
Lawson-Hemphill

New textile burst tester

The new Textile Burst Tester 13-60 series by Lawson-Hemphill, Swansea, MA/USA is used as a multidirectional tensile test to identify failure in the direction of least resistance for evaluating the materials physical strength and fiber bond.

The textile burst tester is designed to meet international standards for tests on textiles. In textiles, the burst tester measures the fabrics strength along with immediate or eventual effects of dyes, chemicals and processes. It also demonstrates the results of wear, age and environment and evaluates the comparative strength of alternative fibers.

The instrument is designed for measuring the bursting strength of sample materials subjected to an increasing hydrostatic pressure. This pressure is applied to a circular region of the specimen via an elastic diaphragm. The specimen is firmly held round the edge of this circular region by a pneumatic clamping device. When the pressure is applied, the specimen deforms together with the diaphragm. The bursting strength corresponds to the maximum pressure supported by the specimen before failure. Identical, in the principle

to a multi-directional tensile test, this measurement is independent from the cutting direction of the sample (machine or cross) since the failure naturally occurs in the least resistance direction. The rubber diaphragms with specific thickness and shore hardness must have a bulge versus pressure pattern within the tolerance of the standards related to the type of material tested.

The hydrostatic pressure is transmitted to the diaphragm by a hydraulic jack associated with a frictionless ballscrew driven by a precision DC motor. The rotational speed and the position of the motor are servo-controlled by means of an optical encoder ensuring a perfect control of the fluid flow rate together with the determination of the displaced volume of fluid.

This measurement may be used to determine the profile of the resistance pressure of the rubber diaphragm itself versus the displaced volume of fluid. The corresponding values may then be subtracted from the values actually measured during a test in order to take into account the sample resistance only (applications to textiles for instance).

Sample tightening system:

- A large pneumatic jack enables an accurate and reproducible tightening.
- The tightening surfaces have an adequate profile to minimize the slippage even for difficult materials like textiles for high volume bags.
- The tightening pressure is measured with a precision manometer and may be displayed in metric or imperial units.
- The gripping strength is recalculated according to the geometry of the tightening surfaces, and displayed in newtons.

The bursting pressure is measured by a metallic gages pressure transducer (0-100 bars) with an accuracy of $\pm 1\%$ of read value ± 1 digit between 5% and 100% of the FSD and a resolution of 2 mbars (50,000 points). Some important features of this tester include large graphic LCD, software available for easy data transfer to Excel and other spreadsheets, pneumatic sample clamping, menus allow programming to meet pre-defined test methods and international standards, predefined test methods may be stored and recalled. ■