

Timber species

Wood is a natural material, and is sourced from many different tree species. Each species produces timber which varies in colour, density and performance properties, all of which will influence that species' suitability for a particular job.

Tree species are broadly divided into two main groups: softwood and hardwood. Softwood comes from cone-bearing trees, which are described as coniferous, while hardwood comes from deciduous trees which shed their leaves at the end of the growing season or during a dry season.

Hardwoods are also divided into two further groups, tropical and temperate, depending on where they grow.

Softwoods

Softwood timber is obtained from conifers - trees which have needle-like leaves and usually bear cones. Softwoods are the most commonly used timber materials because they are generally less expensive than hardwoods, are readily available, easy to work with and are less dense than most hardwoods.

- Of the 650 species of softwoods throughout the world, approximately 50 are in commercial use
- Most softwood used in the UK comes from Sweden, UK forests, Finland, Latvia, Germany and Russia.

Hardwoods

Hardwoods are mainly deciduous, or broad leaf, trees shedding their leaves in winter. There are two groups - temperate and tropical (some hardwoods are evergreen).

- Some 20,000 different commercial species
- Although generally more durable and stronger than softwood, they must be used in the correct way and environment
- Hardwoods tend to be deeper in colour and are often used decoratively
- The majority of hardwoods are usually denser than softwood, due to their comparative cellular structure. However, some hardwoods, particularly tropical species, grow fast enough to be of similar, or lower, density than slow growing softwoods



Sustainable timber

Timber is the most sustainable building product available. It is naturally renewable - over 97% of softwood timber used in the UK comes from Europe, where the forest area is increasing by the equivalent of 90 football pitches every hour of the day and night.*

For reassurance for softwoods and hardwoods look for certification labels like FSC (Forest Stewardship Council) or PEFC (Programme for the Endorsement of Forest Certification).

Always ask your supplier about their responsible purchasing policies.

*IIED & ECCM, Using Wood to Mitigate Climate Change, 2004 and UNECE-FAO, State of the Europe's Forests, 2011.



This information sheet provides general advice only and is not specific to the requirements of a particular building project. It is the builder's responsibility to check compliance with Building Regulations and standards.

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

Temperate hardwoods are 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 are found in tropical areas such as Central and South America, West and Central Africa and South East Asia. It is essential that any tropical timber (as well as all timber) you use is from a managed forest source and has certification to prove it (see Page 1 for ways to check).

Tannin is a natural constituent of wood and exists in softwoods and hardwoods. For example, oak (hardwood) and western red cedar (softwood), two commonly used timbers, 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.

To learn more about this, and how to protect against it visit www.trada.co.uk or ask your local timber supplier.

Which species of wood do I choose?

This depends on a number of factors, but when selecting the timber species consider these points:

1. The end use – for example, is the wood to be used as a structural material and then covered over 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 managed forest source, and certified, (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?

Table of species and uses

The tables overleaf provide an indication of some of the more common softwoods and hardwoods and their uses.

Working qualities. This refers to ease of working. 'Difficult' indicates that care should be taken in machining to achieve an acceptable surface finish. Health and safety requirements relating to the use of woodworking tools and machinery and to the control of wood dust should always be followed.

Colour(s). This relates to the heartwood of the species. Most timbers vary in colour and will change with use, the application of finishes and exposure to light. Unprotected timber exposed to the weather will discolour and may develop mould growth.

Durability. This 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'

Density. This varies depending on species and moisture content. Averages at 15% moisture content are quoted; 0.5% of the given weight can be added for every 1% increase in moisture content. '**' indicates that density can vary by 20% or more.

Texture. Surface texture is defined as 'fine', 'medium' or 'coarse'.

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

Moisture movement. The dimensions of dried timber can change in response to atmospheric conditions. Movement is classed as 'small', 'medium' or 'large'. 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.

Softwoods

Species / Origin	Colour	Density kg/m ³	Texture	Moisture movement	Working qualities	Durability	Treatability Heartwood	Uses
Douglas fir N America, UK and Europe	Reddish brown to light brown	530	Medium	Small	Good	Moderately durable	Extremely difficult	Plywood. Interior and exterior joinery. Cladding.
Larch, European Europe	Pale reddish brown	550	Fine	Small	Medium	Slightly durable to moderately	Extremely difficult	Cladding. Trim.
Pine, Scots UK	White/cream	510	Coarse	Medium	Medium	Slightly durable to moderately	Difficult to extremely difficult	Heavy structural. Internal and exterior joinery.
Western red cedar N America	Reddish brown	390	Coarse	Small	Good	Moderately durable	Difficult to extremely difficult	Cladding.
Whitewood, European Europe	White to pale yellowish brown	470	Medium	Medium	Good	Slightly durable	Difficult to extremely difficult	Flooring. Interior and exterior joinery. Structural.
Redwood, European Scandinavia/Europe	White/cream	510	Medium	Medium	Medium	Slightly durable to moderately	Difficult to extremely difficult	Interior joinery. Furniture. Structural.
Spruce, Sitka N America, UK	Reddish brown	450	Coarse	Small	Good	Not durable to slightly durable	Difficult	Interior joinery. Packaging and pallets. Structural.

Temperate hardwoods

Species / Origin	Colour	Density kg/m ³	Texture	Moisture movement	Working qualities	Durability	Treatability Heartwood	Uses
Beech, European Europe, UK	White/cream (reddish brown after steaming)	720	Fine	Large	Good	Not durable	Easy (red heart extremely difficult)	Furniture. Interior joinery. Flooring. Plywood.
Birch, European Europe, Scandinavia	Light brown	670	Fine	Large	Good	Not durable	Easy to moderately easy	Cabinet making. Furniture. Plywood.
Cherry, European Europe, UK, Scandinavia, Asia, N. Africa	Pinkish brown	630	Fine	Medium	Good	Moderately durable	No information	Cabinet making. Furniture.
Chestnut, Sweet Europe, UK, Asia Minor, Australia, N. Africa	Yellow to brown	560	Medium	Large	Good	Durable	Extremely difficult	Interior and exterior joinery. Fencing. Trim. Structural.
Oak, European Europe, Asia Minor, N. Africa	Yellowish brown	720* (*can vary by up to 20% or more)	Medium to coarse	Medium	Medium to difficult	Durable	Extremely difficult	Furniture. Interior and exterior joinery. Flooring. Tight cooperage. Fencing. Heavy structural.



Tropical hardwoods

Species / Origin	Colour	Density kg/m ³	Texture	Moisture movement	Working qualities	Durability	Treatability Heartwood	Uses
Teak Burma, Indonesia, Thailand and plantations elsewhere	Golden brown some with dark markings	660	Medium	Small	Medium	Very durable	Extremely difficult	Interior and exterior joinery. Sports goods. Furniture.
Iroko W. Africa	Yellow brown	660	Medium	Small	Medium to difficult	Durable to very durable	Extremely difficult	Interior and exterior joinery. Bridge construction.
Sapele W. Africa	Reddish brown	640	Medium	Medium	Medium	Moderately durable	Difficult	Interior and exterior joinery. Furniture. Flooring. Veneer.
Utile W. Africa	Reddish brown	660	Medium	Medium	Medium	Moderately durable to durable	Extremely difficult	Interior and exterior joinery. Furniture and cabinet work.

Further information and advice

Available species

- Information on the variety of softwood and hardwood species is usually available from your local timber supplier.

UK grown species

- UK Forestry Commission www.forestry.gov.uk

American hardwoods

- The American Hardwood Export Council
www.ahec-europe.org

General information about timber procurement

- wood for good www.woodforgood.com

Procuring sustainable timber

- Government requirements for the purchase of sustainable timber – CPET (The Central Point for Expertise in Timber Procurement) www.proforest.net/cpet

Approved Certification Schemes

- www.woodforgood.com/building-sustainably/specifying-and-buyingtimber/certification

To check on threatened species visit www.iucnredlist.org

Visit www.trada.co.uk for additional technical advice and a comprehensive guide to Timber Species.

A *Choose and Use* information sheet 'Sourcing sustainable timber' is also available in this series.

Wood species guide

an app for iphone, ipad and ipod touch www.trada.co.uk/wsg

Choose and Use is a series of information sheets for builders produced by TRADA, The Timber Research and Development Association.

They offer up-to-date advice on how to select the right timber and timber products for different applications.

You can often save time and money by choosing the correct timber material or timber products as well as ensuring you comply with current Building Regulations and Building Codes. For more information about specific products visit www.trada.co.uk or contact your local supplier.

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