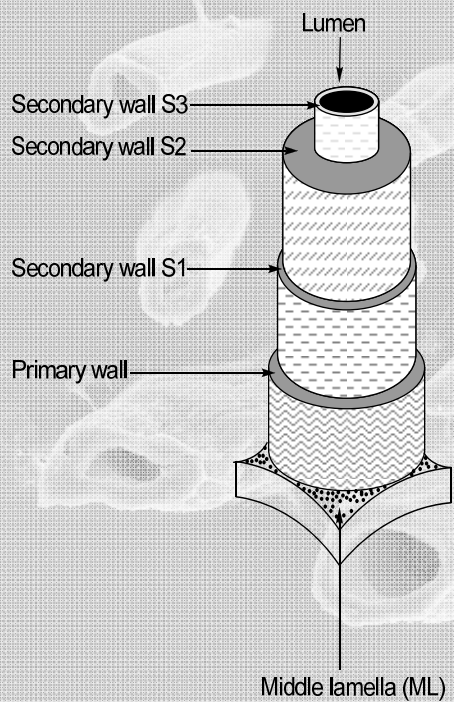


Lignin in Cell-Wall Layers of Softwood and Hardwood Fibers

	Cell Wall Layer	Tissue Volume		% Total Lignin	Lignin Concentration
Loblolly Pine					
Early Wood	S1	13		12	25
	S2	60		44	20
	S3	9		9	28
Middle Lamella + Primary Wall		12	Secondary wall S3	21	49
Cell Corner		6	Secondary wall S2	14	64
Late Wood	S1	6	Secondary wall S1	6	23
	S2	80	Primary wall	63	18
	S3	5		6	25
Middle Lamella + Primary Wall		6		14	51
Cell Corner		3		11	78
White Birch					
Fiber 2ndary Cell Wall		73		60	19
Middle Lamella + Primary Wall		5		9	40
Cell Corner		2		9	85



40µm