

# TIMBER SPECIES

Wood Campus Timber Trade Topics are produced in collaboration with the Timber Trade Federation. For further information, visit [www.ttf.org.uk](http://www.ttf.org.uk)

## TOPIC CHECKLIST

- Is the species suitable for the end use?
- Does it have the right strength qualities?
- How durable is it?
- What does it look like?
- Will it last?
- Are there legal and sustainable supplies?



## What are the main types of timber species?

### Softwoods

Softwood timber is obtained from conifers - trees with needle-like leaves, usually bearing cones. Softwoods are the most commonly-used timber because they offer good value and are readily available from sustainably-managed forests. They are less dense and easier to work with than most hardwoods.

Of the 650 species of softwoods throughout the world, around 50 are in commercial use, with the most common being European Redwood and Whitewood (pine and spruce).

Most softwood used in the UK comes from Sweden, the UK, Finland, Latvia, Germany and Russia.

### Hardwoods

Hardwoods are mainly broadleaf, deciduous trees, shedding their leaves in winter, although some hardwoods are evergreen. There are two groups, temperate and tropical, accounting for some 20,000 different commercial species.

Although generally more durable and stronger than softwood, they must be used in the correct way and environment.

The majority of hardwoods are deeper in colour and have a higher density than softwood, due to their cellular structure. However, some hardwoods, particularly tropical species, grow fast enough to be of similar, or lower, density than slow growing softwoods.

Hardwoods are usually supplied in random lengths and widths, but in standard thicknesses are often used as veneers on softwood.

### Temperate hardwoods

Found in temperate areas of the world, such as Europe, North America, South America, Asia, Australia and New Zealand, most of the temperate hardwoods used in the UK, such as oak, birch or beech, come from Europe or North America.

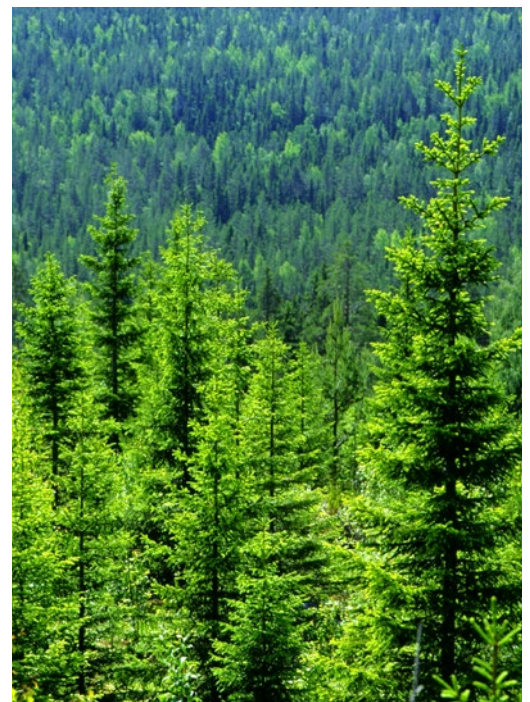
### Tropical hardwoods

Found in tropical areas such as Central and South America, West and Central Africa and South East Asia.

Illegal trade in tropical hardwoods has been largely responsible for deforestation. Care should be taken to ensure you are supplied with timber from legal and sustainable sources. See Wood Campus CPD module *Procuring Sustainable Timber*.

## Sourcing sustainable timber

- See Timber Trade Topic 1 *Sourcing Sustainable Timber*
- See Wood Campus CPD module *Procuring Sustainable Timber*



## Which species of wood should I choose?

Consider these points:

1. The end use – for example, is the wood to be used as a structural material and then covered with something else, i.e. studding covered by plasterboard, or will it be exposed?
2. What strength is required? Does the timber need to have a high bending strength, such as a joist, or a high tensile strength where the timber is stretched in the application?
3. Is the wood to be used purely for a decorative effect? Is this to be a dark or light colour?
4. Is the wood to be machined? Some species are more easily machined than others.
5. Is the wood from a certified legal and sustainably-managed forest source (i.e. FSC or PEFC) or is it from a source that is making progress towards certification (i.e. Verified Progress)?
6. Cost. It may look nice, but is it worth the additional cost, if another less expensive and more commercially available timber can do the same job?
7. Durability and treatability: is it necessary to use preservatives?



European redwood (pine)



European whitewood (spruce)



Douglas fir



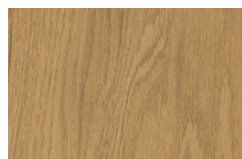
Western red cedar

### Softwoods – main characteristics

Species/Origin	Colour	Density kg/m <sup>3</sup>	Texture	Moisture movement	Working qualities	Durability <sup>1</sup>	Treatability <sup>2</sup> (heartwood)	Uses
Redwood, European Scandinavia/ Europe	Creamy white	510	Medium	Medium	Medium	Slightly to moderately durable	Difficult to extremely difficult	Flooring, external and interior joinery, furniture, structural
Whitewood, European Scandinavia/ Europe	White to pale yellowish brown	470	Medium	Medium	Good	Slightly durable	Difficult to extremely difficult	Flooring and interior joinery, furniture, structural
Scots pine UK	Creamy white	510	Coarse	Medium	Medium	Slightly to moderately durable	Difficult to extremely difficult	External and interior joinery, structural
Douglas fir N America, UK and Europe	Reddish brown to light brown	530	Medium	Small	Good	Moderately durable	Extremely difficult	Interior and exterior joinery, cladding
Larch, European Europe	Pale reddish brown	550	Fine	Small	Medium	Slightly to moderately durable	Extremely difficult	Cladding, trim
Western red cedar N America	Reddish brown	390	Coarse	Small	Good	Moderately durable	Difficult to extremely difficult	Cladding
Spruce, Sitka N America and UK	Reddish brown	450	Coarse	Small	Good	Not durable to slightly durable	Difficult	Interior joinery, packaging, pallets, structural



Beech



European oak



Iroko



Sapele

## Temperate hardwoods – main characteristics

Species/Origin	Colour	Density kg/m <sup>3</sup>	Texture	Moisture movement	Working qualities	Durability <sup>1</sup>	Treatability <sup>2</sup> (heartwood)	Uses
Beech, European <i>Europe, UK</i>	White/cream (reddish brown after steaming)	720	Fine	Large	Good	Not durable	Easy (red heart extremely difficult)	Furniture, interior joinery, flooring, plywood
Birch, European <i>Europe, Scandinavia</i>	Light brown	670	Fine	Large	Good	Not durable	Easy to moderately easy	Cabinet making, furniture, plywood.
Cherry, European <i>Europe, UK, Scandinavia, Asia, N. Africa</i>	Pinkish brown	510	Fine	Medium	Good	Moderately durable	No information	Cabinet making, furniture
Chestnut, Sweet <i>Europe, UK, Asia Minor, Australia, N. Africa</i>	Yellow to brown	530	Medium	Large	Good	Durable	Extremely difficult	Interior and exterior joinery, fencing, trim, structural
Oak, European <i>Europe, Asia Minor, N. Africa</i>	Yellowish brown	550	Medium to coarse	Medium	Medium to difficult	Durable	Extremely difficult	Furniture, interior and exterior joinery, flooring, heavy structural.

## Tropical hardwoods – main characteristics

Species/Origin	Colour	Density kg/m <sup>3</sup>	Texture	Moisture movement	Working qualities	Durability <sup>2</sup>	Treatability <sup>3</sup> (heartwood)	Uses
Teak <i>Burma, Indonesia, Thailand and plantations elsewhere</i>	Golden brown some with dark markings	660	Medium	Small	Medium	Very durable	Extremely difficult	Interior and exterior joinery, sports goods, furniture
Iroko <i>W. Africa</i>	Yellow brown	660	Medium	Small	Medium to difficult	Durable to very durable	Extremely difficult	Interior and exterior joinery, bridge construction
Sapele <i>W. Africa</i>	Reddish brown	640	Medium	Medium	Medium	Moderately durable	Difficult	Interior and exterior joinery, furniture, flooring, veneer
Utile <i>W. Africa</i>	Reddish brown	660	Medium	Medium	Medium	Moderately durable to durable	Extremely difficult	Interior and exterior joinery, furniture, cabinet work

<sup>1</sup> Moisture movement

For structural purposes movement is not usually significant, but if you require stability in varying humidities (e.g. decorative flooring), use a species with small movement. These classifications are not directly related to the shrinkage of green timber.

<sup>2</sup> Durability

Refers to resistance to fungal decay of the heartwood only. Sapwood in most species is generally not durable and should not be used in exposed conditions without preservative treatment. Classes referred to in BS EN 350-1 are:  
Class 1 – 'very durable'  
Class 2 – 'durable'  
Class 3 – 'moderately durable'  
Class 4 – 'slightly durable'  
Class 5 – 'not durable'

<sup>3</sup> Treatability

Refers to how easily timbers can be penetrated with vacuum pressure preservative treatments. The four levels of treatability in BS EN 350-2 are 'easy', 'moderately easy', 'difficult', 'extremely difficult'.

## Modified timber

A number of brands of timber are now available that have been modified chemically, such as Accoya™, or by heat treatment, such as Thermowood.

Generally, these products provide the sustainability of softwoods with the stability and durability normally associated with hardwoods.

The different modification processes affect the performance of the timbers in different ways. Consult the manufacturer for specific details.



### Tannin stain

Tannin is natural in softwoods and hardwoods. For example, oak and Western red cedar will exude tannin as they dry, which may give the appearance of a black deposit. As a result, water running off these surfaces can leave staining, particularly around metal fixings.

### Further information and advice

#### Sourcing sustainable timber

- See Timber Trade Topic 1 *Sourcing Sustainable Timber*
- See Wood Campus CPD module *Procuring Sustainable Timber*

#### Available species

Consult your local timber merchant or Timber Trade Federation member [www.ttf.org.uk](http://www.ttf.org.uk)

#### Swedish grown species

[www.swedishwood.com](http://www.swedishwood.com)

#### UK grown species

[www.forestry.gov.uk](http://www.forestry.gov.uk)

#### American species

[www.americansoftwoods.com](http://www.americansoftwoods.com)

[www.americanhardwood.org](http://www.americanhardwood.org)

#### Technical information

[www.trada.co.uk](http://www.trada.co.uk)

## Sustainable timber

Timber is the most sustainable mainstream building product. It is naturally renewable. Over 90% of timber used in UK construction comes from Europe, where more trees are grown than harvested (source: TTF Statistical Review 2016).

Softwood and temperate hardwood forests in Scandinavia, Europe, Canada and North America are stable or growing. Growing forests act as carbon sinks; wood products act as carbon stores.

Ask for PEFC or FSC Chain of Custody certification.

See Wood Campus RIBA CPD module *Procuring Sustainable Timber* for more on timber certification and sustainability and government requirements.



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