

**Gill Timbers– India**

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# SEASONING OF WOOD



Seasoning is the controlled process of reducing the moisture content (MC) of the timber so that it is suitable for the environment and intended use. We need to reduce the MC of timber for the following reasons:

- ▶ Every time the MC reduces the timber shrinks especially tangentially.
- ▶ Consequently it will show fewer tendencies to warp, split or shake.
- ▶ Seasoned timber although lighter will be stronger and more reliable.

The sap in timber is a food for fungi and wood parasites. Remove the sap and the wood will be less attractive to these dangers. For construction grade timber the timber must be below 20% MC to reduce the chances of Dry Rot and other fungi infestations.

- ▶ Dry well seasoned timber is stronger.
- ▶ Dry well seasoned timber is easier to work with and consequently safer especially machine working.

Timber with higher moisture content is difficult to finish i.e. paint, varnish, etc. There are two main ways of seasoning timber, Natural (Air) and Artificial (Kiln) drying. Both methods require the timber be stacked and separated to allow the full circulation flow of air, etc. around the stack.

### **Air Seasoning.**

Air seasoning is the method used with the timber stacked in the open air. It requires the following:

Stacked stable and safely with horizontal spacing of at least 25 mm.

Vertical spacing achieved by using timber battens (piling sticks) of the same or neutral species. Today some timber yards are using plastics. The piling sticks should be vertically aligned and spaced close enough to prevent bowing say 600 to 1200 mm max centres.

Ends of boards sealed by using a suitable sealer or cover to prevent too rapid drying out via the end grain.

The stack raised well clear of the ground, vegetation, etc to provide good air circulation and free from rising damp, frost, etc.

Over head cover from effects of direct sunlight and driving weather.

The details depend on the size, quantity and species of the timber. You cannot however expect to obtain less than 16 - 17% mc in the UK. Further seasoning needs to be done inside, in heated and ventilated buildings.

### **Kiln Seasoning.**

There are two main methods used in artificial seasoning, compartmental, and progressive. Both methods rely on the controlled environment to dry out the timber and require the following factors:

- ▶ Forced air circulation by using large fans, blowers, etc.
- ▶ Heat of some form provided by piped steam.
- ▶ Humidity control provided by steam jets.

The amount and duration of air, heat and humidity again depends on species, size, quantity, etc. Schedules are published for the various species to enable operators to select an appropriate drying environment. In the UK they are usually provided by the Kiln Manufacturers and also published in the Handbook of Hardwoods and Handbook of Softwoods (BRE).

### **Compartmental.**

A compartment kiln is a single enclosed container or building, etc. The timber is stacked as described above and the whole stack is seasoned using a programme of settings until the whole stack is reduced to the MC required.

### **Progressive.**

A progressive kiln has the stack on trolleys that 'progressively' travel through chambers that change the conditions as it travels through the varying atmospheres.

The advantage of this system, although much larger, has a continuous flow of seasoned timber coming off line.

### **How to Season your own timber.**

This process is for small batches and is *based* on a one inch thick board, for other thicknesses and varying species you should adjust this time according to your experience and judgement. I have made notes in italics below to help you along the way.

In the UK~ Or certainly temperate climates - *generally* ~ for a one-inch thick board such as oak will take *about* 12 months. Beech is much faster. Further-rough guides for Air drying times for fresh felled timber in temperate areas similar to the UK:

Softwoods ~ 25 mm thick, stacked in spring reduces to about 20 % in 1 1/2 to 3 months.

Softwoods ~ 50 mm thick, stacked in spring reduces to about 20 % in 3 to 4 months.

Hardwoods ~ 25 mm thick, stacked in autumn reduces to about 20 % the following summer.

Hardwoods ~ 50 mm thick, stacked in autumn reduces to about 20 % the following autumn.

However, note that these times show reduction to only 20 %. Further outdoor exposure may bring it down to 16 or 17 % but usually will require indoor drying to get to 12 % or less. Extreme care and good judgement is needed to get timber down to these levels without tension and stresses developing. Low heat, correct humidity and ventilation is what you must get right and certainly do not try to force the pace. Read R.B. Hoadley's book, *Understanding Wood* for a better guide to home seasoning.

*These are rule of thumb for temperate climates and you must make checks, record conditions and use your judgement and make adjustments where necessary.*

*Take samples from centre of stack, identify, weigh and record. Note the season of the year that you start the process and carefully note weather extremities to help you predict the duration and effects.*

After approximately 3 months for softwoods and 12 months for hardwoods – start weighing samples (note times above) and record together *with notes on the weather in the immediate past cycle. You may well want to start weighing and recording before these times to get a better understanding of the different species you may have in the stack.*

Weigh and record every week thereafter and after three consecutive weighs showing no difference consider the stack Air Dry for external use.

Test using the oven method to determine the %MC and whether it is fit for your use.

Re-stack the timber in-doors. Take care that the environment is not too hot and there is sufficient ventilation. You need to control this environment and thus you need to take regular readings of temperature and humidity of the air and % mc of timber samples.

Take samples from centre of stack, identify, weigh and *record temperatures and humidity if you have access to an hydrometer.*

Continue to weigh and record every week and after three consecutive weighs showing no difference consider the stack Air Dry for internal use.

Test using the oven method.

Continue the process until you reach the % MC you require for your particular use.

*Keep your notes and they will help you to predict the seasoning process of future batches.*

### **Test using the oven method.**

Remove sample from centre of stack. Cut off a member 300 mm long. Cut off a small cube sample approx. 25 mm long. Weigh and record. Place in a warm oven (experience must judge - dangers of over heating is obvious) for 15 to twenty minutes or so and re-weigh and record. Continue until there are no discernible differences between readings. You will now have a wet weight and a dry weight.

The %MC is obtained by the formulae –

Wet weight – dry weight / dry weight X 100 = %MC (*this is a standard scientific formulae for determining wood %MC - not mine !*)

A moisture meter is very handy but not quite so accurate as the oven method. Why not test your sample using the oven method and then see how much you can trust your meter?

**AIR DRIED TIMBER**



**KILN AND DRIED TIMBER [ KD HT ]**

