


Lignin Distribution in Spruce Tracheids



The diagram illustrates the structure of spruce tracheid cell walls, distinguishing between early wood and latewood. The secondary wall is composed of three layers: S1 (thin, ~0.1 μm), S2 (thick, 1-5 μm), and S3 (thin, 0.2-0.3 μm). The table provides the lignin distribution for these layers.

| | Morphological Origin | % Tissue Volume | % Total Lignin | % Lignin Concentration |
|------------|----------------------|-----------------|----------------|------------------------|
| Early Wood | Secondary Wall | 87 | 72 | 23 |
| | Middle Lamella | 9 | 16 | 50 |
| | Cell Corners | 4 | 12 | 85 |
| Latewood | Secondary Wall | 94 | 82 | 22 |
| | Middle Lamella | 4 | 10 | 60 |
| | Cell Corners | 2 | 9 | 100 |

Note: Secondary wall is comprised of three layers: the thick S2 (middle) layer, which is 1-5 μm in thickness from early to latewood, and the thin S1 (0.2-0.3 μm thickness) and S3 (~0.1 μm thickness) layers.