

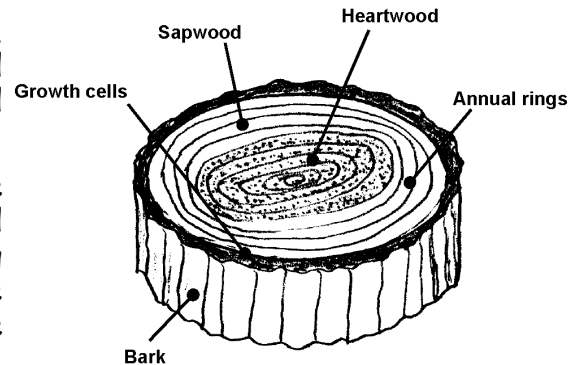
Design & Manufacture

Homework 7

Growth

Trees grow by the action of photosynthesis in their leaves. Photosynthesis is where the energy from sunlight is combined with minerals dissolved in water, drawn up from the roots, and carbon dioxide from the atmosphere, to provide food.

Each summer new growth is made from cells just beneath the bark. The cells produce new bark on the outside and new wood on the inside. One year's growth of wood is shown as a ring called an annual ring, which is often used to see how old a tree was when it was cut down. The rings are counted and the number of rings is the age of the tree in years.



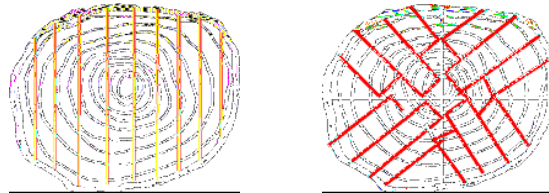
Older wood in the middle of the trunk dies and becomes harder, darker and drier and is called Heartwood, this is the best wood in the tree. The younger wood is still used for transporting food (sap) from the leaves to the rest of the tree and is lighter in colour and a lot wetter than heartwood and is called Sapwood. The Bark is used for protecting the tree.

Conversion

To be useful, the wood has to be converted from a tree trunk to planks. This is done by sawing through the tree trunk. There are two common methods of sawing.

Through and through - a quick cheap method, but produces planks that are likely to warp.

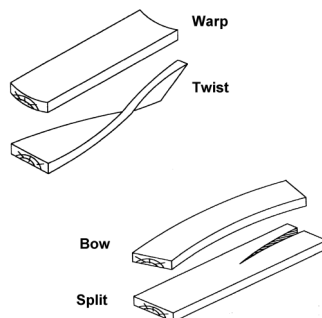
Quarter Sawn - a more costly method that produces more waste, but the planks produced are less likely to warp.



Through and through Quarter sawn

Seasoning

When the wood is cut into planks it is still very wet from the water taking the minerals from the roots to the leaves. If the planks dry quickly the wood splits and warps and becomes useless. To dry the wood slowly it is stacked in large drying ovens called kilns. The drying program takes four or five weeks.



Storage

When the wood is seasoned it should contain less than 10% water. Wood to be used for products that will be used indoors, needs to be stored indoors, so that it remains dry and keeps its low moisture content, and won't warp or split. It is best stored flat or vertically upright, so that it does not bend because of its own weight.

Questions

Draw a Sawn tree trunk show the main features that can be seen on the cut surface.

Explain in your own words what does the term conversion mean?

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Explain in your own words what does the term seasoning mean?

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Draw examples of what can happen if wood is seasoned too quickly.

How much water should be in the wood if it is to be used indoors?

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