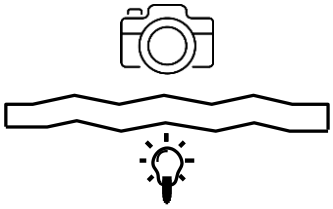
Description



MRP-ST LAB FOR 2015 - Formation for MRP-Schnettler automatic test line

Laboratory Formation Measurement

The laboratory formation measurement presented here is based on the Zellcheming Association's leaflet for the standardization of the various formation measurements.

Formation is understood here to be various parameters which describe the uniformity of the optical appearance of a paper in transmitted light.

Indicator / Characteristics

The MRP-Schnettler laboratory formation measurement is characterized by the following features:

- two-sided contactless measurement
- Non-destructive
- online-capable, can therefore be compared directly with the online measuring device

Physical principle

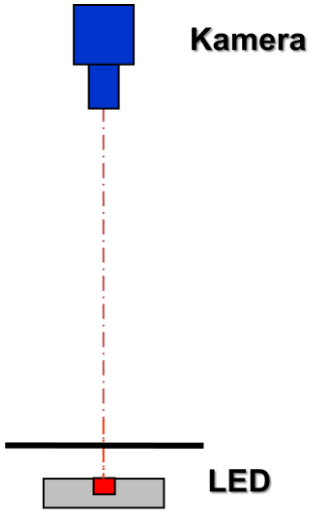
Traditionally the formation is usually described by only one formation index. Since this often leads to unsatisfactory results, it is proposed to evaluate the formation using three indices:

Contrast is the difference between the light and dark areas

Cloudiness [mm] is the average size of the structures / clouds visible in the paper. The key figure for cloudiness Fwi (wi - cloudiness index) is used to determine the average size of the flakes (clouds) in the paper. These are the areas "dark" in the paper (below the average value).

Orientation [-1...+1] is a measure of the directional dependence of the structures in the paper. The key figure for the orientation should be the symmetry / evaluate asymmetry of the image with respect to the two main directions.

These 3 characteristic values are evaluated by the optical formation measuring instrument. For this purpose a matrix camera is mounted on one side of the web and a surface illumination on the other side. The paper is transilluminated and the resulting image is recorded.



The images are recorded with a line scan camera in online mode and with an area scan camera in laboratory mode. On the next page a grey value line is shown from one image.

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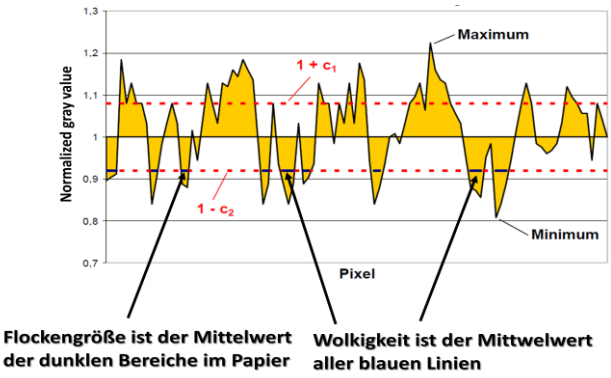
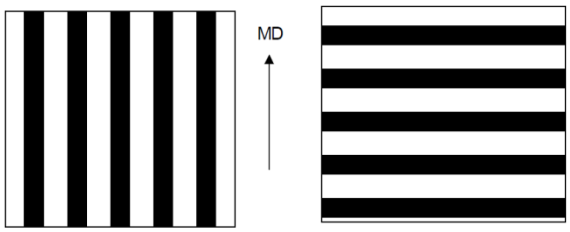


Besides contrast and cloudiness, the orientation is also evaluated. The following picture should explain the evaluation.



Orientation B = 0: no preferred orientation
Orientation B = +1: only orientation in MD, "Clouds" on CD
Orientation B = -1: only orientation in CD, "Clouds" in MD

Recorded measured values and statistics

- Contrast
- Cloudiness
- Orientation (MD/CD)
- Number of flakes
- Mean value Flake size
- Angle of the flakes
- Image of the paper in transmitted light
- Dirt specks (per area)
- Pin holes (pinholes per area or per time)
- Standard deviation of the individual measured values, available as 1S, 2S, 3S as required.
- Coefficient of Variation
- Maximum and minimum values of the measurement series

Measurement accuracy

Type	MRP-ST LAB FOR 2015
Measuring range	Must be tested on customer samples in the MRP laboratory
accuracy - 2 sigma at 1 sec	
Operating temperature	10°C-50°C

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