

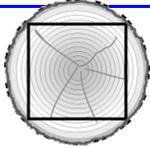
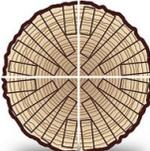
Conversion and Seasoning Timber-based materials

A: Conversion

Once a tree reaches maturity it can then be **felled** (cut down). Felling is a mechanised process involving logging machinery. A tractor carries a special adapter that can cut the tree, strip off the branches and slice the logs into manageable lengths.



Once felled, the logs are then transported to the saw mill where they are converted into useable planks. Depending on the type of wood and how it is going to be used, it may go through a number of different conversion processes, as shown in the table on the right.

B: Conversion process	Description	Picture	Common Uses
Baulk cut	This is the simplest form of conversion. The trunk is simply cut into a square or rectangular section. This removes the bark and evens up the trunk.		Beams in the construction of timber framed buildings
Plain sawn	This is the most popular form of conversion and involves sawing the trunk into planks. It is a simple and cost-effective method; however it can lead to a number of problems with warping and twisting. This stock form is most commonly used with softwoods.		Many areas of general joinery
Rift sawn	During this form of conversion the trunk is cut tangentially to the circular trunk. This produces an attractive grain pattern and the wood is less likely to warp and twist. This method is used for both soft and hardwoods.		Where the natural attractive grain is important, such as in the manufacture of furniture
Quarter sawn	This is a complex method of conversion that produces a lot of waste. It is expensive in terms of its financial cost and its impact on the environment. The trunk is cut radially out from the centre. This stock form of wood is generally used for expensive hardwoods.		To manufacture high quality furniture. Oak furniture that has been quarter cut will display 'figuring', this shows up as silver markings that catch the light.

C: Seasoning

Newly converted timber contains a lot of moisture and is known as **green timber**. The high moisture content makes the wood difficult to work, saw or plane. It will twist, warp and split if left in this state. It is also open to rotting and is vulnerable to insect attack.

The high moisture content needs to be reduced by a process called seasoning. There are two different methods of seasoning: **air seasoning** and **kiln seasoning**.

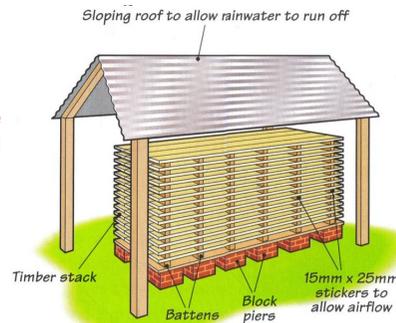
F: Key words

- Felling: the process of cutting a tree down
- Conversion: the process of sawing a tree trunk into planks
- Green timber: wood that has not been seasoned
- Air seasoning: a natural method of drying out green timber
- Kiln seasoning: a relatively quick method of drying out green timber using steam

D: Air seasoning

With this method, the aim is to reduce the moisture content of the wood by letting air flow around it in a controlled way. This is a relatively cost effective process but takes a much longer time than kiln seasoning - it takes around one year per 25mm of plank thickness to season.

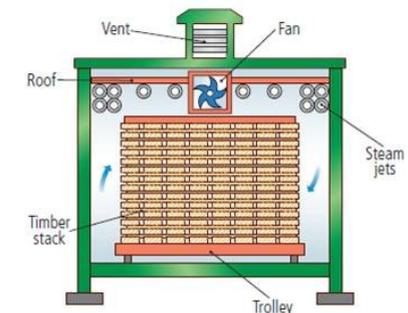
The planks are carefully stacked inside a building that has a roof, but is open on all sides. The roof will keep off the rain, snow and high sun, but the open sides allow the air to circulate around the boards. The planks are separated by stickers and the stack of boards is kept off the ground by being placed on brick piers. As the air flows around the stack it will very slowly dry out the planks.



E: Kiln seasoning

With this method, the aim is to reduce the moisture content of the wood by gradually reducing the moisture content of steam that is fed into a kiln.

A stack of timber is mounted onto a trolley that is wheeled into a kiln. The kiln is fully enclosed and has steam fed into it. As the moisture content of the steam is reduced it dries out the timber. This is significantly quicker than air seasoning. It is controllable but has a higher financial and environmental cost.



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Revision Checklist

I can explain the term **conversion** of timber

I can draw the four conversion processes

I can describe the four conversion processes

I can name products which are made using the four types of converted timber

I can use notes and sketches to describe the process of air seasoning timber

I can use notes and sketches to describe the process of kiln seasoning timber

Test yourself

1. Approximately how long would it take a 100mm thick plank of timber to air season?
2. Explain why it is necessary to season wood.
3. Why is air seasoning considered to be more environmentally friendly than kiln seasoning?
4. What type of products are made from rift sawn timber?
5. Draw a cross-section and fully label a seasoning kiln.
6. Use notes and sketches to describe the four processes of converting timber.