

# Timber - Hardwood

CORE 1.12

## Where do Timbers come from?

Timber comes from a tree that has been cut down and processed into planks or other sections such as square sections, dowels or profiles.

Timber is used to build houses, furniture, toys and fences and is still used widely today. Timber is grown naturally and easy to work with but is also strong and lightweight.



## Two types of Timber?

There are two main types of Timber:

- **Hardwood** — This type of timber comes from trees that have broad leaves, lose their leaves in winter and produce fruit. They take a long time to grow (100 years) so they are rarely planted and are becoming rare and are expensive to buy.
- **Softwood** — This type of timber comes from trees that have needle-like leaves and are evergreen all year round. They take around 20 – 30 years to grow and therefore are planted commercially so are easily available and cheap to buy.





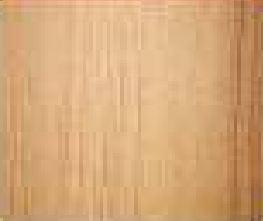



Type	Description	Advantages	Disadvantages	Common uses
Oak		<ul style="list-style-type: none"> <li>• Strong and durable</li> <li>• Has an attractive <b>grain</b> when well finished</li> </ul>	<ul style="list-style-type: none"> <li>• Expensive</li> <li>• Becoming rarer</li> <li>• Harder to work with than some woods</li> <li>• Corrodes iron and steel</li> </ul>	<ul style="list-style-type: none"> <li>• Used a lot for building houses and boats in the past</li> <li>• Now used for high-end furniture and wine and whisky barrels</li> </ul>
Mahogany		<ul style="list-style-type: none"> <li>• Has a very attractive finish</li> <li>• Quite easy to work</li> </ul>	<ul style="list-style-type: none"> <li>• Expensive</li> <li>• Environmental problems with sourcing from tropical forests</li> <li>• Oils in the wood can give some people a skin rash or breathing problems</li> </ul>	<ul style="list-style-type: none"> <li>• High-quality furniture, jewellery boxes, windows</li> </ul>
Beech		<ul style="list-style-type: none"> <li>• A tough wood</li> <li>• Does not crack or splinter easily</li> <li>• Hard</li> </ul>	<ul style="list-style-type: none"> <li>• Expensive</li> <li>• Not very resistant to moisture</li> <li>• Not suitable for exterior use</li> </ul>	<ul style="list-style-type: none"> <li>• Toys, cooking implements, solid and laminated furniture</li> </ul>
Balsa		<ul style="list-style-type: none"> <li>• Very lightweight</li> <li>• Easy to cut</li> </ul>	<ul style="list-style-type: none"> <li>• Much too soft and weak for most products</li> </ul>	<ul style="list-style-type: none"> <li>• Model making, primary school projects, surf board cores</li> <li>• Used for rafts in ancient times</li> </ul>

Table 1.12.1 Properties of hardwoods

# Timber - Softwood



CORE 1.12

## Softwoods

Type	Description	Advantages	Disadvantages	Common uses
Pine		<ul style="list-style-type: none"> <li>• Very durable</li> <li>• Easy to work</li> <li>• Quite cheap as it grows quickly enough to be forested</li> <li>• Reasonably strong, lightweight and easy to work with</li> </ul>	<ul style="list-style-type: none"> <li>• Can warp, crack and splinter more than some other woods</li> </ul>	<ul style="list-style-type: none"> <li>• House construction, for roof joists and floorboards</li> <li>• Furniture, doors, interior woodwork</li> </ul>
Cedar		<ul style="list-style-type: none"> <li>• Natural oils make it resistant to water and fungal growth</li> </ul>	<ul style="list-style-type: none"> <li>• More expensive than pine and not as strong</li> </ul>	<ul style="list-style-type: none"> <li>• Outdoor furniture, fences, sheds, boats</li> </ul>

# Manufactured boards

## Manufactured boards

Type	Description	Advantages	Disadvantages	Common uses
<b>Plywood</b> 	<ul style="list-style-type: none"> <li>• A tree trunk is sliced into thin layers called <b>veneer</b></li> <li>• These layers are glued together with the grain lines going in alternate directions</li> </ul>	<ul style="list-style-type: none"> <li>• Flat and structurally strong</li> <li>• Surface looks like wood</li> <li>• Resistant to warping, cracking and twisting</li> </ul>	<ul style="list-style-type: none"> <li>• Quite expensive</li> <li>• Edges can look rather rough</li> <li>• Susceptible to water damage if wrong grade is used</li> </ul>	<ul style="list-style-type: none"> <li>• Building and furniture panels that need some strength</li> </ul>
<b>Medium density fibreboard (MDF)</b> 	<ul style="list-style-type: none"> <li>• Wood dust and fibres are mixed with a glue and pressed into flat sheets under extreme heat and pressure</li> </ul>	<ul style="list-style-type: none"> <li>• Cheap (made from waste wood)</li> <li>• Smooth ungrained surface is good for painting or staining</li> <li>• Easy to machine</li> </ul>	<ul style="list-style-type: none"> <li>• Does not look good, so needs coating</li> <li>• Weak compared to real wood or plywood</li> <li>• Tools blunt quickly due to the glue</li> </ul>	<ul style="list-style-type: none"> <li>• Cheap flat-pack furniture, wall panels, display cabinets, storage units</li> </ul>

# Timber - Properties

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## Material properties

### Hardness –

This is the ability of a material to withstand cutting and scratching. Timber is generally a soft material that can be easily scratched by metal cutting tools which are much harder than timber. However, Timbers like Oak are quite Hard for Timber and will blunt tools over time because of their Hardness. Compared to Balsa which is a very soft Timber, this can be marked / scratched with a finger nail.

This property should not be confused with softwood and Hardwood!

Hardwood is not Hard and Softwood is not Soft think of them as:

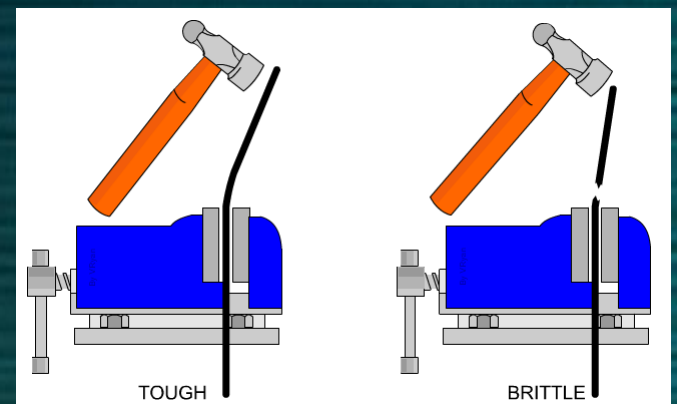
Hardwood = loosed leaves in winter

Softwood = Evergreen



### Toughness –

This is the ability of a material to withstand being hit and not break, Timber is a Tough material because when hit Timber will often dent or mark but won't break.



### Durability –

This is the ability of a material to last a long time. If Timber is seasoned properly (dried out) then it is durable and can last along time (Pine 25 years or Oak 100's years) but if left outside wet it will rot and not be very durable.

Timber can also be treated to make t even more durable and some timbers contain natural oils that make them even more durable.



# Timber

CORE 1.12

## Natural timbers

Where do timbers come from?

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What has timber traditionally been used to make?

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## Hardwoods

Describe a Hardwood tree

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Name three examples of Hardwoods

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- .
- .

For two of these explain their advantages and disadvantages

1, Hardwood name:

Image to show hardwood timber

Advantages

- .
- .
- .

Disadvantages

- .
- .
- .

2, Hardwood name:

Image to show hardwood timber

Advantages

- .
- .
- .

Disadvantages

- .
- .
- .

## Softwoods

Describe a Softwood tree

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Name two examples of softwoods

- .
- .

For one explain their advantages and disadvantages

Name of softwood:

Advantage

- .
- .

Disadvantage

- .
- .

What timber would you choose to design and build a shed for a Garden?

Timber choice:

Explain why you have chosen this timber

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## Manufactured boards

Describe how manufactured board are made

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What key advantages do Manufactured boards have over natural timber?

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Which manufactured board wouldn't you want to use if the material was going to be put on show?

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Explain why

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# Timber

CORE 1.12

What manufactured board would you use if you wanted to clad a piece of structural furniture?

Manufactured board choice:

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Reason why?

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## Properties

Name and describe the three properties that Timbers have

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