

TEAR TESTER

83-20-00, 83-21-00



FEATURES

- Automatic specimen notching
- Mechanical-pneumatic clamping avoids sample slippage to ensure repeatable results
- Automatic pendulum reset with lifting device
- Tearing force displayed digitally
- RS-232 data output
- Small, table-top instrument
- Maintaining a uniform quality level
- Safety Hood protects operator from injury while pendulum is in motion.

TEAR TESTING

Tear testing measures the force required to continue the tearing of an initial cut in sheet materials. Models and weights are available to test material with a variety of strengths. This is also useful to evaluate strength of perforated materials.

Also known as the Elmendorf test, the tearing test has been performed in the paper industry for more than half century in order to measure the mean internal resistance of cellulose or papers to the propagation of a deliberately initiated tear. It enables rapid determination of the dynamic resistance of materials designed to be subjected to strong shearing loads (e.g. newspaper) or liable to be damaged by sharp or heavy objects (e.g. paper bags, seat belts, protective clothing).

Subsequently, the test was naturally adopted for all materials in the form of sheet or films, cardboards, cloth, knitted fabrics, plastic films, aluminum foil, non-woven fabrics, complex flexible packaging etc. for which the service requirements are similar to those for paper.

OPERATION

The test is carried out on a specimen composed of one or more samples of standard dimensions, usually with a distance of 1.7 in (43mm) remaining to be torn after initiating the tear. The energy of a pendulum of suitable weight is used to completely tear the specimen. The difference in the angle from the vertical of the center of gravity of the pendulum between the downswing and the upswing is a measure of the energy absorbed in tearing the sample. This angular movement is measured with a digital encoder and is immediately converted to the mean tearing force for a single sheet by the microprocessor incorporated in the apparatus.



▲ Shows Testing Apparatus in motion

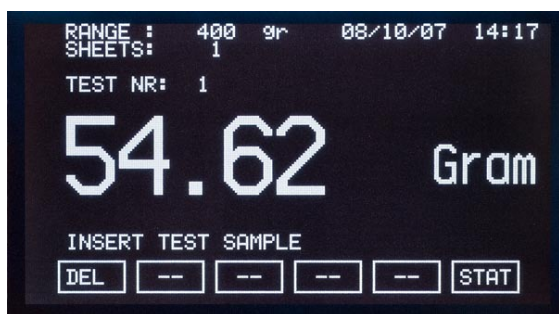
SPECIFICATIONS

NEW FEATURES

- **Repeatability:** The mechanical-pneumatic specimen gripping system guarantees sufficient clamping pressure to avoid all slipping phenomena, thus ensuring perfect reproducibility of the experimental conditions.
- **Safety:** As soon as the safety hood preventing access of the operator to the swinging pendulum zone is closed, the specimen is pre-notched automatically by a pneumatically driven shear.

- **User-friendliness:** The mean tearing force is indicated on an easy-to-read alphanumerical liquid crystal display and can also be transferred to a computer, either for additional statistical treatment or for record keeping purposes.

- **Ergonomics:** When the apparatus is equipped with an automatic pendulum raising device, after each test, the pendulum raising device, after each test, the pendulum is immediately reset in its starting position.



◀ Digital Screen with Test Results

Model	83-20-00	83-21-00
Capacities	0-6400 grams	0-10,000 grams
Pendulum range	400, 800, 1600, 3200, 6400	5000, 10,000
Accuracy	1.0% of pendulum range	1.0% of pendulum range
Calibration weights	20%, 50% and 90%	20%, 50% and 90%
Measuring principle	Hi-resolution digital encoder	Hi-resolution digital encoder
Measuring Range	0-100 N for Textiles	0-100 N for Textiles
Languages	German, French, English, Dutch, Italian, Spanish and Finnish	
Statistics	Average, Maximum, Minimum, SD, COV and Tear Index	

Physical Specifications

W x D x H	21.3 in x 19.7 in x 19.7 in (54 cm x 50 cm x 50 cm)
Weight	115 lbs (52 kg)
Electrical	110V/60Hz or 220V/50Hz
Air Requirements	600-700 kPa

Standards

Paper	TAPPI 414, APPITA P 400, ASTM D 689, NEN 1760, BS 4468, SCAN P 11, UNI 6444, CSA D9, ISO 1974
Plastic Film	NF T.54.141, ISO 6383/2, ASTM D 1922
Textile	NF G.07.149, ASTM D 1424, M&S P-29, ISO 13937-1

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