



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.

It represents a flexible system which permits effective use with respect to the particular measurement tasks and offers the basis for easily adaptable optional accessories for customized friction testing according to individual 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 functional modules:

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

Developed and manufactured by Honigmann, Wuppertal / Germany

## Scope

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

## Method

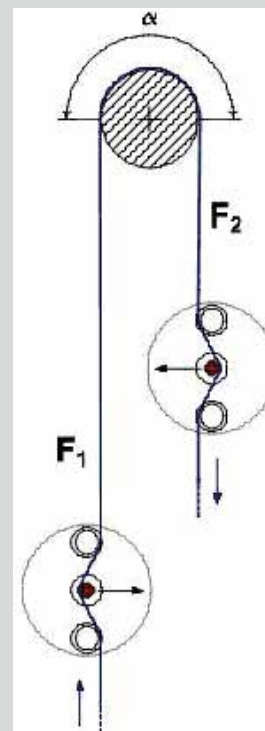
The opposite drawing shows a schematic presentation of a measuring arrangement typical for determination of friction coefficients.

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 Eytelwein formula.

## Eytelwein formula:

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

μ .... friction coefficient  
 F<sub>1</sub> .... input tensile force  
 F<sub>2</sub> .... output tensile force  
 α .... angle of contact



## Application examples:

- 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

## Optional:

- 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
- version for sewing yarns

## Technical data:

- 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 W x H x D: 534 x 297 x 400 mm
- weight: approx. 20 kg

## Measuring methods:

- yarn / ceramic friction
- yarn / steel friction
- yarn / glass friction with different surface conditions

## Software:

- based on Windows® operating software
- numerical and graphical information
- friction value, F<sub>1</sub>, F<sub>2</sub> tensile forces, take-off speed
- standard statistics (mean, max, min, std, CV)
- FFT-analysis
- reporting
- generates files for editing and further processing of data with other programs, e.g. MS Excel

Technical data and pictures are subject to change!

## THE TEXT TECHNO GROUP

Your reliable partners for  
quality improvement