

SOLAR KILN SEASONING OF TIMBER AND ITS ECONOMIC ADVANTAGES

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Seasoning of timbers is becoming quite popular in Sri Lanka due to the improved finish and durability, whatever the end use of the materials is. There are two technologies of seasoning timbers. In one form fuel is used to generate energy, while the other is based on naturally available solar energy.

There are two types of solar kilns in existence. One is the green house type, and the other is the external solar collector type. In the former, the whole kiln is covered with a transparent material polythene or glass. The solar energy is allowed to fall on the blackened surface (solar collector) underneath the transparent covering, to heat up the entrapped air within. The heated air is then circulated by means of fans. In the case of the external heated solar collector type, the trapped air is heated and circulated through the timber stacked in a brick and cement compartment. The latter is more expensive than the green house type. The green house made of aluminium framing and polythene cladding has the added advantage of transportability, due to lightness in weight and easy assembly.

In this paper the performance of a kiln, intermediate in character to the green house type and external solar collector type is discussed. Results schedules of controlled tests performed on the prototype kiln for identified timber species are presented.

Observations of governing parameters related to the seasoning process indicate that the efficiency of the kiln under good weather conditions is comparable with that of the traditional kilns. Provision of external heat sources would further improve its performance.

SUMMARY OF EXPERIMENTAL RESULTS OBTAINED BY SOLAR SEASONING OF TIMBER AT DANKOTUWA

01. Species of timber	Rubber	Mangogy	Coconut	Ginisagu	Albezia
02. Nature of timber	1½" Planks	1" Planks	2" x 3" rafters	1" Planks	¾" Planks
03. Initial moisture content %	72 67 82 59 69	54 36	43 20 44 41 23	30.7 34.5 54.2 30 50.4	43.8 34 36 35 53
04. Final moisture content %	7.8 8.3 13.5 12.4 13.5	13.7 13.8	12.1 11.9 13.6 13.3 12.5	13.8 5.6 1.6 11.3 12.6	12.9 10.7 10.8 3.2 17
05. % Drop in moisture content	64.2 58.7 68.5 46.6 55.5	40.3 22.2	30.9 8.1 30.4 27.7 10.5	16.9 28.9 52.6 18.7 37.8	20.9 23.3 25.2 31.8 35
06. Average initial moisture content	69.8	45	34.2	39.96	40.36
07. Average final moisture content	11.1	13.75	12.68	8.98	10.9
08. No. of days taken for drop in moisture content	38	16	18	14	12
09. No. of rainy days	13	16	18	14	12
10. No. of clear days	25	16	18	14	12