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The Relationship of Fiber Cell Wall Ultrastructure to Soft Rot Decay in Kempas (*Koompassia malaccensis*) Heartwood

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Summary

The ultrastructure of fiber walls in kempas (*koompassia malaccensis*) heartwood was examined in relation to soft rot cavity formation. The fibers consisted of middle lamella and thick secondary wall. The secondary wall was differentiated in to a S_1 layer, and a unique multi-lamellar S_2 layer. Two distinct forms of lamellae were recognisable, one type being considerably thicker than the other. They also differed in their electron density, the thin lamellae being much denser than the thick lamellae. It was not possible to determine whether a S_3 layer also existed, because of the presence of a dense material coating the lumen wall, which obscured the definition of this region of the fiber wall. The resistance to soft rot varied with different regions of the fiber wall, middle lamella being completely resistant and the thick S2 lamellae least resistant. The observed relationship between the ultrastructure of these fiber wall regions and the degree of their resistance/susceptibility to soft rot cavity formation is discussed.

Keywords: *Koompassia malaccensis*, kempas heartwood, fiber wall ultrastructure, cell wall lamellae, soft rot cavities, transmission electron microscopy, light microscopy