

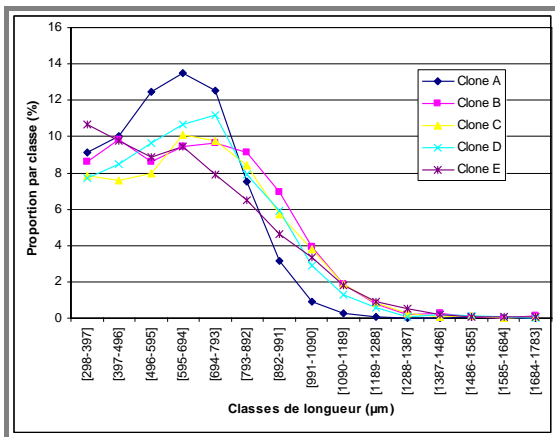


Analysis of wood properties

- Measurement of wood chemical composition: water and acetone extractives content, Klason lignin and cellulose contents
- Measurement of wood colour on sawdust, roundwoods, chips
- Measurement of fibre morphology into wood
- Microscopic analysis of wood structure
- Tree morphological and mechanical characterisations



The Soxhlet extraction apparatus



Comparison of fibre length distributions of 5 eucalyptus clones

General information

Each species presents particular properties. Wood structure and its chemical composition are important criteria to determine the quality of wood, of a species or of a sample. As well, the morphology of fibres contained is a factor to be considered. Various methods are available to characterise wood.

The wood chemical composition is determined from sawdust procured from a wood sample. The necessary quantities can be close to 3g of o.d. wood .

- measurement of water/acetone wood extractives contents (in particular tannins and resins)
- Measurement of Klason lignin content
- Measurement of cellulose contents ...
- Analysis of sugars

Wood colour can be measured from sawdust. Each sample is characterised in few seconds. Wood brightness, its luminance and its chromatic coordinates are determined.

For any further information, please contact:

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Mortiser. A groove is made on the log, sample is sawdust



Chain saw. Sample may be a roundwood taken on a log and used for fibre morphology analyses, or sawdust collected during sawing



Core driller. This non-destructive measurement extracts a sample from a log or from a standing tree.



Drill. It is a non-destructive method for trees. Collected chips may serve to measure the tree fibres morphology.



The morphological analysis of wood fibres can be performed on 20g-wood sample.

Fibres are individualised using a mixture of hydrogen peroxide and acetic acid; thus, they are not degraded. Then fibres are characterised with the MorFi analyser. The different available measurements are:

- The average fibre lengths and their associated distributions,
- The average fibre widths and their associated distributions,
- Fibre straightness
- Fibre coarseness

Fibres can be observed under the microscope as well in the wood matrix or after dispersion.

These measurements on wood can be performed using samples taken with different methods, among which, the non-destructive ones, can be applied on still standing trees without risk of mortality.

Originally, the methods have been developed to carry out samplings on logs at mill's reception to measure moisture.

The wood mechanical properties are also important factors to characterise. Measurements on logs characterise them. They comprise as follows:

- **The Average Longitudinal Residual Deformation** measurable on fresh-cut logs or on still standing trees. It explains the "growth constraints" of standing trees. These constraints are released at tree felling and during sawing up. They generate losses of quality and also deformations, end splits ...
- Wood **infra density** measured on roundwoods by Archimedes' pushing principle
- Evaluation of **wood reaction rate**
- **Micro-densitometry**