

# External wood cladding

**Wood cladding is becoming increasingly popular once more as a facing material, replacing brick or rendered finishes with warm and practical facades that are seen as a more sustainable option. It is used for internal or external applications, although you must consider the durability of the timber when selecting material for external use. Wood cladding is generally easy to fix, but do consider final detailing, especially on corner joints and at ground level on external applications.**

## Choosing external cladding

When choosing any form of board cladding, consider:

- The choice of species
- The size and length of boards available
- The degree of weather protection
- The ease of installation and fixing
- The choice of finish
- The robustness of the material.

Softwood continues to be the most popular external cladding for most buildings. Western Red Cedar and European Larch are naturally durable, but thanks to modern preservative methods\*, less durable species are also widely used. Heat treatment (e.g. Thermowood®, Plato® wood) and wood modifying processes (e.g. Accoya®, Kebony®) have introduced a new range of softwood products that achieve greater durability without the use of preservatives.

Durable temperate hardwoods, such as European Oak and Sweet Chestnut, are increasingly used. With the exception of their sapwood, they can be used without treatment. They can be installed kiln dried or 'green', but 'green' timber requires special detailing to allow for shrinkage and movement. Tropical hardwoods are generally stronger, more robust and durable than softwoods for cladding. As some of these species may be less well known, check suitability, certification and availability with your merchant.



## 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 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.

## Choosing materials for the right finish

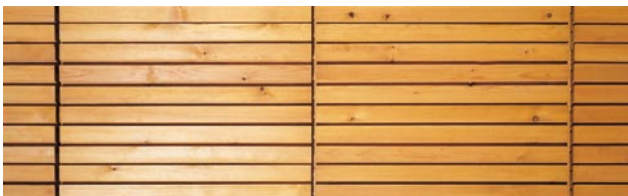
The species, grade, and quality of materials you choose have an important bearing on the service life, appearance and maintenance of the cladding. Take into account the number and size of knots (ensuring there are no dead knots) and other defects, such as splits and shakes, when deciding on the final visual appearance of the cladding.

Think about the final surface finish you want to achieve when choosing a preservative treatment. For example, using a pressurised treatment process may give the timber a green appearance. Some species can be left unfinished and will turn silvery-grey as sunlight bleaches the surface. For a decorated surface, use good quality microporous paint systems, or consider using pre-finished timber cladding. Always follow the manufacturer's instructions to ensure good coverage and service life.

## Direction of boarding

Timber cladding can be applied in any one of three directions. Take this into consideration at the time of selection. Your decision will have an impact on the methods of fixing as well as on the overall look of the façade.

### Horizontal boarding



Available with overlapped or profiled sections. The board profile and spacing can provide a variety of design effects, as well as protection for the building. If using horizontal boarding, consider how the boards will be fixed and jointed to provide good detailing for the building. Tongued and grooved boards should be installed tongue upwards.

### Vertical boarding

Board on board is a popular and versatile arrangement, although shiplap and tongued and grooved profiles are also used. The tongues need to be long enough to allow for slight movement of the timber so that open gaps do not develop with natural shrinkage and expansion.

Other methods of vertical cladding can also be employed by staggering overlaps with boards on top of boards.



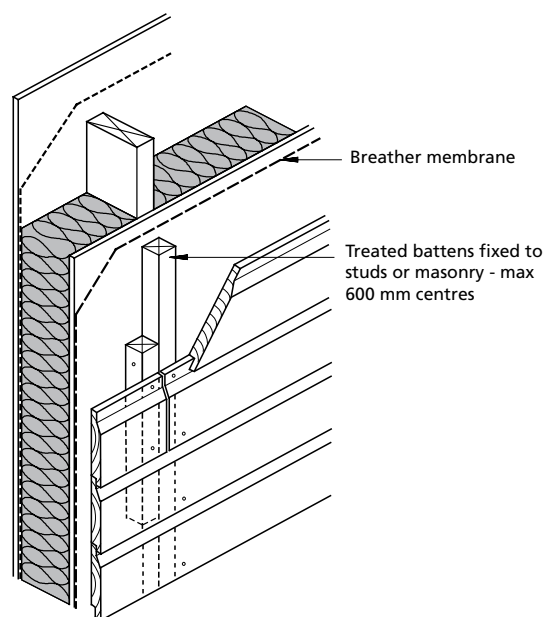
## Diagonal boarding

Provides an alternative appearance. Overlapping boards are not suitable. Tongued and grooved boards should be installed tongue upwards. Ensure counter-battening is done to provide ventilation.

## Remember the cavity

The timber cladding you are fixing to the building is effectively an outer layer of protection against the elements. However, a cavity should be formed behind the cladding to allow any water or moisture that might penetrate the cladding to escape. This ensures internal and external surfaces of the wood maintain a similar moisture content, reducing the potential for movement and distortion, allowing ventilation between the inner and outer surfaces.

The cavity should be at least 19mm wide, but may be wider, depending on the thickness of fixing battens. A weatherproof membrane is usually required to protect the structure, although this may not be needed on masonry.



## Using battens

Use softwood battens that are preservative treated and structurally graded to ensure they are able to carry the weight of the board material. Fix horizontal boards to vertical battens, taking care where boards are jointed to ensure they sit securely on sufficient batten width. Conversely, fix vertical boards to horizontal battens, with vertical 'counter' battens to facilitate drainage and ventilation. Support battens should be fixed at spacings of no more than 600mm, whether vertical or horizontal, and at no more than 400mm for diagonal boards. These spacings will help maintain the overall stability of the cladding.

## Board sizes

### Horizontal boards

- Shiplap or feather edge type boards should have a minimum of 15mm overlap, but allow 2mm gaps between the up-stands for expansion
- Tongued and grooved boards should have a maximum face width of 125mm, with a 2mm clearance above the tongue for expansion. Install with the tongue upwards
- Open joint boards should have an 8-15mm gap at the 'water face'. Chamfered edges allow the boards to overlap slightly, reducing any exposure of the cavity.

### Vertical boards

- The face width of tongued and grooved vertical boards should not exceed 125mm. The most versatile fixing method is board on board. Any overlap should be a minimum of 20mm.

### Diagonal boards

- Shiplap boards are advisable and should be fixed on to battens. For vertical boards, take into consideration the comments above for overlaps.

## Board lengths

To maintain a consistent design appearance, the length and width of the board needs to be considered. This will vary depending on the species chosen:

- Most softwoods are available up to a maximum length of 4.8 metres
- Most temperate hardwoods are available up to around 3.6 metres
- Tropical hardwoods, depending on the species, are available in maximum lengths of between 2.1 and 4.2 metres.

## Fixing external cladding

### Softwood

Stainless steel annular ring shank nails are recommended for fixing softwood cladding:

- The nail penetration into the batten is generally twice the thickness of the board being fixed and should be punched slightly below the wood's surface
- Boards over 125mm overall width should have double fixings

- Make sure that butt joints always meet on sufficient batten support width
- It's essential to use stainless steel nails for species with high tannin content and for timbers installed 'green'. This avoids permanent staining due to the reaction on mild steel or galvanised nails.

### Hardwood

Screws are the preferred method of fixing for hardwood boards. Stainless steel screws should be used for timbers installed 'green' and/or unfinished:

- Slight over-sizing of the screw holes will allow for any movement in the wood and prevent splits. Countersinking screws is also recommended
- Where 'green' wood is used, it may be necessary to fit washers to the screws to maintain the fixing security. This can become a design feature

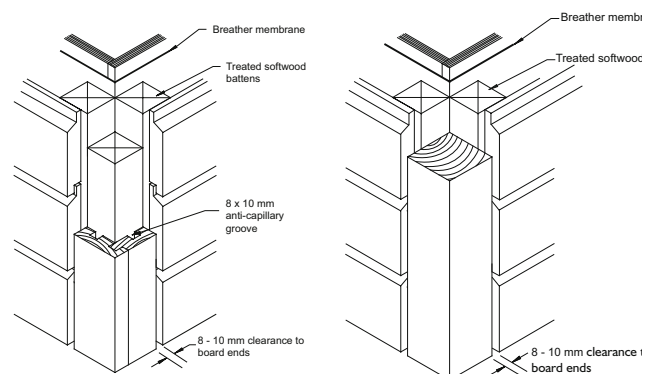
## Detailing

### Window and door openings

Openings within a wall require special attention. These openings need to be in multiples of the board widths to avoid the need to notch or cut the boards and to provide a good appearance as well as allowing for fixings. Thought also needs to be given to the 3-dimensional relationship of any flashings, sills etc. to allow for adequate drainage of water from behind the cladding, board surface and ends away from the building.

### Corner details

This is an important area of fixing detail, not just aesthetically but functionally, to ensure adequate protection against water. Some typical corner details are shown in the drawings below.



Mitreing boards at corners is not recommended, as natural movement of the timber will allow the joint to open, causing failure of the surface coating and water ingress. Mitreing the ends of boards can be considered, but it is advisable to provide a gap between any adjoining surfaces.

Internal and external corners are more easily detailed on vertical boarding. These can be jointed by 'tonguing and grooving' to give added stability and protection.

## Treatment against fire

Fire protection is a requirement under UK Building Regulations and must be taken into consideration when using wood cladding. Wood cladding can be protected from fire by the application of flame retardant chemicals. These can be applied by an impregnation process, similar to preservative treatment. For external use, a leach-resistant type must be used. For more information visit the Wood Protection Association ([www.wood-protection.org](http://www.wood-protection.org)).

## Maintenance and durability

Finally, consider what decorative finish is required:

- Think about the final visual appearance you want when choosing preservative treatment
- The correct timber preservative and finishing will enhance the service life of the cladding and keep maintenance to a low, practical level
- In areas of low pollution, ultraviolet light will turn unfinished boards silvery grey. This will not affect their strength or durability, and in many instances is a desired aesthetic effect. Oak is susceptible to 'surface checking', as its moisture content varies, but again, with no effect on its durability
- Timbers that are classified 'moderate to durable' or better can be used without being preservative treated, but must contain no sapwood
- If a coloured finish is required, good quality microporous exterior stain or paint systems should be used. Consider using pre-finished timber cladding
- Follow the manufacturer's instructions for care and maintenance products to ensure good coverage and service life.

### Further information and advice

Please ask your timber supplier for advice on cladding materials, battens and structural timber.

Visit [www.trada.co.uk](http://www.trada.co.uk) for additional technical advice if needed.

A TRADA book on External wood cladding is available from [www.trada.co.uk/bookshop](http://www.trada.co.uk/bookshop).

**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](http://www.trada.co.uk) or contact your local supplier.

