

2.10 Application of panels in cladding, fascias and soffits

2.10.1 Selection of panels for claddings, fascias and soffits

The selection of wood-based panels for claddings, fascias and soffits depends on a number of factors of which the most important are:

- adequate strength, stiffness and impact resistance
- high durability in external environments
- good dimensional stability in the presence of high humidity or liquid water.

The selection of panels from the appropriate European Standards meeting these demanding requirements is presented in *Table 2.13*. It is also important to note that an increasing number of modified wood-based panels are being manufactured specifically to achieve high durability for use in external applications. Such innovative products may initially be covered by recognised third-party certification schemes or European Technical Approvals rather than European Standards. Examples of such products would be thermally modified solid wood claddings and acetylated MDF panels. Some applications are illustrated in *Figure 2.20*.

2.10.2 Design of cladding

2.10.2.1 Sizes and profiles

Typical panel sizes are 2440 × 1220mm, 2400 × 1200mm, 2400 × 600mm and 1200 × 600mm, with other sizes available to order.

Panels may be plain (square) edged, or profiled, usually with matching tongue and groove. Proprietary panels are available pre-finished with grooved profiles to simulate timber boarding.

2.10.2.2 Thickness and support spacing for cladding

Recommended panel types, thicknesses and maximum support spacing (mm) are shown in *Table 2.14*.

Table 2.14: Support spacing

Panel types	Maximum support spacing (mm) for panel thickness (mm)				
	6mm	9mm	12mm	18mm	>20mm
Mediumboard and MDF	400	400	600	600	-
Hardboard	600	600	-	-	-
CBPB	-	-	400	400	600
OSB	-	400	400	600	600
Plywood	-	400	400	600	600

Thicker panels are more rigid and should be used where increased stiffness and impact resistance are required. They are also generally more dimensionally stable.

2.10.2.3 Framing options

There are two main options – fixed to hidden framing or battens, or fitted into exposed framing. Where possible, a drained vented cavity should be provided behind the cladding; however, where cladding also acts as sheathing this is impracticable and care needs to be taken with precautions to prevent water ingress.

Framing and fixing details should accommodate movement where this can occur in the supporting structure.

Hidden framing

The cladding should be fixed to vertical battens or framing at the maximum centres given in *Table 2.14*, with a minimum bearing on framing of 18mm (*Figure 2.21*). All panel edges should be supported.

Panels should be fixed with a 3mm minimum gap between adjacent panels to allow for moisture expansion.

Vertical joints can be left open or covered with weathered cover battens or trim (*Figure 2.22*). Horizontal joints should be gapped to avoid water retention and have a flashing dressed over the head of the lower panel; gaps should be wide enough to allow access for application of finishes and redecoration while the flashing should have a cross fall of about 10°. Joints may also be sealed with an appropriate flexible sealant in accordance with the sealant manufacturer's recommendations. Schematic examples of joint details are shown in *Figure 2.21* and *Figure 2.22*.

Table 2.13: Panel grades* for claddings, fascias and soffits

Selection	EXPOSURE	PLYWOOD BS EN 636	PARTICLEBOARD BS EN 312	OSB BS EN 300	MDF BS EN 622-5	FIBREBOARD BS EN 622-3,4	CBPB BS EN 634
Claddings and fascias	Full (SC3)	636-3	-	-	-	HB.E	CBPB
Soffits	Protected (SC2)	636-2	-	OSB/3	MDF.HLS ⁺	HB.E ^o MBL.E ^o MBH.E ^o	CBPB

* Some manufacturers offer 'exterior' panels, the long-term durability of which is dependent on the presence of a durable coating. In the European specification these panels can only be classed as satisfying a Service Class 2 exposure, which is deemed to be equivalent to protected exterior situation.^o These panels are NOT load-bearing.* The table provides the minimum grade of panel that satisfies the particular set of requirements: panels of higher quality may be substituted, and their selection may result in a reduction in required thickness. Although all the panels meeting the grade specifications will satisfy a particular set of requirements, the level of performance of different brands of these panels may vary considerably; some may even be endowed with high levels of properties not directly covered by the table.



Figure 2.20: Wood-based panels used in cladding, fascias and soffits

Exposed framing with rebates/beads

The cladding should be fixed into framing with supports at the maximum centres given in *Table 2.14*. The panels should be fixed into rebates with a minimum height of 15mm.

Where panels are inset into framing, a 3mm minimum gap should be left at the panel perimeters to allow for moisture expansion.

Panels should be fixed to allow for dimensional change due to change in moisture content and retained with metal or timber beading, adequately fixed. The top and sides should be fixed using conventional beads, bedded in mastic or sealant. The bottom edge bead should be omitted to avoid water retention, and the bottom panel edge should be fixed, with a gap to avoid moisture pick-up at the edge. Panel heads should be protected by weathered projecting framing. *Figure 2.24* shows a typical fixing arrangement.

Panels should be bedded on mastic strips on all edges and be sealed at jambs with a non-setting mastic. Edges of panels should be sealed before fixing.

2.10.3 Design of fascias and soffits

These applications are generally satisfied by the use of pre-packaged cut-to-size pieces which may also be pre-finished prior to site delivery. In the case of soffits, incorporation of adequate ventilation slots will be a specified requirement or constitutes good practice, permitting essential air flow to ventilate the roof space. This function is usually achieved by the incorporation of proprietary ventilation strips or inserts.

2.10.4 Site work for cladding, fascias and soffits

2.10.4.1 Conditioning

It is important that panels are installed at a moisture content close to that which they will achieve in service. Advice on the conditioning of panels is found in PanelGuide *Section 4.2.4*.

2.10.4.2 Fixing

Panels should be conditioned, primed (if they are to be painted) and edge sealed before fixing.

Panels should be fixed using corrosion resistant nails, staples or screws. Corrosion resistant materials include galvanised or sheradised steel, austenitic stainless steel, phosphor bronze and silicon bronze.

Screws and flat headed improved nails (such as annular grooved or ringshank) have superior holding power and should be used in preference to plain shank nails.

Minimum nail length should be 50mm or 2.5 times the panel thickness, whichever is greater.

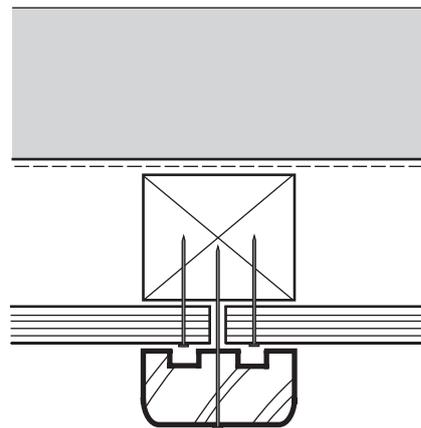


Figure 2.21: Board cladding with vertical battened joints

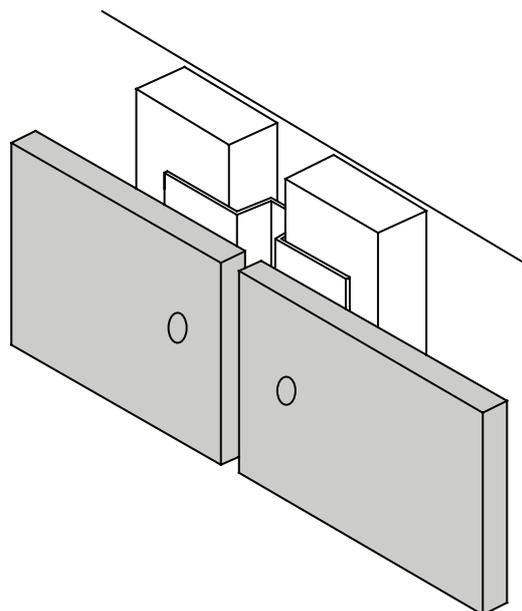


Figure 2.22: Open vertical joint with preformed metal 'top hat' flashing

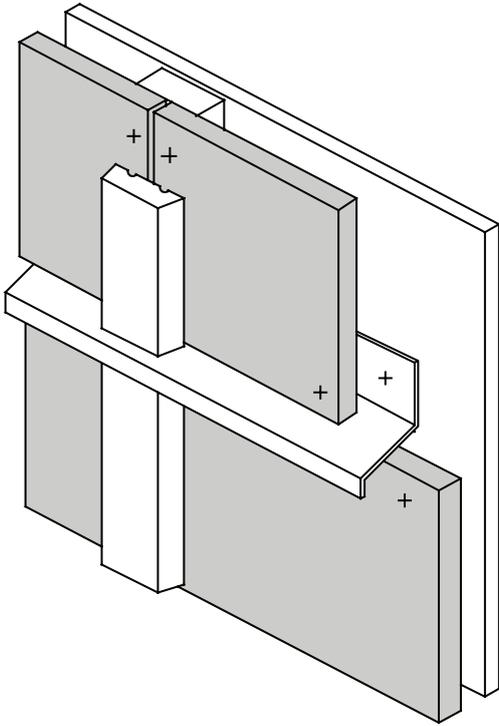


Figure 2.23: Vertical joint with timber cover battens and horizontal joint with preformed metal flashing

Staples should have as wide a crown as possible (11mm minimum), be not less than 15 gauge and not less than 50mm in length.

Where panels are to be fixed directly to battens or framing, the frequency and pattern of nailing around the periphery and on intermediate framing studs should be as in *Table 2.15*. Where manufacturer's instructions are supplied with the panels, their recommendations should be followed. To avoid tear out at panel edges, fixings should not be inserted closer to the edges than the minimum distances given in *Table 2.15*.

To avoid buckling of the thinner and more flexible panels, nailing should commence at the top centre and continue outwards and downwards.

Where panels are retained by beads or cover mouldings, the panels can be located in position by single fixings

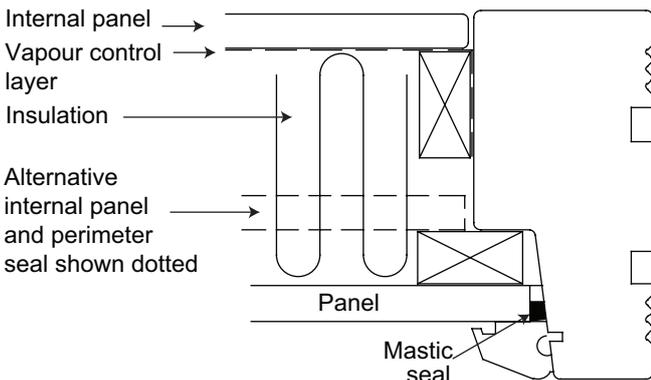


Figure 2.24: Infill panel with exposed framing

Table 2.15: Spacing of fixings for cladding, fascias and soffits

Panel type	Maximum spacing (mm)		
	Perimeter framing	Intermediate framing	Min edge distance (mm)
Mediumboard and MDF	150	300	8
Hardboard	150	300	8
CBPB	see note below	see note below	see note below
OSB	150	300	8
Plywood	150	300	8

Note: For cement-bonded particleboard recommended nail spacing and edge distances vary with thickness and from manufacturer to manufacturer – examples of nail spacing range from 200 to 400mm on perimeter framing and from 300 to 610mm on intermediate framing; nail edge distance varies from 15mm for panels less than 12mm and 20mm for thicker panels up to 25mm irrespective of thickness. Panels may need to be pre-drilled or fixed with self-drilling screws to avoid splitting. For fixing cement-bonded particleboard it is therefore essential to obtain and follow the manufacturer's recommendations.

at mid-point top and bottom and retained by the beads fixed at 150–200mm centres to the framing.

Edge gaps between adjacent panels and to abutting framing should be provided as given above.

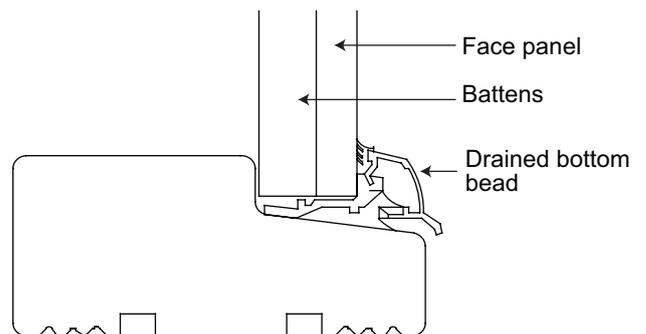
2.10.5 Finishes for cladding, fascias and soffits

See *PanelGuide Section 4.7* for detailed information on decoration and finishing.

Panels are available with various factory applied finishes.

Where unfinished panels are used, they can be decorated with conventional paints and stains, taking care that the appropriate primers are used on tempered hardboard and CBPB.

Premature failure of paint systems on wood-based panels is often due to high moisture content in the panel, impairing adhesion between the paint and the panel. Water ingress usually occurs at joints in panels or through surrounding framework and careful detailing is required.



Coatings technology is constantly evolving and there is a variety of finishing and paint systems suitable for use on wood-based panels, including opaque paints, translucent and opaque stains, and textured coatings. These products are also available in a variety of finishes from gloss through to low sheen and matt finishes. Most systems suitable for external woodwork will be suitable for use with wood-based panels, subject to the use of an appropriate primer for tempered hardboard and alkali compatible finishes for CBPB.

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Revisions to PanelGuide Version 4 contributed by Ian Rochester (WPIF), Vic Kearley (BM TRADA) and Nick Boulton (TTF)

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Contact details for the PanelGuide project partners are:



Wood Panel Industries Federation
Autumn Business Park
Dysart Road
Grantham
Lincs
NG31 7EU
Tel: 01476 512 381
Email: enquiries@wpif.org.uk
Website: www.wpif.org.uk

Timber Research and Development
Association
Chiltern House
Stocking Lane
Hughenden Valley
High Wycombe
Bucks
HP14 4ND
Tel: 01494 569 603
Email: information@trada.co.uk
Website: www.trada.co.uk

National Panel Products Division
Timber Trades Federation
The Building Centre
26 Store Street
London
WC1E 7BT
Tel: 020 3205 0067
Email: tff@tff.co.uk
Website: www.tff.co.uk



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