

Table S1. Dimensional changes^a on drying of tracheid lumen diameter and wall thickness^b of the four wood types

| Tree | Wood types | Lumen diameter (μm) | | | | | | Wall thickness (μm) | | | | | | |
|-------|------------|---------------------|---------|-------------|-------------|---------|-------------|---------------------|---------|-------------|-------------|---------|-------------|-------------|
| | | Radial | | | Tangential | | | Radial | | | Tangential | | | |
| | | 100 % RH | 10 % RH | Shrinkage % | 100 % RH | 10 % RH | Shrinkage % | 100 % RH | 10 % RH | Shrinkage % | 100 % RH | 10 % RH | Shrinkage % | |
| Tree1 | OW | 27.81± | 27.38 ± | 1.55 ± 0.07 | 24.24 ± | 23.73 ± | 2.08 ± 0.10 | 4.35 ± | 4.14 ± | 4.72 ± 0.18 | 4.46 ± | 4.36 ± | 2.14 ± 0.12 | |
| | | 0.45 | 0.44 | | 0.57 | 0.56 | | 0.21 | 0.20 | | 0.17 | 0.17 | | |
| | MCW1 | 26.86 ± | 26.32 ± | 1.02 ± 0.03 | 23.99 ± | 23.58 ± | 1.75 ± 0.11 | 4.67 ± | 4.51 ± | 3.36 ± 0.18 | 4.56 ± | 4.49 ± | 1.76 ± 0.15 | |
| | | 0.59 | 0.58 | | 0.94 | 0.93 | | 0.19 | 0.19 | | 0.15 | 0.15 | | |
| | MCW2 | 24.56 ± | 24.34 ± | 0.91 ± 0.06 | 22.10 ± | 21.87 ± | 1.02 ± 0.06 | 4.82 ± | 4.69 ± | 2.88 ± 0.13 | 5.21 ± | 5.14 ± | 1.27 ± 0.08 | |
| | | 0.61 | 0.61 | | 0.68 | 0.67 | | 0.12 | 0.12 | | 0.16 | 0.16 | | |
| | SCW | 23.15 ± | 22.99 ± | 0.71 ± 0.04 | 20.60 ± | 20.46 ± | 0.69 ± 0.03 | 5.40 ± | 5.29 ± | 2.02 ± 0.19 | 5.29 ± | 5.24 ± | 0.92 ± 0.06 | |
| | | 0.49 | 0.49 | | 0.73 | 0.72 | | 0.15 | 0.15 | | 0.22 | 0.22 | | |
| | Tree2 | OW | 27.68 ± | 27.28 ± | 1.43 ± 0.08 | 22.61 ± | 22.22 ± | 1.74 ± 0.10 | 4.36 ± | 4.15 ± | 4.89 ± 0.13 | 4.32 ± | 4.23 ± | 2.27 ± 0.09 |
| | | | 0.61 | 0.60 | | 0.57 | 0.56 | | 0.16 | 0.15 | | 0.11 | 0.11 | |
| | | MCW1 | 26.46 ± | 25.94 ± | 0.98 ± 0.03 | 22.23 ± | 21.87 ± | 1.60 ± 0.07 | 4.34 ± | 4.20 ± | 3.34 ± 0.11 | 4.59 ± | 4.50 ± | 1.81 ± 0.08 |
| | | | 0.52 | 0.51 | | 0.81 | 0.79 | | 0.18 | 0.18 | | 0.12 | 0.12 | |
| MCW2 | | 24.62 ± | 24.39 ± | 0.94 ± 0.06 | 22.15 ± | 21.86 ± | 1.32 ± 0.08 | 4.59 ± | 4.45 ± | 2.91 ± 0.10 | 5.02 ± | 4.95 ± | 1.38 ± 0.08 | |
| | | 0.56 | 0.56 | | 0.92 | 0.91 | | 0.09 | 0.08 | | 0.17 | 0.17 | | |
| SCW | | 22.50 ± | 22.35 ± | 0.70 ± 0.04 | 20.72 ± | 20.53 ± | 0.89 ± 0.05 | 4.79 ± | 4.69 ± | 2.07 ± 0.15 | 5.64 ± | 5.58 ± | 1.06 ± 0.09 | |
| | | 0.57 | 0.57 | | 0.49 | 0.48 | | 0.23 | 0.22 | | 0.25 | 0.25 | | |
| Tree3 | | OW | 27.37 ± | 26.96 ± | 1.51 ± 0.08 | 23.88 ± | 23.39 ± | 2.05 ± 0.12 | 4.41 ± | 4.21 ± | 4.62 ± 0.18 | 4.09 ± | 4.01 ± | 2.00 ± 0.10 |
| | | | 0.58 | 0.56 | | 0.62 | 0.62 | | 0.19 | 0.18 | | 0.13 | 0.13 | |
| | | MCW1 | 27.20 ± | 26.65 ± | 1.03 ± 0.04 | 26.50 ± | 26.12 ± | 1.42 ± 0.10 | 4.68 ± | 4.51 ± | 3.64 ± 0.19 | 4.77 ± | 4.68 ± | 1.97 ± 0.10 |
| | | | 0.60 | 0.60 | | 0.58 | 0.56 | | 0.15 | 0.15 | | 0.16 | 0.15 | |
| | MCW2 | 22.08 ± | 21.88 ± | 0.90 ± 0.05 | 23.15 ± | 22.93 ± | 0.94 ± 0.05 | 4.73 ± | 4.60 ± | 2.72 ± 0.12 | 4.93 ± | 4.86 ± | 1.44 ± 0.07 | |
| | | 0.86 | 0.86 | | 0.96 | 0.96 | | 0.15 | 0.15 | | 0.13 | 0.13 | | |
| | SCW | 21.85 ± | 21.70 ± | 0.67 ± 0.03 | 20.55 ± | 20.37 ± | 0.90 ± 0.05 | 5.15 ± | 5.05 ± | 1.90 ± 0.13 | 5.39 ± | 5.32 ± | 1.31 ± 0.07 | |
| | | 0.65 | 0.65 | | 0.77 | 0.77 | | 0.16 | 0.16 | | 0.19 | 0.19 | | |

^aObtained from the transverse surface.

^bThickness of double wall of two adjacent tracheids.

All values are means ± standard errors.

Table S2. The chemical data for the four wood types of three trees used for the multivariate approach of canonical correlation analysis.

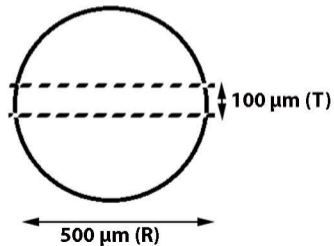
| Tree | Wood types | Lignin ^a | Arabinose ^b | Galactose ^b | Xylose ^b | Mannose ^b |
|--------|------------|---------------------|------------------------|------------------------|---------------------|----------------------|
| Tree 1 | OW | 25.86 | 9.89 | 8.40 | 30.34 | 36.47 |
| | MCW1 | 28.74 | 6.79 | 31.55 | 20.94 | 27.69 |
| | MCW2 | 31.74 | 5.71 | 40.75 | 17.95 | 20.79 |
| | SCW | 35.14 | 4.89 | 49.72 | 15.31 | 16.11 |
| Tree 2 | OW | 26.11 | 11.01 | 8.81 | 31.04 | 38.17 |
| | MCW1 | 28.26 | 6.30 | 30.39 | 23.59 | 28.57 |
| | MCW2 | 31.25 | 5.71 | 40.99 | 17.81 | 20.71 |
| | SCW | 35.03 | 4.09 | 50.53 | 14.16 | 18.89 |
| Tree 3 | OW | 26.43 | 8.76 | 8.65 | 30.05 | 40.44 |
| | MCW1 | 28.14 | 6.21 | 29.42 | 23.43 | 30.29 |
| | MCW2 | 31.99 | 5.25 | 41.07 | 16.74 | 21.07 |
| | SCW | 34.46 | 3.47 | 49.93 | 16.64 | 18.36 |

^a Lignin content of the four wood types were determined by the acetyl bromide assay [13].

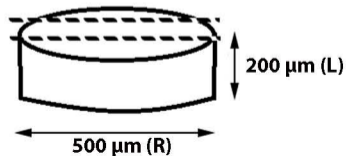
^b The neutral monosaccharide compositions of the four wood types were determined by 2 M trifluoroacetic acid (TFA) hydrolysis as a percentage of the total neutral monosaccharides [12]. The percentage of glucose is not given as it was not used in the statistical analysis.

**Untrimmed ("as cut") disc
(0.5 mm diameter)**

Top view



Side view



Trimmed disc

Side view

