

PULP AND PAPER

L&W Stylus Roughness Tester Emveco Lorentzen & Wettre Products | Paper testing



L&W Stylus Roughness Tester Emveco measures the micro-surface roughness of paperboard and linerboard. The property evaluated is called microdeviation – a measure of the topography of the paper or board surface. Microdeviation correlates well with print uniformity.

Stylus measurements has proven to be an excellent predictor of how well a flexo printed surface will print with minimum ink consumption and remaining print uniformity. Microdeviation is a characteristic which correlates to how well a paper or board will print. It gives added weight to the larger changes that occur in the specimen surface, from one sample to the next. High values of microdeviation tells us that the specimen has steep vertical changes and that it will not print well, since the ink will have trouble reaching the actual surface of the paper. Hence, the lower the value of microdeviation, the smoother surface and the better it will print.

Testing procedure

The sample is placed in the measuring gap and measurement starts when a photocell detects the presence of a sample or the start button is pushed in manual mode. The reference head is automatically lowered against the sample so that is rests against the paper sample. The reference head moves at a constant speed relative to the sample and the stylus follows the contours of the surface. After defined measuring distance the reference head is lifted and moved back to the start position. The sample is then released and can be moved to next measuring position. L&W Stylus Roughness Tester Emveco comes with a strip feeder which makes testing easier.

Benefits

- Detects and analyses surface characteristics that affect print uniformity and ink consumption
- Helps printers to less rejects due to poor print uniformity, poor print gloss, missing dots and to reduce ink consumption
- Fast less than 10 seconds for an evaluation test length of 76 mm (3 in)
- Compact design
- Superior precision and repeatability due to automatic measuring process
- Touch screen for ease of use
- Touch screen for ease of t
- Integrated strip feeder

Operator friendly

When the instrument arrives it is ready to use. The easy to use colour touch screen has intuitive menus and large easily accessible buttons. The capacitive colour touch screen has a protective surface for easy cleaning and durability with fast response and high resolution.

The operator merely chooses appropriate testing sequence and places the test piece in the measuring gap and the instrument begins measuring automatically. An auto cycling function permits the continuous cycling of the measuring sequence to facilitate repetitive and continuous measurements.

Measurement results

The microdeviation and microaverage are presented on the colour touch screen, either in tabular or graphic form. The result can also be printed on the built-in printer, on a network printer or exported via Ethernet.

Strip feeder

Extensive measurements are facilitated with an integrated strip feeder. With the strip feeder each position is measured at a fixed interval and continues until the strip ends. To speed up the strip measurement, the strip feeder can be set to measure more frequent at certain positions and less on others. Defined position measurement ensures repeatable testing.



The reference head is well protected.



Integrated strip feeder.



Built-in thermo printer.



Optional strip holder, here with L&W Micrometer.

Measuring principle

The stylus roughness method is used to scan paper product and measure its micro surface characteristics.

A lightly weighted stylus is mounted in the center of a reference head which rests on the surface of the test specimen. The reference head moves at a constant speed relative to the specimen and the stylus follows the contours of the surface (i.e. moves up and down relative to the reference head). This vertical movement is sampled at a constant spacing distances and the obtained, discrete values are then used to calculate the microdeviation.

Microdeviation – the difference between two successive test points, squared. Mean of the sum squared multiplied by 1000.

Microdeviation =
$$\frac{1000}{n-1} \sum_{i=2}^{n} (x_i - x_{i-i})^2$$

Where:

x = vertical displacement of stylus in mils or μm n = number of samples

An alternative presentation of the surface characteristics is microaverage which is the average deviation from point-to-point readings.



Fixed distance between measurement points

Technical specifications – I	-&W Stylus Roughn	ess Tester Emv	eco, code 263
Inclusive	Check gauge for static check of stylus Check steel plate with profile pattern		
Instrument			
Presentation	8.4 in colour touch screen		
Stylus	spherical tip with diameter 25 µm (0.001 in)		
Measuring length	76 mm (3 in)		
Test time	<10 seconds		
Distance between measurement points	0.25 mm (0.010 in)		
Max throat depth (from sample edge to centre of measuring head)	112 mm (4.4 in)		
Results			
	Measurement values: - microdeviation - microaverage in mil or µm Statistics: - mean value - standard deviation - coefficient of variation - maximum and minimum values of the series		
Connections			
Data	Ethernet The instrument acts as a FTP-server. Test results can be retrieved by a FTP-client.		
Installation requirements			
Power	100 W		
Options			
	Foot switch Strip holder		
Dimensions	0.3×0.3×0.4m 12×12×16in	Volume	0.12 m³ 4.3 ft³
Net weight	17 kg 35 lb	Gross weight	26 kg 58 lb
Applicable standards			
TAPPI working draft			
Related standard			
TAPPI 575			

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