter of seconds by means of calibration check plates, supplied with the instrument.

The instrument can be calibrated, and is supplied with an ISO conform calibration certificate.

The instrument is equipped with an asynchronous, serial RS 232 C data port.

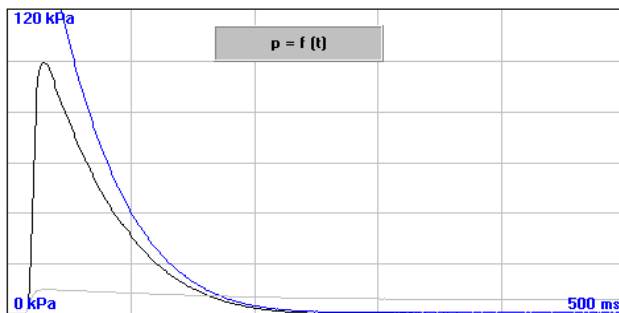
DYNAMIC AIR PERMEABILITY	
ID:	_____
Start vol.:	400 cm <sup>3</sup>
Start press:	190 kPa
Limits:	30/70 kPa
Test area:	50 cm <sup>2</sup> R
Instrument:	FX 3350
S/n:	123
Date:	25. 6. 2006
Time:	12: 05
Operator:	_____
ADAP / Exp.	
1:	630 mm/s / 0.87
2:	915 mm/s / 0.55
2:	~~~~~ deleted
2:	600 mm/s / 0.88
3:	644 mm/s / 0.87
-----	
Avg:	625 mm/s / 0.87
Min:	600 mm/s / 0.87
Max:	644 mm/s / 0.88
CV :	3.6 % / 0.7 %
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Test report, printed with the  
Strip Printer L 5130 MINIPRINT  
(original size).

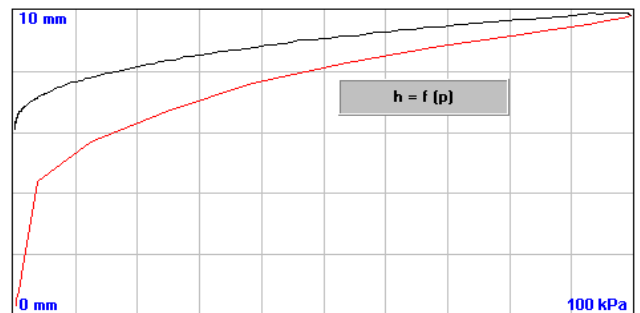
## ADDITIONAL FUNCTIONS WITH THE EVALUATION PROGRAM LABODATA III

By means of the optional Evaluation Program L 5110 LABODATA III and a PC the following curves can be

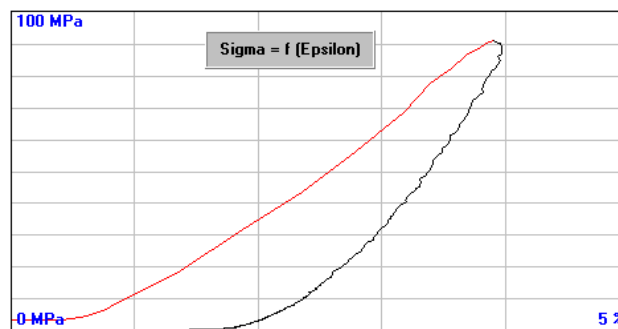
displayed, printed and detailed analyzed for R & D work on airbag fabrics and on airbags:



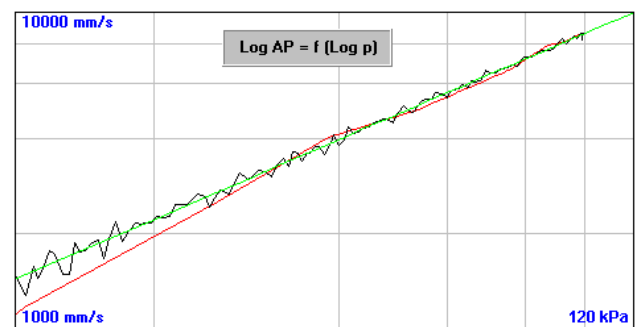
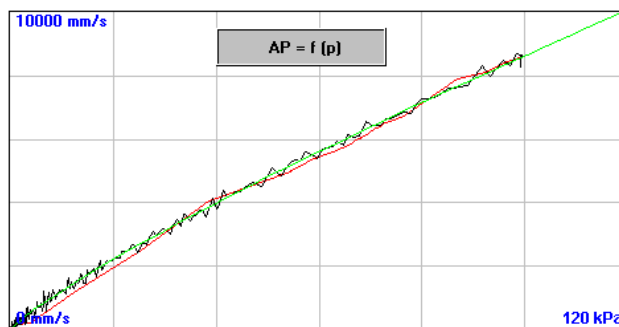
Test pressure  $p$  versus time  $t$



Bulging height  $h$  versus test pressure  $p$



Biaxial stress  $\sigma$  versus biaxial strain  $\epsilon$



Measured and computed dynamic air permeability  $AP$  versus test pressure  $p$ , both in linear and double-logarithmic scale.

These curves, together with the detailed data extracted from them, provide for vital information about the performance of the tested fabric in an airbag, which is not easily available otherwise.

## TECHNICAL SPECIFICATIONS

- Measuring range: approx. 200 to 6,000 mm/s (= l/m<sup>2</sup>/s) in the pressure range of 30 to 70 kPa
- Test area: 50 cm<sup>2</sup>, circular
- Test pressure: 0 through 100 kPa
- Rise time: 10 through 30 ms
- Fall time: 100 through 300 ms
- Total measuring time: 500 ms
- Start pressure: max 400 kPa
- Lower test pressure limit: 1 through 99 kPa, standard value: 30 kPa
- Upper test pressure limit: 1 through 99 kPa, standard value: 70 kPa
- Displayed test result: average dynamic air permeability and exponent of the air permeability curve in the selected test pressure range
- Data port: RS 232 C, asynchronous, bidirectional
- Maximum sample thickness: 3 mm
- Maximum clamp separation: 50 mm
- Projection of clamping lever: 50 cm
- Minimum clamping force: 380 kgs
- Power requirements: 230 V, 50 through 60 Hz, 600 W
- Dimensions (w x d x h): 42 x 80 x 58 cm
- Net/gross weight: 105 / 130 kgs.

The instrument is supplied complete with an air compressor and a calibration check plate for each test head. The test heads are *not* included, they must be ordered separately.

## ACCESSORIES

For the Dynamic Air Permeability Tester FX 3350 AIRBAG-TESTER the following accessories are available:

### **FX 3350-XXX Test Heads for FX 3350**

- Model FX 3350-100: for extremely dense airbag fabrics
- Model FX 3350-200: for dense airbag fabrics
- Model FX 3350-400: for medium dense airbag fabrics
- Model FX 3350-800: for open airbag fabrics
- Model FX 3350-1k6: for extremely open airbag fabrics.

### **FX 3350-TRA Power Transformer for FX 3350**

Built-in power transformer for operation of the FX 3350 Dynamic Air Permeability Tester on a 100 V or 115 V power line. **(Please specify the line voltage when ordering).**

### **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 an IBM compatible PC. Required to generate and evaluate the AIRBAG-TESTER curves.