

TXL-IPL-008 / 27 October 2026 · One-year manufacturer warranty

Yarn Friction Coefficient Tester

Measures the friction behaviour of moving yarn against a metal contact surface; optional yarn-to-yarn friction module. Force range 0–500 cN ($\pm 1\%$), coefficient of friction $0 < \mu < 1$, yarn speed 1–200 m/min, pretension 0–24 cN, 360° contact wrap. Yarn creel, pretensioner, waxing unit, vacuum yarn collection and 4.3-inch touchscreen PLC/HMI.



Model technical data

1	Force measuring range: 0–500 cN; accuracy $\pm 1\%$.
2	Coefficient of friction range: $0 < \mu < 1$.
3	Yarn speed: 1–200 m/min; pretension 0–24 cN.
4	Contact / wrap angle: 360°.
5	Standard yarn–metal; optional yarn–yarn friction module.
6	Yarn creel, pretensioner, waxing unit; vacuum yarn collection.
7	Control: 4.3-inch touchscreen PLC/HMI; 220 V $\pm 10\%$, 50 Hz.
8	Dimensions approx. 430 × 430 × 400 mm; weight approx. 19 kg.

Physical specifications and utilities

Electrical supply	Control: 4.3-inch touchscreen PLC/HMI; 220 V $\pm 10\%$, 50 Hz.
Power / connected load	Approx. 50–200 W connected load for preliminary planning.
Overall instrument dimensions	Dimensions approx. 430 × 430 × 400 mm; weight approx. 19 kg.
Instrument weight	Dimensions approx. 430 × 430 × 400 mm; weight approx. 19 kg.
Gross / shipping weight	Approx. 26.5–47.5 kg gross; estimated packing allowance.
Lab requirements	Level, stable working surface; specimen conditioning follows the selected method.

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	Kinetic coefficient of friction of yarn against a solid surface
Parameters selected for the method	Input tension, wrap angle, yarn speed and contact surface
Verification points	Input/output tension channels, wrap angle and yarn speed

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.
- For the indirect method, $\mu = \ln(T_2/T_1)/\theta$ with angle in radians and tensions in the same unit. Record mean input/output tensions and the validity conditions of the method.
- 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.

Related test methods

ASTM D3108 · TS 7475

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

The ASTM D3108-01 channel requirement of ± 1 mN is not equivalent to the model accuracy statement of $\pm 1\%$. Verify the basis of the percentage statement and channel calibration over the applicable working range.

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.

ASTM D3108-01 / 6.1.1-6.1.3, 11

1	Indirect yarn-friction measurement uses input and output tension measurement within ± 1 mN, with input control also within ± 1 mN. Coefficient calculation uses tension ratio and contact angle together; store wrap angle in radians.
TS 7475:2004 / 1.2.1.1-1.2.1.3, 1.6-1.7	
1	Yarn/solid friction requires ± 1 mN input/output tension accuracy; reference contact diameter 12.7 mm. Unless otherwise specified, use 100 m/min and wrap angle π or 2π ; coefficient = $\ln(T_2/T_1)/\theta$. Verify the model's existing $\pm 1\%$ declaration separately against the ± 1 mN requirement.