

THE INTERNATIONAL RESEARCH GROUP ON WOOD PRESERVATION

Section 1

Biology

**Soft Rot Decay of Cengal (*Neobalanocarpus heimii*) Heartwood
in Ground Contact in Relation to Extractive Microdistribution**

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Summary

The heartwood of cengal (*Neobalanocarpus heimii*, fam. Dipterocarpaceae) is naturally durable. A square-sawn utility pole specimen of cengal heartwood, after 30 years in ground contact, showed 10-15 mm surface decay all around the ground line position, accompanied with isolated surface termite attack at the decayed region. Light and transmission electron microscopy (TEM) of the decayed regions provided evidence of wood cell wall degradation by cavity-forming soft rot fungi. In the outermost layers, where such decay was most severe and severely discolored, all tissue types were degraded. However, in regions with moderate decay, differences in tissue types were observable in the extent of cell wall degradation. The presence of relatively intact vessels and parenchyma cells among heavily degraded fibres suggested that fibres were more susceptible to decay than vessels and parenchyma. Middle lamella was the only cell wall region which remained intact in all cell types which were severely degraded.

Analysis of cengal heartwood revealed high contents of extractives soluble in hot water (14.1% m/m) or methanol (20.3% m/m), lignin (31.4% m/m) and phenolic materials (23.5% m/m), while microscopic observations provided information on the microdistribution of extractive materials. Vessels, fibres and parenchyma cells (both ray and axial parenchyma) all contained extractives in their lumen, but in variable amounts. The bulk of extractives were present in the lumina of fibres and parenchyma cells,