Wood flooring

Timber flooring is an effective way to add character to your home. Successful installation of a wood floor depends on the right selection of the type of flooring, the species from which it is made and its construction and appearance. This leaflet explains the main types of wood flooring and discusses some of the principles of selection to ensure you achieve the desired result.

Photo: Bona Ltd

Before you begin

When installing wood flooring, it is essential that you always do the following:

- Acclimatize the boards to the in-service atmospheric conditions expected at the premises for a period of several weeks before installing them. For installations over under floor heating, ensure the moisture content of the boards is between 6% and 8% at the time of laying.
- Ensure that any cement sub-floors register a relative humidity (RH) reading of no higher than 75% (65% or less for under floor heating installations or for floors intended as stick-down installations) when tested with a hygrometer.
- Make sure that all wet trades (plasterwork, screeds etc) have had ample time to dry out fully before installing the floor.

Selecting the right species

The relative humidity of a normal domestic environment is likely to range between 35% and 65% over a yearly cycle, and wood floors will shrink and swell in response to these conditions. By selecting an appropriate species of timber, you can control dimensional movement occurring over the lifetime of the floor. For most domestic environments, species with medium movement characteristics will give you a floor with acceptable levels of movement. However, for specialist installations such as those involving under floor heating, you should use species with small movement. Large-movement timbers are best used as the wear layer of engineered boards if atmospheric conditions are not too dry and when no under floor heating is installed.

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).

FSC
FSC-ACC-008

Always ask your supplier about their responsible purchasing policies.

PEFC
PEFC/16-44-002

*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.

Produced by TRADA Technology on behalf of the Timber Research and Development Association (www.trada.co.uk), and supported by Wood for Good and Swedish Wood

Timber species and dimensional movement	
Movement classification	**Commonly used species**
Small	iroko, teak, merbau, American mahogany, dark red meranti, western hemlock
Medium	ash, European oak, American white oak, maple, sycamore, European redwood/whitewood, European cherry
Large	beech, birch, sweet chestnut

By selecting solid wood floors in narrower board widths, or floors which are made from components of smaller dimensions (for example, woodblock or finger mosaic), you can avert the risk of distortion in the form of 'cupping' or 'ridging'.

Installation over under floor heating

For installations over under floor heating, it is essential you limit the selection of species to those with small movement characteristics. Maximum board widths of 75mm are normally recommended for under floor heating installations, although wider commercial products are becoming available which may require special precautions to avoid in-service movement. You must also ensure that the moisture content of boards intended for under floor heating installations is between 6% and 8% when the floor is laid.

Installation of flooring over under floor heating ducts
Photo: Junckers

Wear resistance

Different species of flooring will provide different levels of wear resistance and you must give this some consideration for floors which are subjected to different levels of trafficking.

Wear resistance by species	
Level of pedestrian traffic	**Suggested species to use**
Light (domestic environments, small classrooms, small offices).	idigbo, European birch, Douglas fir, Scots pine and light red meranti
Normal (large assembly halls, school/college classrooms, hospitals, hotels, shops)	teak, afzelia, iroko, dark red meranti, keruing, merbau and sapele
Heavy (usually concentrated in definite traffic lanes in large public institutions)	European beech, European oak and rock maple

Thickness of the wear layer

Floors will generally not require maintenance in the form of aggressive sanding – just screen meshing, which removes little or no wood from the surface. If the floor is subjected to more substantial wear, more frequent sanding will be necessary. Engineered boards cannot be sanded down to the core layer, and a minimum of 1mm–1.5mm of the hardwood wear layer must remain after final maintenance. The thickness of the hardwood wear layer is typically 3.4mm, which allows for two substantial maintenance cycles involving sanding with several grades of sandpaper. If you suspect more frequent maintenance will be necessary, use boards with a thicker wear layer.

For heavily trafficked environments where frequent maintenance is anticipated (bars, restaurants etc) use a solid, thick board over one which possesses a thinner wear layer.

Thickness of boards

When fixing wood strip or boards onto support battens or joists, you must select a thickness of board which is appropriate to the span of the batten or joist in order to avoid deflection and squeaking of the floor. For domestic and residential environments, use the following combinations:

Batten and joist spans for domestic/residential environments	
Finished board thickness (mm)	**Maximum span (centre to centre in mm)**
16	505
19	600
21	635
28	790

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Appearance grades

Flooring can come in a variety of different appearance grades ranging from 'clear' to 'rustic' depending on the amount of knots and other growth features which are visible on the surface. You must define the required appearance grade with the client before laying the floor. This is usually agreed in terms of permissible criteria such as size and frequency of sound and unsound knots, colour variations, fissures etc. You must also make sure that subsequent deliveries of the same flooring are within the agreed grade before accepting them.

Installation methods

The selection of a particular type of floor for any given end-use depends on the way the floor is to be installed as well as on the risk of in-service movement. There are three basic forms of installation.

Fixed

The flooring is either face-nailed or secret-nailed to support battens or joists. The floor is therefore firmly fixed, with each element of the floor being individually fixed to the supports.

Installation of sports hall floor over battens supported by cradle supports
Photo: Junckers

Floating

Where adjacent components of the floor are linked together, either by means of clips, edge gluing or an interlocking click system, to form a rigid floor covering which is held in place by its own weight. The flooring is not fixed to the base, allowing the floor to respond freely to changes in humidity.

Glued or stick-down

The floor components are glued directly onto the sub-floor using a continuous layer of a trowelled adhesive or with adhesive beads.

Types of wood flooring

There are a number of different types of board construction including solid wood boards, those laminated from smaller billets and those with a multi-layered or engineered construction. The main types are:

Solid, square-edged softwood boards without tongues

Normally used when the floor is fixed with nails or screws onto support battens. Being square-edged, they do not interlock and gaps can often occur between individual boards. Square-edged boards are usually covered with a textile covering to hide the fixings unless a rustic appearance is required.

Tongued and grooved solid softwood and hardwood boards

Made from solid softwood or hardwood with a tongue and grooved profile which allows the boards to interlock together, often with a decorative V-joint between adjacent boards. They can be used as secret-nailed (fixed) or clipped (floating) systems and can also be stuck directly to the sub-floor as stick-down installations.

Solid pre-assembled hardwood board

This type of flooring uses secret-nailed (fixed), clipped (floating) or stick-down installation, and consists of wood strips made from smaller billets of hardwood joined together by dovetailing, edge-gluing or edge-jointing. Individual strips are machined to a regular profile, usually tongued and grooved along edges and ends.

Multi-layered parquet

This type of flooring is used for secret-nailed (fixed), interlocked edge-glued (floating) or stick-down installations. Each wood strip consists of a solid wood wear layer which is bonded onto a core of smaller softwood billets arranged at right angles to it, with a balancing veneer bonded to the underside. This construction is often referred to as 'engineered flooring' or 'laminated flooring' and should not be confused with laminate flooring, which consists

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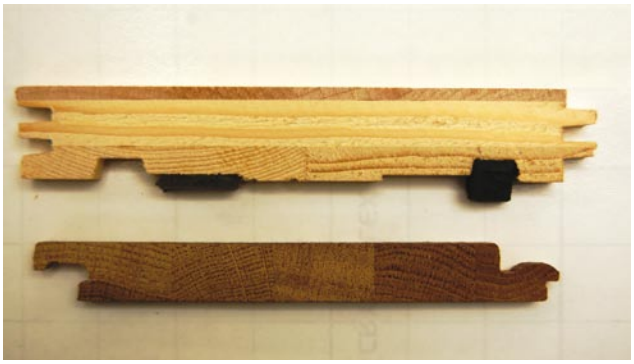
of an entirely different form of construction. Engineered/laminated flooring is less sensitive to in-service movements such as 'cupping' or 'ridging' and is more stable than solid wood flooring.



Parquet and overlay flooring

This type of flooring is generally thinner and should therefore be used directly over a continuous supporting surface such as a base of concrete, wood or wood-based panels.

Woodblock

This type of flooring consists of solid blocks usually up to 13mm thick and between 200mm–400mm in length and 40mm–80mm in width, which can be interlocking or square-edged.

Mosaic parquet elements

This type of flooring is made from solid sawn wood of small dimensions and rectangular shape and flat edges, which is laid in a variety of patterns such as 'brick half-bond', 'herringbone' or 'basketweave'.

Further information and advice

BS 8201:2011 *Code of practice for installation of flooring of wood and wood-based panels*, BSI

Kaczmar, P. *Wood flooring: a guide to installation*, TRADA Technology, 2009

Kaczmar, P. *Sealing timber floors: A best practice guide*, TRADA Technology, 2001

Kaczmar, P. *Seals for timber floors: A specification guide*, TRADA Technology, 2002

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.

Company Details Here
Address Here
Address Here
Address Here
Postcode

Contact numbers

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