Specification FibreShape FA system

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1. Test equipment

The FibreShape FA system consists of an automatic sample feeding unit called “Automatic sample feeder”, an A4 scanner, a laptop with i7 or i9 CPU, 16-32 GB Ram, Windows 10 and the FibreShape PRO software. The FibreShape systems are based on transmitted light scanners. Analysis, visualization and evaluation are carried out by the FibreShape software. A major advantage of working with scanners is that many fibers can be analysed in a single measurement.



The sample feeder automatic enables the automatic transportation of the manually distributed fibres, chips, shives or hurds into the scanning area. The scan preparation table has a length of 74 cm or 94 cm. The advantage of the automatic system compared to the manual sample feeder is that it reduces the effort to one measuring cycle. 3.5 times more sample material can be scanned in one step compared to direct scanning.

2. Dimensions and scan area

Dimensions FibreShape FA: L = 113.7 cm x 53 cm x 19.5 cm.
An area of 24.6 cm x 74.4 cm or a support surface of 1830 cm^2 is available for specimen preparation. This corresponds to 3.5 times the area of the available scanner area.

3. Measuring range FibreShape FA

Measuring range for Epson V850

- Epson A4 scanner (optical resolution limit is approx. 1600 dpi or 15µm)
- Thickness measurement : 30 µm to 3 mm
- Length measurement: 30 µm to 20 cm

4. Sample preparation and sample types

The samples can be distributed on the transportation foil or in Petri dishes. Up to 12 Petri dishes (with a size of 12 cm x 12 cm each) can be placed on the preparation table with a length of 74 cm. They are placed in 2 x 6 rows and then scanned step by step in one operation. Afterwards, the 12 scanned images are evaluated.

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Types of materials that can be measured with the FibreShape FA system:

- wood chips
- TMP fibers (thermomecanical pulp)
- hemp hurd
- flax shives
- recycled glass fibres

5. Evaluation and presentation of the results

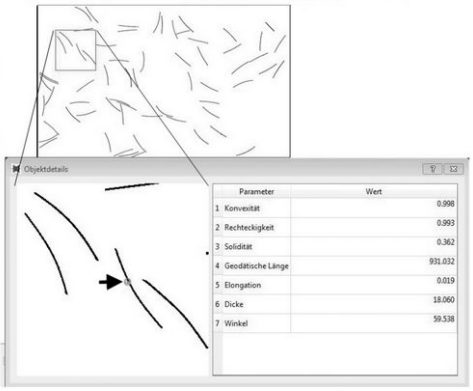
The FibreShape system allows the measurement of fibre lengths, fibre thickness as well as their statistical evaluation according to various methods in accordance with ISO 9276. Optical properties such as colour can also be analysed with FibreShape and used for quality inspection.
FibreShape is used in different process areas, e.g. for quality control of raw materials, for monitoring material processing or for predicting material properties. FibreShape allows to process a large number of measurements in a short time and to provide good statistics. The reporting system is interactive and allows the creation of the graphical representation and statistics.
Measurement output:

- Statistics (object count, percentiles, mean and standard deviation, median, length weighted/unweighted length distribution and others)
- Graphical representation (e.g. length histogram)

The output of the reports is available as PDF or odt. The raw measurement data are available as csv files.

6. Single object measurement

An important feature in FibreShape is the possibility to output data of a single measured object. For the exact identification of any object, the interested object is selected and marked. The values of the relevant size and shape parameters of this measured object appear.



7. Computing time

At 2400 dpi scan resolution, the scanning and evaluation time of 12 Petri dishes with a size of 12 cm x 12 cm is approximately 45 min.

8. Standards

Image analysis and reporting is done according to ISO 13322-1 and ISO 9276.

9. Further information

- The FibreShape user interface and PDF reporting are available in 11 languages.
- The FibreShape tester is adjusted and calibrated for resolution using USAF 1951 standards.

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