

L&W Fiber Tester Kink, Vessel Cells and Minishives

Lorentzen & Wettre Products | Pulp Measurements

Measuring and having control of the fibre mixes is essential to be able to produce uniform paper quality. With the optional module L&W Fiber Tester Kink, Vessel Cells and Minishives it is possible to detect and monitor objects with poor bonding properties.

Kink

Local deformations of the fibres such as knees and wrinkles in the fibres are called kinks. A kink can be a weak point of the fibre. Kink correlates well with shape factor in most cases, since local deformations are included in shape factor. Deformed fibres give a more elastic paper (a good property when manufacturing sack paper) if the paper is freely dried.

Information about kinking may be more important than fibre length. It is possible to save raw data to be able to look at individual fibres and the computed kink angles afterwards. The fibres are analysed using image analysis, where local directional changes of greater than 30° are counted as kinks. In order to be recognised as a kink, the distance between two deformations must be at least 200 µm.

Local deformations are measured in the form of kinks/mm, kinks/fibre, kinks >60° per fibre, average segment length and kink angle. Detailed measurements of deformations in pulp can be used to optimize boiling, bleaching and the mechanical treatment of pulp.

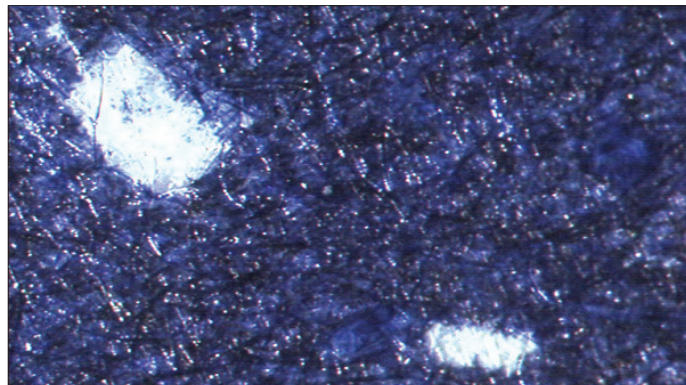
Vessel cells

Vessel cells come from hardwood and are wide, thin and short cells. Vessel cells cause linting problems in the printing room. Bad bonding properties of the pulp increase the risk of linting. Bad bonding between fibres and vessel cells can also cause linting problems in the paper machine.

Vessel cells are analysed using image analysis, in the same way as fibres are analysed. The specification of vessel cells is set up by specification of 10 parameters. Recommended settings for these parameters are preset but may be changed by the user. Since the conditions can be preset, it is also possible to set the module to measure other objects that deviate from (are wider than) fibres, such as shives, printing ink or fibre bundles.

Minishives

The same principles as for vessel cells are used but with other settings of the selections criterias.



Vessel cells picking on printed sheet (source Tore Nevander, NOSS).

Technical specifications

L&W Fiber Tester Kink, vessel cells and minishives – code 931

Kink	Alternative kink calculations for reports (selectable from menu): <ul style="list-style-type: none"> – Mean kink angle – Number of kinks per mm – Number of large kinks per mm (>60°) – Number of kinks per fibre – Number of large kinks per fibre – Mean kink index – Mean segment length
Vessel Cells (Minishives)	Width: Range is selectable from menu, typical 0.05–1 mm Length: Range is selectable from menu, typical 0.05–7.5 mm No. of vessel cells/shives per 100 000 fibres or per gram Vessel/shive area per fibre volume Vessel/shive volume per fibre volume Length/width distributions Raw data is available
	Images of classified objects can be saved and used for adjustments of selection criteria in order to fine tune the classification. Selection parameters: <ul style="list-style-type: none"> – Object width – Object length – Object area – Mean fibre greyness – Standard deviation fibre greyness – Mean greyness of the interior of the object – Standard deviation of greyness of the interior of the object – Border interior grey ratio of the object – Shape factor (principle for fibre shape calculation) – Roundness of object

Installation requirements

L&W Kink, Vessel cells and minishives software is integrated in L&W Fiber Tester

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