

TXL-KMS-004 / 27 October 2026 · One-year manufacturer warranty

Elmendorf Tear Resistance Tester

Ballistic pendulum method for tear resistance.



Model technical data

1	Ballistic tear test with microprocessor-controlled vertically moving pendulum.
2	Force capacities: 800 cN (1.75 lb), 1600 cN (3.5 lb), 3200 cN (7.0 lb) and 6400 cN (14 lb).
3	Measuring units: mN, cN, N, g, kg, oz and lb.
4	Instant results and statistical evaluation on the LCD display.
5	USB computer data output is standard.
6	Cutting dies and blade set for specimen preparation are supplied with the instrument.
7	Suitable for textile materials as well as paper and board products.

Physical specifications and utilities

Electrical supply	Approx. 220–240 V AC, 50/60 Hz, single phase; build-dependent.
Power / connected load	Approx. 10–80 W connected load for preliminary planning.
Overall instrument dimensions	Approx. 550 × 400 × 650 mm (W × D × H).
Instrument weight	Approx. 20–45 kg net.
Gross / shipping weight	Approx. 32–66.2 kg gross; estimated packing allowance.
Interfaces	USB computer data output is standard.
Lab requirements	Dry filtered compressed air if the pneumatic circuit is fitted; operating pressure and flow confirmed at delivery.

Dimension order and approximate values are stated in each row. Packaging data are separate from instrument dimensions and net mass. Approx. rows are preliminary engineering estimates based on comparable equipment and function/capacity; they are not verified manufacturing measurements or standard requirements. Installation and shipment are finalised against the approved drawing and nameplate. Estimate scope: base product / one unit; external computer, bench and auxiliary plant excluded.

Specifications, dimensions, and power requirements are approximate and subject to change without prior notice for continuous design improvements.

Product technical specifications and images may vary according to manufacturing conditions and applicable standards.

Test and configuration

Measured output / function	Tear force derived from pendulum energy (N)
Parameters selected for the method	Pendulum range, specimen direction and initial slit
Verification points	Pendulum, friction loss and calibration weight

Control and recording specification

Method-specific software and recording requirements follow. Delivered software modules are defined by the order scope.

- Method code and edition, specimen ID, operator and selected test parameters are linked to the record.
- The calculation and endpoint are defined by the selected method edition; instrument signals and operator assessments are kept distinct.
- Raw measurements, units, valid/invalid test flags and the reported result remain traceable.
- Calculations are checked against known inputs and an independent calculation; sensor channels are checked against calibration values.
- For NF G07-149:1981, the AFNOR scope summary specifies a low-capacity 5–10 daN pendulum class and results within 15–85% of the selected full scale. Not every model pendulum belongs to this class; verify pendulum, calibration for the specific torn length and specimen die separately. This is a publisher scope note only: the standard body/apparatus clauses remain unavailable and ISO 13937-1 geometry is not automatically equivalent.

Related test methods

ASTM D1424 · ASTM D5734 · ASTM D689 · BS 4253 · BS 4468 · ISO 13937-1 · DIN 53128 · DIN 53862 · ISO 1974 · ISO 4674-2 · ISO 9290 · M&S P29 · NF G07-149

Listed methods are application references. Suitability is established by assessing hardware, method edition and calibration together.

Historical method references: ASTM D5734, BS 4253, BS 4468, DIN 53862, ISO 9290, NF G07-149

Test parameters for the reviewed method

The values below were reviewed in selected clauses of the stated source edition. They are not a declaration of equivalence to a later edition or independent instrument verification.

ISO 13937-1 (earlier edition) / 6.2

1	Jaw gap 3 ± 0.5 mm; initial slit 20 ± 0.5 mm; effective tear length 43 ± 0.5 mm.
ASTM D1424-96 / 6.3, 8.3, A1.4	
1	Elmendorf effective tear length 43.0 ± 0.15 mm; initial slit 20 mm. Adjustment check uses jaw gap 2.5 ± 0.25 mm. Usable scale range is 20-80% for standard apparatus and 20-60% for the high-capacity type.
ASTM D5734-95 (2001) / 6.5–6.6, 8.1	
1	For nonwoven Elmendorf testing, remaining tear distance is 43 ± 0.15 mm and this edition's jaw-spacing gauge is 2.8 ± 0.3 mm. Select 20–80% full scale for the standard-capacity instrument. Do not automatically copy D1424 settings.
ISO 9290:1990 / 5.1-5.2, 6.1	
1	Woven-fabric tear method: initial slit 20 ± 0.5 mm, propagated tear distance 43 ± 0.5 mm. Select the template and pendulum capacity for this edition; the method excludes nonwovens and knitted fabrics.

ASTM D689-03 / 5.3

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| 1 | Paper tearing requires jaw depth 15.9 ± 0.1 mm and width at least 25 mm; pendulum-axis to jaw centreline distance 103 ± 0.1 mm. Do not equate the paper fixture with a fabric Elmendorf template; select ply count and capacity separately. |
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ISO 1974:2012 / 5.1.4-5.1.5

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| 1 | Paper Elmendorf method: jaw gap 2.8 ± 0.3 mm, gripping depth 15 ± 1 mm and width 25 ± 1 or 36 ± 1 mm. Tear length after the slit 43.0 ± 0.5 mm. Verify paper geometry separately from fabric/coated-fabric kits. |
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ISO 4674-2:2021, corrected 2021-11 / 5.1

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| 1 | Coated-fabric pendulum method: jaw gap 2.8 ± 0.3 mm; clamping-line to pendulum-axis distance 104 ± 1 mm at $27.5 \pm 0.5^\circ$ from vertical. Verify non-slip gripping and first-swing energy measurement. Do not assume equivalence to paper jaws. |
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