



The friction behaviour of fibers and yarns is to be considered as a key parameter in many processes. Therefore, in addition to the measurement and analysis of filament tension forces, the calculation of coefficients of friction becomes more and more important in textile practice.

The strive for higher manufacturing speeds, the constantly growing demands on the quality of the products and new production processes all require exact knowledge of the fibre characteristics.

Lenzing Instruments **μ-METER** for rapid, exact and reproducible examination of coefficients of friction is the result of continuous and consistent product development through intense feedback from the market.

The **μ-METER** is a flexible system, which permits effective use with respect to the particular measurement task. A vast range of optional accessories are easily adapted to customized friction testing needs.

In combination with a yarn take-off unit, the tested yarn passes a friction body at a certain speed and a certain angle. The tensile forces before and behind the friction body are measured and the friction coefficient is calculated from the Eytelwein formula.

The apparatus for measurement of coefficients of friction consists of three modules:

- **μ-Meter**
- **Filament take-off device**
- **Data collection and analysis system**

Scope:

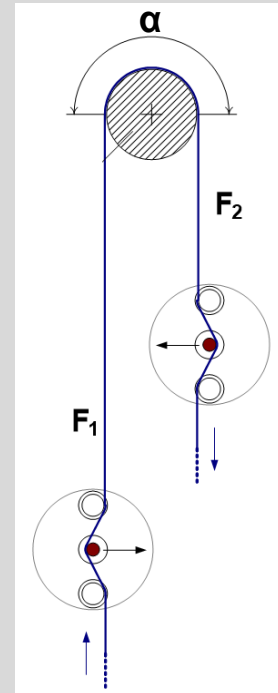
At-line testing instrument for automatic and accurate determination of the friction characteristics of filament yarn.

Method:

The adjacent drawing shows a schematic presentation of a measuring arrangement typical for determination of friction coefficients. The test yarn is pulled over a friction body at a certain speed and a certain angle. The tensile force is measured before and behind this friction body. The friction coefficient is calculated from the **Ey-telwein formula**:

$$\mu = \frac{1}{\alpha} \cdot \ln \frac{F_2}{F_1}$$

μ: friction coefficient
 F1: input tensile force
 F2: output tensile force
 α: contact angle



Speed range:

0 - 300 m/min

Tensile force:

Max. 200 cN (higher on request)

Power supply:

230/115 VAC ± 10 %
 50/60 Hz, 100 W

Dimensions:

Depth: 400 mm
 Width: 534 mm
 Height: 400 mm
 Weight: 20 kg

Measuring methods:

- Yarn/ceramic friction
- Yarn/steel friction
- Yarn/glass friction with various surface conditions
- Yarn/yarn friction

Software:

- Windows® based
- Numerical and graphical info.
- Friction value, F1, F2 tensile forces, take-off speed
- Standard statistics (mean, max, min, std., CV)
- FFT analysis
- Reporting
- Generates files for editing and further processing of data in other programs, e.g. MS Excel

Typical applications:

- Friction values of thread guide devices
- Stick-slip measurements
- Friction coefficients of filaments
- Analyzing the uniformity of surface preparations
- Continuous measurement of friction coefficients over yarn length
- Measurement series to determine the concentration of the finish or sizing
- Thread/thread measurements
- Examinations of dust and friction generated dust

Optionally available:

- Electronically controlled friction body heating
- Take-off device for stick-slip measurement
- Extended filament/filament measurement
- Angle adjusted adapter for filament/filament measurement
- Preparation nozzle

Technical data and pictures are subject to change.

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 quality improvement

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