

Cempanel

BUILDING BOARD

CEMENT PARTICLE BOARD





Cempanel

Class “0” cement particle board with excellent impact, fire and acoustic properties. Its durability, consistently high manufacturing tolerances and lack of need for wet trades makes Cempanel ideal for off-site and modular construction.

Cempanel (cement particle board) is superior to timber and plasterboard panel products when used as internal linings on rainscreen cladding projects (sheathing), general purpose external boarding, floors or studwork interior walls. Cempanel is both stronger and less absorbent than timber and plasterboard. The high cement and alkaline content also resists insect and fungal attack.

Composition

Comprising by weight 69% cement and c. 31% fine wood particles with trace amounts of process additives and mineralizing agents, the wood particles are the main ingredient by volume. These ingredients are mixed and laid onto carrier plates which are stacked and compressed to the desired thickness until the cement has hardened. The boards are then conditioned to bring them to optimum moisture content. Once fully matured the boards are trimmed and quality inspected.

Product consistency across the range is ensured as all Cempanel thicknesses and sizes are manufactured in the same factory. Conforms to BS EN 634.



Product Specification

Cempanel is an exterior and interior cement particle cladding and lining board that is far superior to timber sheathing. Cempanel does not absorb water and is structurally stronger than timber.



Technical Information							
Standard Board Size	1200mm x 2400mm						
Thickness (mm)	8	10	12	16	18	20	24
Weight (kg/m ²)	10.4	13.0	15.6	20.8	23.0	26.0	31.2
Quantities (sheets) per pallet	75	60	50	37	33	30	25
Appearance	Grey surface with particulate core						

Dimensional Tolerance	
Diagonal	± 4.0mm
Length / Width	± 2.0mm
Thickness 8 – 12mm	± 1.0mm
Thickness 16 – 20mm	± 1.5mm
Thickness 24mm	± 2.0mm

Specific Properties	
Density	1100 – 1300kg/m ³
Modulus of Elasticity	3000N/mm ²
Moisture Content	12 ± 3%
Surface Alkalinity	pH 12
Bending Strength	9 – 12N/mm ²
Tensile Strength Perpendicular to Plane	0.5N/mm ²
Thermal Conductivity (K Value)	< 0.125W/m°C
Thickness Swelling (Immersed in water 24hrs.)	< 2%

Fire Resistance	
BS 476 Part 6 and 7 Surface spread of flame. Classified as:	Class "0" material

The strengths of Cempanel

Cempanel combines the strength of cement with the flexibility of timber. It is resistant to changes in heat and moisture. This quality makes Cempanel fire resistant and a good thermal insulator.

Sound reduction

Sound insulation can be improved by using insulation between 2 panels.

Board thickness	Sound reduction in dB
8mm	30
10mm	31
12mm	31
16mm	33

2 layers of board thickness	Insulation in cavity	Studwork	Sound reduction in dB
12mm	40mm (43kg/m ³)	75mm x 50mm timber @ 610mm centres	45
16mm	80mm (43kg/m ³)	75mm x 50mm timber @ 610mm centres	47
12mm	50mm (60kg/m ³)	48mm x 32mm galvanized steel @ 610mm centres	54
16mm	2 x 50mm (60kg/m ³)	70mm x 32mm galvanized steel @ 600mm centres faced with 100mm x 24mm strips	50

Thermal insulation

Having a 0.125 W/m²°C K value makes Cempanel cement particle board popular as a lining in temperature controlled spaces or as a partition board.

Sound reduction

With a density of 1100-1300kg/m³ Cempanel is also frequently used as a sound proofing board for airborne sound. Sound reduction achieved by single skin Cempanel for selected thickness of board is shown above.

Insulated render system

Cement particle boards are truly versatile. Cempanel's structural stability makes an ideal carrier board for insulated render as well as for large or small format coated cladding systems.

Racking strength

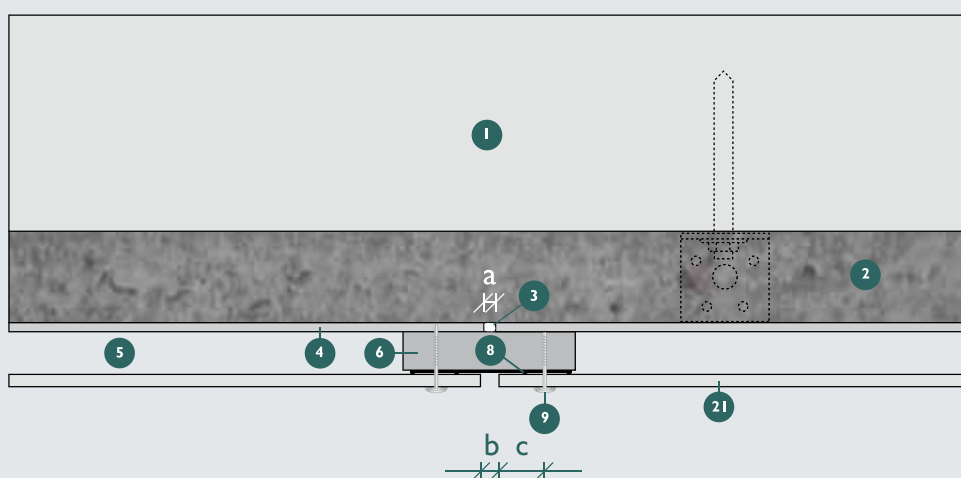
High dimensional stability contributes to improved performance and enhanced structural stability.



Sheathing

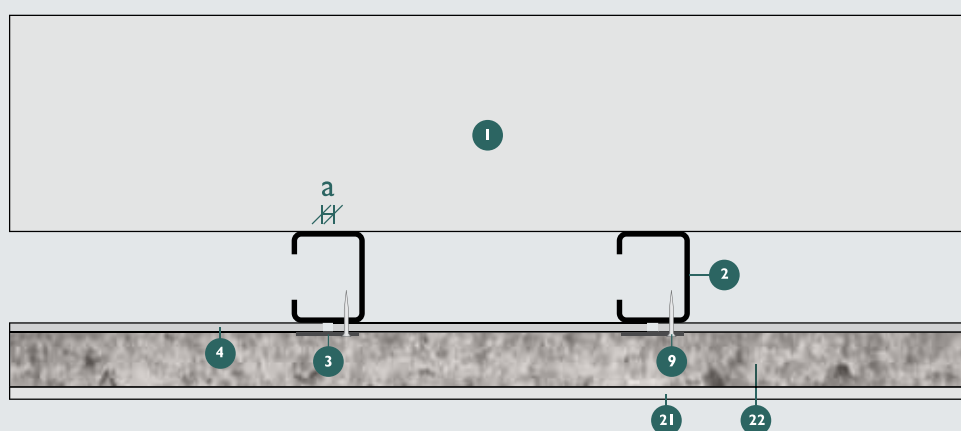
Rainscreen cladding ventilated facade principle

- 1 Load bearing wall or steel frame
- 2 Insulation
- 3 Polyurethane sealant
- 4 Cempanel
- a 5mm gap
- 5 Air gap min 25mm
- 6 Batten or cladding rail
- 8 EPDM underlay 90mm
- 9 Facade screw 4.5 x 36/41
- 21 Facade board
- b Joint width 8mm
- c Edge distance min 30mm



Rainscreen cladding insulated render system (Typical detail only. Consult render supplier for fixing details)

- 1 Load bearing wall or steel frame
- 2 Light guage steel frame
- 3 Aluminium sealing tape
- 4 Cempanel
- a 5mm gap
- 9 Self drilling fixing screw
- 21 Render
- 22 Insulation



Installation & Fixing

All fixing holes should be manually drilled with a hole 0.8mm larger than the desired fixing.

Fixings

Countersunk steel or galvanized self-tapping screws
3.5mm - 4.2mm diameter; 2.5 to 3 times the board thickness.

Method – nails screws or staples, manually, pneumatic or power fixed.

Site work

Cempanel should be cut in the same way as chipboard with tungsten carbide tipped blades at 3000 - 4000 r.p.m. If a highly sanded surface is required e.g. for direct application of paint, conventional hand held wood sanders can be used indoors in conjunction with dust extraction equipment.

Most common woodworking tools can be used on Cempanel. It can be sawn, drilled, planed, routed, nailed or screwed. It is relatively lightweight and with no need for wet trades, cement particle board is one of the more workable panel materials available to the UK construction industry.

Joint sealing

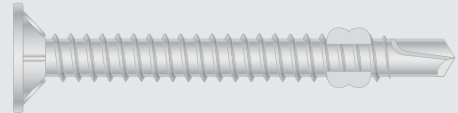
Where Cempanel is used as a carrier board for external cladding applications particular attention should be paid to wind loadings. A 5mm gap should be left between boards which is filled with a bead of polyurethane sealant. Alternatively the joint is left open then covered with a 50mm, 1436 grade aluminium foil.

Wind load

If sheathing is left exposed for any length of time designers should take account of wind load below. Otherwise sheet and fixing centres are 600mm regardless of thickness.

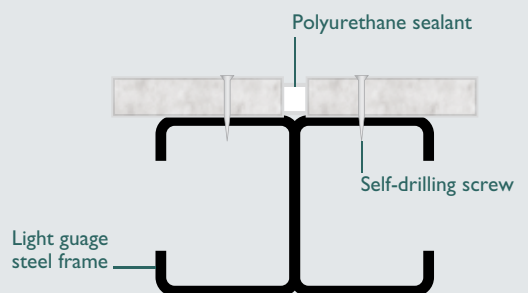
Board thickness	Wind Load (kg/m ²)			
	50	80	120	160
Maximum distance between steel stud (cm)				
10mm	57			
12mm	69	54		
16mm	92	73	59	51
20mm	115	91	74	64

Fixings

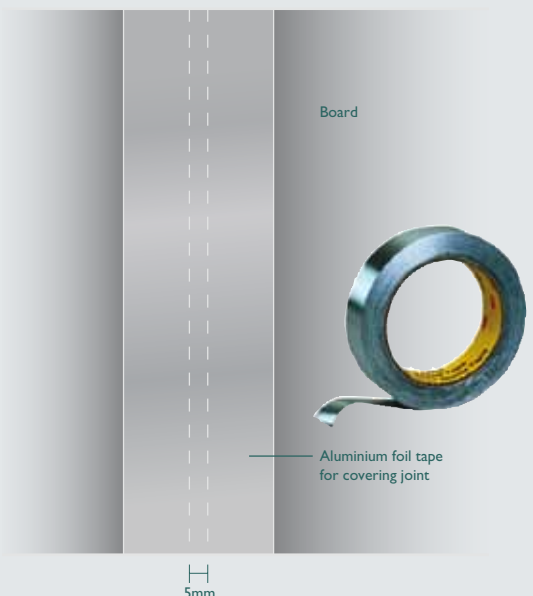


Self-drilling screw for fixing into steel frame

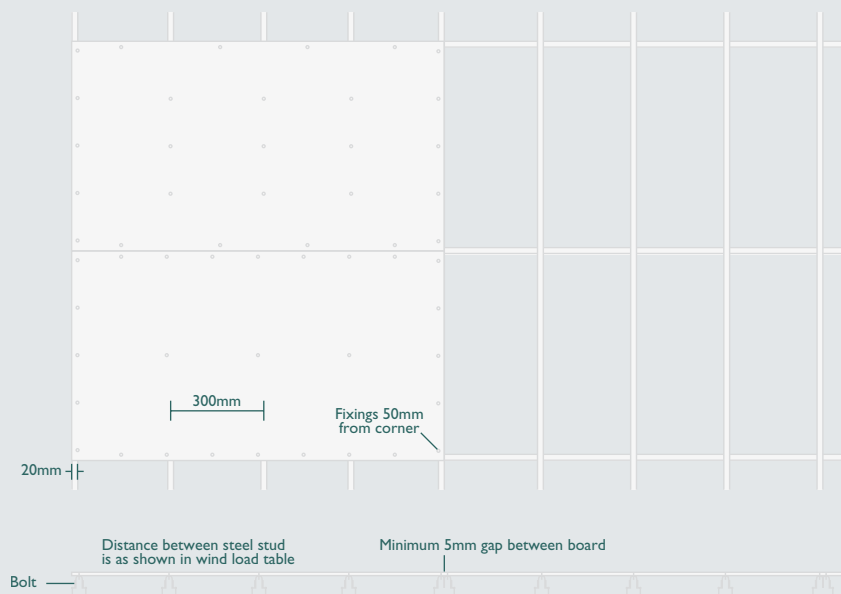
Joint sealing - section (sealant)



Joint sealing – plan (tape)

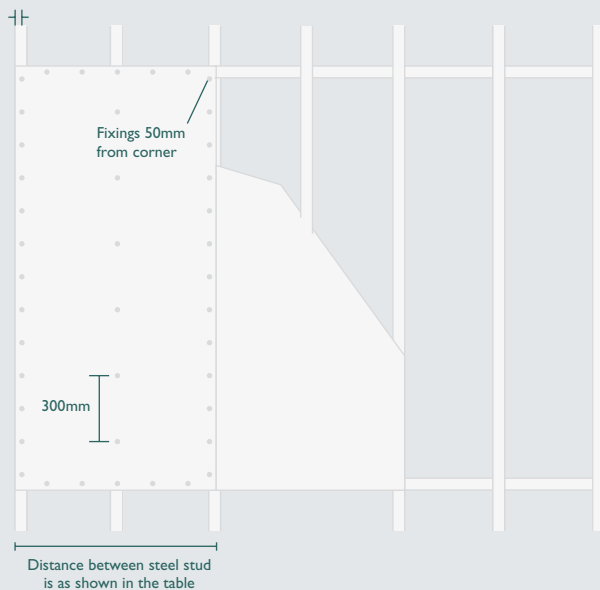


Installation details – horizontal



Installation details – vertical

15mm if used as sheathing
20mm if used as external cladding board



Conformity

Cempanel conforms with the requirements of BS EN 634-2:1997 Cement-bonded particle boards. Specification Requirements for OPC bonded particleboards for use in dry, humid and exterior conditions.

Accreditations

Insulated Render Systems:
Saint Gobain Weber, Maulden Road, Flitwick, Bedford, MK45 5BY. The use of Cempanel will not affect the guarantee offered by Weber.

Sto Therm, 2 Gordon Avenue, Hillington Park, Glasgow, G52 4TG. The use of Cempanel in 12mm thickness (or greater) has been found to be suitable to accept installation of Sto Therm external wall insulation systems in mechanically and adhesively fixed variants.

Screw pull out load test:
Mechanical Properties Testing Laboratory, National Metal and Materials Technology Center, Thailand. Test Report 2530, October 2007, found that an 8x32mm screw required an average maximum load across 10mm, 12mm, 16mm and 20mm thick Cempanel boards of between 259.08Kg to 499.95Kg to be withdrawn.



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As with all manufactured materials, appearance of cement particle board may vary according to light and weather conditions. It is advisable to ask for samples of sheets prior to specification and purchase. Owing to this and limitations of the printing process, colours of sheets in this brochure may only be taken as indicative.

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