

## Discolouration of *Tectona grandis* (Teak) timber during kiln drying

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Teak (*Tectona grandis*) is one of the most valuable timber species, favoured by many people due to its durability, physical and mechanical properties, and colour and grain pattern. Kiln drying of Teak wood causes the development of a dark brown discoloration, commonly called "kiln brown stain" (KBS). KBS develops immediately under the surface or inside the timber in the heartwood region. Subsequent planing of the wood surface results in its expose. The discoloration of Teak caused by kiln drying is a major down-grading factor and has substantial economical impact (loss) on high quality furniture production.

Present study was conducted to investigate the parameters that affect KBS of Teak wood at one of the export oriented teak furniture industries in Sri Lanka and to find out an appropriate technique to prevent this problem.

The results showed that development of KBS of Teak occurred only in heartwood and not in the sapwood. Development KBS is a continuous and cumulative process. Drying temperature and drying rate (loss of water g per h) are found to be critical factors for KBS of Teak timber. Temperatures above 50 °C and RH below 65% caused discoloration. It is important use a kiln schedule which is not exceeding temperature above 50 °C and drying rate higher than 1.62 (g/h) within the range of 35-30 % moisture of the wood.

Discoloured timber samples were treated with different concentrations of Na<sub>2</sub>SO<sub>3</sub> and H<sub>2</sub>O<sub>2</sub> solutions to bleach out oxidized extractives on the surface. Among these chemicals, 3% Na<sub>2</sub>SO<sub>3</sub> and 1% H<sub>2</sub>O<sub>2</sub> solutions were found to be the most effective in restoring light brown colour of the Teak wood surface.