

Supply

S.00.01-02

Date Published

November 2023

Document Type

Timber Knowledge Sheet

Category

Supply

Audience

Agent | Importer |
Landscape | Merchant

Theme

Source

Author

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for TDUK

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Tree Species

Thanks to the variety of different tree species globally, timber can vary in colour, density, and performance depending on its source. These variations in timber due to species determine the suitability for different construction uses.



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Tree Species

As a construction material, timber has a very distinct advantage over the alternatives - trees are a living thing and therefore a renewable resource.

With the use of correctly managed forests, timber represents an excellent way of creating a more sustainable construction industry.

Hardwoods and Softwoods

Tree species are broadly divided into hardwoods and softwoods, with hardwoods further divided into tropical and temperate hardwoods.

Softwood comes from conifers – cone-bearing trees with needle-like leaves. As softwoods are generally less expensive than hardwoods, easy to work with, and less dense, they are the most commonly used timber material. Around 50 of the approximate 650 known species of softwood trees are used commercially, with most softwood used in the UK sourced from the UK and northern Europe, including Sweden, Finland, Latvia and Germany.

Hardwoods are mainly deciduous (or broadleaf) trees that shed their leaves in winter. There are over 20,000 different commercial species, with the majority denser than softwood thanks to their cellular structure.

Nonetheless, some hardwood species are very fast-growing and there is a large overlap in densities and mechanical properties between hardwoods and softwoods. As hardwoods tend to be deeper in colour they are often used decoratively or as veneers on softwood and are usually supplied in random lengths and widths but standard thicknesses.

Temperate hardwoods derive from temperate world regions, including Europe, North America, Asia, Australia, and New Zealand, while tropical hardwoods are found in tropical areas such as Central and South America, West and Central Africa, and South-East Asia.

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Certification

It is essential to use timber from well-managed forest sources, whatever species or where it is from in the world. Certification provides reassurance regarding the provenance of timber. In the UK, look for certification labels like FSC (Forest Stewardship Council), PEFC (Programme for the Endorsement of Forest Certification), or Grown in Britain.



IMAGE: FSC, PEFC and Grown in Britain certification logos

Choosing Species

Consider these factors when selecting tree species for different uses:

Factors	Description
End Use	Is the timber to be used as a structural material and then covered with e.g., plasterboard, or will it be exposed?
Strength and Density	What strength is required? Is the timber used as a joist and require a high bending strength, or does it need a high tensile strength to cope with stretching? Density is related to the timber's performance in fire and fastener embedment strength.
Working Qualities	How easy is the timber to work with? Is it 'difficult' and requires care in machining to achieve an acceptable surface finishing?
Colour and Texture	Is the timber for decorative effect? Should this be light or dark? Most timber varies in colour and change with use, finishes, and light exposure, while unprotected timber exposed to the elements will weather. Surface texture is defined as 'fine', 'medium' or 'coarse'.
Durability and Treatability	Durability refers to resistance to fungal decay and insect degradation, while treatability refers to how easily the timber can be penetrated by vacuum pressure preservative treatments. Is the timber's natural durability sufficient, or are preservatives necessary for the intended end use?
Moisture Movement	Dried timber dimensions change in response to atmospheric conditions, with movement classes as 'small', 'medium' or 'large'. If stability in varying conditions is required, e.g., a decorative floor, select a species with small movement.
Source	Is the wood from a managed forest source with FSC, PEFC or Grown in Britain certification? What other evidence is available demonstrating the source is legal and sustainable, such as a FLEGT license or national scheme certification?
Cost	Is the cost of the timber equivalent to its value in the application, if another less expensive and more commercially available timber can perform the same job?

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The tables below provide examples of species commonly available for sale in the UK.
Please visit the Timber Development UK Wood Species Database for a wider range of information:

Softwood Species

Species	Douglas fir	Larch	European redwood	European whitewood	Sitka spruce	Scots pine	Western red cedar
	<i>Pseudotsuga menziesii</i>	<i>Larix decidua</i>	<i>Pinus sylvestris</i> *	<i>Abies alba / Picea abies</i>	<i>Picea sitchensis</i>	<i>Pinus sylvestris</i> *	<i>Thuja plicata</i>
Origin	Europe North America UK	Europe	Europe	Europe	North America UK	UK	North America UK
Density (kg/m ³)	530	550	510	470	450	510	390
Working Qualities	Good	Medium	Medium	Good	Good	Medium	Good
Colour	Reddish brown to light brown	Pale reddish brown	White to cream	White to pale yellowish brown	Reddish brown	White to cream	Reddish brown
Texture	Medium	Fine	Medium	Medium	Coarse	Coarse	Coarse
Durability	Moderate	Slight to moderate	Slight to moderate	Slight	Not durable to slight	Slight to moderate	Durable
Treatability	Extremely difficult	Extremely difficult	Difficult to extremely difficult	Difficult to extremely difficult	Difficult	Difficult to extremely difficult	Difficult to extremely difficult
Moisture Movement	Small	Small	Medium	Medium	Small	Medium	Small
Uses	Cladding Exterior Joinery Interior Joinery Plywood	Cladding Trim	Furniture Interior Joinery Structural	Flooring Exterior Joinery Interior Joinery Structural	Interior Joinery Packaging & Pallets Structural	Heavy Structural Exterior Joinery Interior Joinery	Cladding

* Timber properties vary within a species. They are influenced by the climate and growth conditions of the tree, which is why the same species from different growth areas can show different properties.

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Temperate Hardwood Species

Species	American ash	American white oak	European beech	European birch	European cherry	European oak	Sweet chestnut
	<i>Fraxinus spp.</i>	<i>Quercus spp.</i>	<i>Fagus sylvatica</i>	<i>Betula pendula</i>	<i>Prunus avium</i>	<i>Quercus robur</i>	<i>Castanea sativa</i>
Origin	North America	North America	Europe UK	Europe (Scandinavia)	Asia Europe North Africa UK	Asia Europe North Africa UK	Anatolia Australia Europe North Africa UK
Density (kg/m ³)	670	770	720	670	630	720*	560
Working Qualities	Good	Medium	Good	Good	Good	Medium to difficult	Good
Colour	Grey	White to cream	White to cream (reddish brown after steaming)	Light brown	Pinkish brown	Yellowish brown	Yellow to brown
Texture	Coarse	Medium	Fine	Fine	Fine	Medium to Coarse	Medium
Durability	Not durable	Moderate	Not durable	Not durable	Moderate	Durable	Durable
Treatability	Easy	Extremely difficult	Easy	Easy to moderately easy	Difficult	Extremely difficult	Extremely difficult
Moisture Movement	Medium	Medium	Large	Large	Medium	Medium	Large
Uses	Interior Joinery Tool Handles	Flooring Furniture Heavy Structural Exterior Joinery Interior Joinery	Flooring Furniture Interior Joinery Plywood	Cabinet making Furniture Plywood	Cabinet making Furniture	Cooperage Exterior Joinery Fencing Flooring Furniture Heavy Structural Interior Joinery	Exterior Joinery Fencing Interior Joinery Trim Structural

* Can vary by 20% or more

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Tropical Hardwood Species

Species	Balau	Greenheart	Iroko	Massaranduba	Sapele	Teak	Utile
	<i>Shorea spp.</i>	<i>Chlorocardium spp.</i>	<i>Milicia spp.</i>	<i>Manilkara spp.</i>	<i>Entandrophragma cylindricum</i>	<i>Tectona grandis</i>	<i>Entandrophragma utile</i>
Origin	South-East Asia	South America	West Africa	South America West Indies	West Africa	South-East Asia	West Africa
Density (kg/m³)	980	1040	660	1050	640	660	660
Working Qualities	Difficult	Difficult	Medium to Difficult	Medium to Easy	Medium	Medium	Medium
Colour	Yellow brown	Green brown	Yellow brown	Reddish brown	Reddish brown	Golden brown with dark marking	Reddish brown
Texture	Medium	Fine	Medium	Fine	Medium	Medium	Medium
Durability	Durable	Very durable	Durable to very durable	Very durable	Moderately durable	Very durable	Moderately durable to durable
Treatability	Extremely difficult	Extremely difficult	Extremely difficult	Extremely difficult	Difficult	Extremely difficult	Extremely difficult
Moisture Movement	Medium	Medium	Small	Medium	Small	Medium	Medium
Uses	Decking Heavy Structural Marine or Freshwater Construction	Heavy Structural Marine or Freshwater Construction	Exterior Joinery Interior Joinery	Decking Flooring Heavy Structural Marine or Freshwater Construction	Flooring Furniture Exterior Joinery Interior Joinery Veneer	Exterior Joinery Furniture Interior Joinery	Cabinet making Exterior Joinery Furniture Interior Joinery