

**fermacell<sup>®</sup>**

# The Orange Book





# Contents

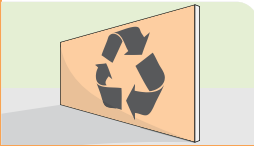
Fermacell	4
Partitions	28
Linings	62
Floorings & Ceilings	76
Fire Protection	98
Timber Frames	108
Rainscreens	112
Fix & Finish	116
Wet Areas	126

# Health Check Cell

The Company	5
Fire	10
Acoustics	11
Impact	18
Moisture	21
Environmental	22
Product Use	23
COSHH Health & Safety	26

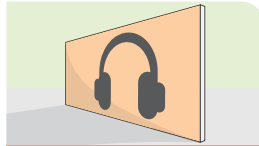


## Fermacell at a glance.



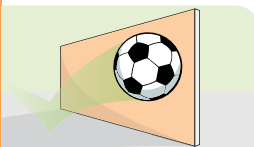
### Environmentally Certified

Manufactured from recycled materials.



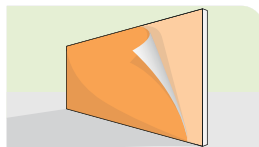
### Sound Insulating

Simple Party Wall constructions.



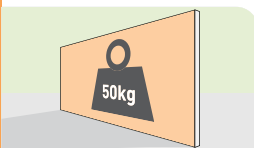
### Impact Resistant

Reduces double layering or use of Sheathing Ply.



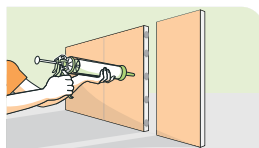
### Ready to Decorate

Ready to accept paint, wallpaper, tiles.



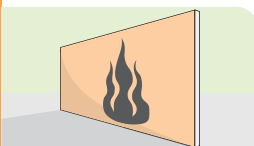
### Load-carrying

Up to 50 kg per cavity fixing and 30 kg per screw. Eliminates Noggings.



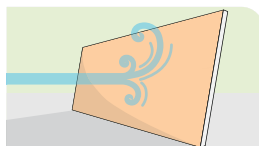
### Unique Jointing System

Glued, square edge boards produce a continuous membrane.



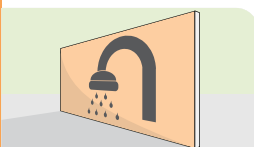
### Fire Resistant

60 mins fire resistance from single layer partitions up to 10 m high. Class '0' certification. European class A2.



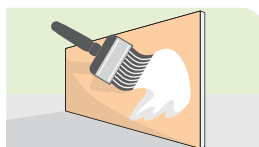
### Rigid Structure

Category 1 racking resistance provided by 12.5 mm Fermacell.



### Moisture Resistant

Suitable for humid areas. May be installed before building envelope complete.



### Rapid Finishing

FST (Fine Surface Treatment) eliminates plastering trades.

## Modern construction needs modern materials.

Design innovation combined with increasing pressure from Building Regulations means that materials must save time and money on site and offer technically superior solutions.

Fermacell is one such material. A high performance multi-purpose building board that when installed combines the properties of solid blockwork with the speed and flexibility of conventional drywall techniques, and which lets the designer use radical solutions in internal space planning.

## COMPOSITION

Fermacell is produced using ordinary materials in an extraordinary way. Recycled gypsum, recycled cellulose fibres from post consumer waste paper and recycled water are combined to form a homogenous mass, which is then formed into a dense sheet material. After drying, the large format boards are cut to size.

The manufacturing technique is not only unique because of the material it produces, but also due to the fact that the process itself is fully recycling – all by-products are fed back into the system, ensuring no waste is produced. Both the product and the process have been awarded the coveted Rosenheim Institute of Construction Biology and Ecology certificate.



### GENERAL PROPERTIES AND APPLICATIONS

There are a bewildering array of construction systems and techniques to consider when specifying internal finishes.

For partitions, this is most apparent when the properties required of the finished wall call for more than one type of building board to be used in the construction. Hotel bathrooms, for example, often require Moisture Resistance with Acoustic Insulation and Fire Protection. Hospitals will add Impact Resistance and flexibility in accepting wall mounted fittings to this. These criteria almost always demand compromise solutions involving specialist board selection and composite layers, often with costly and time consuming consequences. This in turn creates the potential for confusion, both at detailed drawing stage and on site. Additionally, multiple layering inevitably means thicker walls.

Fermacell offers a unique, single point solution to these problems, combining high levels of Fire Resistance, Acoustic Insulation and Impact Strength with exceptional Screw Holding ability and inherent Moisture Resistance.

From Commercial Projects through to DIY, Fermacell can reap rewards. Fermacell requires minimal additional work prior to painting and decorating. Wallpapers and tiles can be applied direct to the board, and plaster smooth finishes, which are ready to paint in about 45 minutes can be achieved by non-skilled trades using our FST (Fine Surface Treatment) system.

The end result is a finished partition that combines the properties associated with solid masonry with the flexibility of drywall, in a construction that is often thinner, quicker and cheaper to install than both. Using a multi-purpose board that eliminates unnecessary wet trades makes practical, technical and commercial sense.

#### FEATURES & BENEFITS

Feature	Advantage	Benefit
100% Recycled Materials 20% Paper, 80% Gypsum and Water	No paper wrap and fully recyclable	Sustainability
Cellulose Fibre Reinforcement from Recycled Paper	Provides impact resistance for high traffic areas	Increased strength
Severe Duty Rating (Single layer of 12.5 mm)	High impact resistance	Increased durability and decreased partition thicknesses
Slimmer Party Wall Solutions	Easier to achieve acoustic ratings	Potential time & cost saving
Moisture Resistant	Can be installed before envelope complete	Potential cost saving
F60 from a Single Layer, Class 0 Certified	Less sheets required to achieve desired fire resistance	Potential cost saving
Holds 30 kg on a Screw, 50Kg with Toggle Bolt	Minimal service ply/patress or noggings required	Potential cost saving
Multi Purpose Board	Results in rationalisation of boards	Saving through quality control
Ecologically Certified	Important contribution to overall health & wellbeing	Comfort
Easily applied Fine Surface Treatment (FST)	No need for plastering trades or water ingress into the building	Time and co-ordination savings

#### LOAD-CARRYING CAPACITY OF FERMACELL WALLS

Fermacell Gypsum Fibreboards (thickness) <sup>(1)</sup>	Loadbearing strength in kg <sup>(2)</sup>				
	Picture hooks fixed by nails		Screw with cont. thread 5 mm dia. <sup>(3)</sup>		
10 mm	15	25	35	20	40
12.5 mm	17	27	37	30	50
12.5 + 10 mm	20	30	40	35	60
15 mm	18	28	38	30	55
18 mm	20	30	40	35	60

(1) Maximum stud centres = 50 x board thickness.

N.B. Where fixings are less than 500 mm apart, reduce the load per fixing by 50%. If a stud support separates the fixings, then use the full loadbearing strength shown above.

(2) Safety factor: 2 (Static load with relative humidity of up to 85%).

(3) Depth of cupboard or shelves: max. 350 mm.

(4) Standard toggle bolt with > 4 mm dia. screw.

(The toggle bolt manufacturer's instruction should be followed.)

### PARTNERSHIPS

At Fermacell we bring together the expertise from our trading partners to provide our system solutions. These include Rockwool Insulation, Protektor, Lindab and Speedline metal systems. Our partner's products are tested with our products along with the relevant standards to providing warranted systems in accordance with the BBA and ETA standards.

## Fermacell is available in standard sizes as well as custom formats up to 6000 mm x 2540 mm.

Wallboard thicknesses range from 10 mm to 18 mm. This choice gives both specifier and installer the ability to select the most appropriate product to speed installation and eliminate waste.

### ONE-MAN BOARD

One-man boards are available in 1200 x 600, 1200 x 1000 and 1500 x 1000 mm.

### STANDARD SIZE BOARDS

Standard size boards in thicknesses from 10 mm to 18 mm are available. Special sizes to eliminate waste and reduce jointing are available to order.

### TAPERED EDGE BOARDS

Tapered edge boards are available with 2 or 4 sided Tapered edges for conventional Dry Lining installation techniques.

### H<sub>2</sub>O BOARDS

Powerpanel H<sub>2</sub>O is a cement bonded light-concrete board with a laminated structure, reinforced both sides with an alkali-resistance glass fibre mesh. H<sub>2</sub>O is a water resistant board for wet areas and semi exposed applications

### HD BOARDS

Powerpanel HD Board is a cement bonded glass fibre board reinforced with an aggregate of aerated clay and recycled foamed glass granules. HD Boards are especially practical because they are light-weight and easy to use with a high strength. The water repellent properties of the boards prevents moisture ingress whilst allowing vapour to be retained. HD Boards can be used in semi and fully exposed applications, and as a render carrier board.

### MODULAR BUILDING

For factory based modular construction and timber frame housing applications, boards up to 6000 x 2540 mm can be supplied reducing the need of jointing.

### VENTED AND INSULATED RAINSCREEN

Fermacell Gypsum Fibreboard has been tested independently for use as a backer board in vented and insulated rainscreen applications. Testing has shown it to be weather resistant, and that it does not degrade with permanent exposure.

Discolouration may occur due to moisture absorption in the board surface. A surface treatment or other protection is recommended for prolonged exposure prior to the installation of the cladding system.

Test in accordance with CWCT Standard Test Methods at a UKAS accredited facility.

### FLOORING SYSTEMS

Fermacell Flooring Systems are a dry alternative to conventional wet screed systems and are designed for upgrading both impact and airborne sound insulation in floors, or for increasing thermal performance. They are also particularly suitable for use with warm water underfloor heating systems and can be used for upgrading the fire protection to the upper surface of a floor construction.

### ACCESSORIES

A full range of accessories is supplied to ensure perfect results every time.



### FERMACELL BOARD DATA

#### DATA, NOMINAL VALUES

##### Dimensional tolerances at constant humidity – Board dimensions

Length	± 1 mm
Width	± 1 mm
Diagonal difference	≤ 2 mm
Thickness: 10 / 12.5 / 15 / 18	± 0.3 mm

##### Nominal density, strength

Nominal density (production target)	1150 ± 50 kg/m³
Bending strength (after drying at 40°C), at right angles to the board surface	≥ 5.8 N/mm²
Transverse strength	≥ 0.3 N/mm²

##### Certified tensile values according to DIN 1052 (Permit No: Z-9.1-434)

Bending perpendicular to the board surface	1.2 N/mm²
Bending in board surface	1.1 N/mm²
Tension in board surface	0.5 N/mm²
Pressure in board surface	2.0 N/mm²
Pressure perpendicular to the board surface	2.5 N/mm²
Shearing in board surface	0.3 N/mm²
Shearing perpendicular to the board surface	0.6 N/mm²

##### Modulus calculations (Permit No. Z-9.1-434)

E-Modulus perpendicular to the board surface	3800 N/mm²
E-Modulus parallel to the board surface	3800 N/mm²
E-Modulus tension	3800 N/mm²
E-Modulus compression	3800 N/mm²
Shearing modulus G perpendicular to the board surface	1600 N/mm²
Shearing modulus G bending in the board surface	1600 N/mm²

##### Additional data

Vapour Resistance $\mu$	13
Thermal conductivity $\lambda$	0.32 W/mK
Specific heat capacity c	1.1 kJ/kgK
Brinell hardness	30 N/mm²
Swelling after 24 hrs saturation	< 2%
Thermal co-efficient of expansion	0.001%/K
Expansion/shrinkage on alteration of the relative humidity of 30% (20°C)	0.25 mm/m
Moisture content at 65% relative air humidity and 20°C air temperature	1.3%
Construction material category according to DIN 4102 Part 1 (non-combustible)	A2
pH value	7-8

##### Characteristic strength and stiffness values of Fermacell Gypsum Fibreboard in N/mm² for design calculation according to DIN 1052 (Test report No: Z-9.1-434/ETA-03/0050)

##### Thickness of board in mm

10 | 12.5 | 15 | 18

##### Perpendicular to the plane of the board

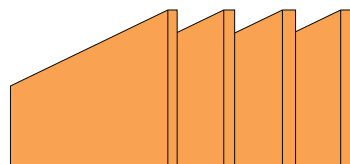
Bending $f_{m,k}$	4.6	4.3	4.0	3.6
Shear $f_{v,k}$	1.9	1.8	1.7	1.6

##### In plane of the board

Bending $f_{m,k}$	4.3	4.2	4.1	4.0
Tension $f_{t,k}$	2.5	2.4	2.4	2.3
Compression $f_{c,k}$	8.5	8.5	8.5	8.5
Shear $f_{v,k}$	3.7	3.6	3.5	3.4

#### BOARDS

Sizes (mm)	10	12.5	15	18
Weight per m² (kg)	11.5	15	18	21



##### Square edge Boards

1500 x 1000 mm	•	•	•	•
1200 x 1200 mm	•	•	•	•
2400 x 1200 mm	•	•	•	•
2700 x 1200 mm	•	•	•	•
3000 x 1200 mm	•	•	•	•

##### Tapered edge Boards

1200 x 1200 mm (4 s.)		•		
2000 x 1200 mm (4 s.)		•		
2400 x 1200 mm (2 s.)		•	•	

Specially cut sizes on request

#### CATEGORY 1 RACKING RESISTANCE PROVIDED BY 12.5 MM FERMACELL



**Our technical support staff are fully qualified to provide detailed technical solutions – usually at the time of your enquiry.**

Where special detailing or a non-standard solution is required we shall undertake to have given a preliminary answer within 24 hours.

Visits either to your premises or site may be arranged according to your requirements. Please call us for further assistance.

Fermacell's daily and continued use in thousands of high profile projects worldwide is a testament not only to the product's huge appeal and breadth of application, but also to the service and professionalism of our staff in supporting its users. Call our Technical Department to experience the benefits of Fermacell for yourself **+44 (0) 870 6090 306**.



### TRAINING

Fermacell is an innovative, high performance product and installation techniques, whilst not difficult, are different to standard Dry Lining practice. For this reason we recommend that first time users of Fermacell – either specifiers or installers – contact us for a brief explanation of the main differences in the use of the board. Although this can be usually accomplished by telephone, we always encourage training, and offer on-site training as required.

#### RECOMMENDED CONTRACTOR TRAINING

At Fermacell we have an Recommended Contractor training scheme. The purpose of the scheme is to enable contractors who want to install Fermacell to be trained and certified by us in the correct installation techniques and practices. The Recommended Contractor training also consists of Technical training for the contractors, surveying and management staff.

#### CPD

Generic, CPD service accredited presentations on the features, benefits and use of Gypsum Fibreboards can be arranged at short notice. These presentations are free and are available to professional and trade bodies, architectural and other building practices as well as schools of architecture and building colleges.

#### INTERNATIONAL CERTIFICATION

Fermacell is produced to the highest international quality standards – our reputation depends upon it. In addition to the accreditation of our factories to ISO 9001 to ensure consistent product quality, Fermacell itself has been certified by various leading authorities, as well as international equivalent bodies throughout Europe.

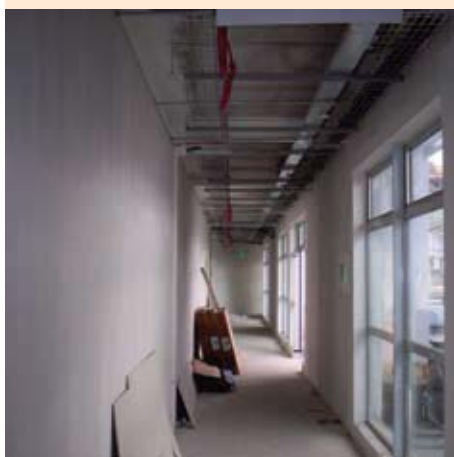
#### RESEARCH LED R&D

Being the best doesn't mean you can be complacent. Increasing innovation in building techniques, changes in Building Regulations and requests and suggestions from our customers lead us to develop both new products and methods of application.

Our purpose built R&D centre in the Harz Mountains in Germany has a continuous programme of New Product Development.

### All materials used in construction in England and Wales must meet “reaction to fire” and “fire resistance” performance criteria.

The “reaction to fire” regulations deal with the potential contribution to a fire that basic materials may make and carry the award of a Class 0 Materials of Limited Combustibility classification covering ignitability, fire propagation and surface spread of flame.



Fermacell Gypsum Fibreboards carry this Class 0 classification together with Euroclass A2, the second highest performance level under new EU rules of appropriately tested gypsum wallboards. Fermacell also carries a class 1 surface spread of flame certification, the highest achievable.

The “fire resistance” performance criteria deal with the duration that a complete construction can delay the collapse of a building that is burning, or even how long it can prevent a fire from spreading from one room or one property to another. The effectiveness of the construction is measured in the number of minutes achieved in a variety of British Standard tests.

These tests have become more stringent with the introduction of new EU fire resistance tests – the BS EN 1363 series – which will use plate thermocouples to give a slower reaction to rises in temperature leading to a requirement for additional heat to follow what is nominally the same time/temperature curve as specified in BS 476.

### What is acoustics?

**The term “acoustics” embraces all aspects of sound: its generation, spread, reduction and reception in the spoken word, music and all other forms of audio.**

Airborne sources of sound, generated in the air by a vibrating object, include:

- the human voice
- radio and television
- loudspeakers
- musical instruments
- machinery

Unwanted or intrusive sound is normally referred to as “noise”.



### WHAT ARE DECIBELS?

Sound is measured by comparing the pressure wave it creates as it travels from its source with the nominal threshold of hearing pressure and then compressing the range using a logarithmic scale.

The result is the decibel scale, which starts at 0 dB – the point at which humans begin to hear sound – and progresses to 140 dB, the point at which a single short noise is likely to irreparably damage hearing. The scale enables sound levels picked up by the ear to be easily and meaningfully analysed – even a 3 dB change in sound pressure level is considered significant.

### WHAT IS SOUND FREQUENCY?

The vibrations that produce individual sounds are measured in cycles per second and written in hertz (Hz) units which are termed the “frequency”. The human ear, which picks up sound from 20 Hz to 20,000 Hz, has varying sensitivities to different frequencies although the optimum range is between 1,000 Hz to 4,000 Hz.

### WHAT IS PITCH?

Pitch is another term for frequency.

#### EFFECTS OF SOUND REDUCTION VALUES ON AUDIBILITY

R <sub>w</sub>	Noise level
30 dB	Normal conversation can be distinguished
35 dB	Loud conversation can be distinguished
40 dB	Loud conversation can be heard but not distinguished
45 dB	Loud conversation can be heard
50 dB	Shouting can be heard but not distinguished
55 dB	Speech is totally unheard with a high level of privacy from other domestic noise
60 dB	High level of privacy including noise from Hi-fi and television

### The Approved Document E is guidance to acoustic performance standards for houses, flats, schools, hotels and hostel types of accommodation.

Whether new build or material change of use, all projects have different criteria, to improve the sound insulation and privacy between domestic and residential rooms.

There are several ways of approaching compliance, primarily with the design of separating walls and floors that will meet and exceed the requirements in the guidance document. The onus is then on the installer to ensure good on site workmanship and consideration to the prevention of flanking transmission around the installed systems. As Part E sets out a requirement for 10% pre-completion site testing of separating (party) walls and floors, builders will need to prove, by site testing, that the sound insulation meets the requirements of the new regulations.

#### **Acoustic failure will prove costly.**

New build dwellings are exempt if built with approved Robust Details (RDs), however sample testing is still carried out.

### PART E AT A GLANCE

**E1** The regulations to protect against sound from other parts of a building or adjoining buildings apply to dwelling houses, flats and “rooms for residential purposes” in hotels, hostels, boarding houses, halls of residence and care homes and call for pre-completion testing.

**E2** Internal walls and floors between bedrooms, WCs and other rooms are required to meet a specific laboratory test standard of airborne sound insulation of 40 dB  $R_w$  or by minimum mass calculations depending on construction. There is no requirement for pre-completion site testing.

**E3** Common internal areas of buildings containing flats or rooms for residential purposes must be designed to prevent more reverberation than is reasonable.

**E4** Acoustic insulation guidelines for schools – which require control of sound insulation, reverberation and indoor ambient noise levels are contained in Building Bulletin 93.

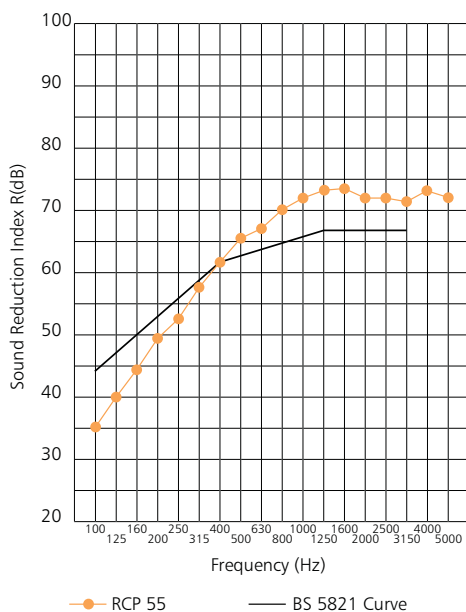
### THE THEORY OF SOUND INSULATION

Airborne sound insulation is the ability of material separating two rooms to minimise the passage of airborne sound through either the dividing element or its surrounding structure. The materials are assessed on a sound reduction index by relating the sound power reduction through the material itself.

Purpose built laboratories consist of two rooms with an opening between them, into which a test sample is inserted, thus allowing an evaluation of partitioning and other insulation structures.

Similarly, testing on site also involves establishing the values relating to the sound pressure level reductions between two rooms. Then reverberation time of the receiving room indicates the Standardised Level Difference ( $D_{nT}$ ).

While a graph of sound insulation v. frequency may be plotted from one third octave band measurements between 100 Hz and 5,000 Hz, a simplified rating method has been drawn up. By overlaying the measured sound insulation graph with a standard curve shape on which the position may be altered to meet certain criteria, a single figure may be calculated from the sound insulation spectrum. This single figure, when achieved in lab tests, is the Weighted Sound Reduction Index ( $R_w$ ) and is called the Weighted Standardised Level Difference ( $D_{nT,w}$ ) following site tests.



### IMPACT SOUND

Impact sound, essentially vibration caused by the collision of one object with another, usually footsteps, applies only to floors.

Testing of impact sound insulation involves dropping, in turn, five similar hammer heads that comprise a standard tapping machine onto a floor at a rate of ten impacts per second. The resultant impact sound is measured in the room below in terms of sound pressure levels.

The use of a resilient layer during testing is not allowed.

### SOUND INSULATION DESIGN

By plotting surface mass against "mean" sound insulation, it has been demonstrated by The Empirical Mass Law that the insulation increases by 4 dB to 5 dB with every doubling of the surface mass.

This has led to the development of a series of practical and economical methods of sound insulation. They include:

- The use of a single light gauge metal stud frame, lined with a layer of board, to produce separation and discontinuity. Even though the air in the cavity can act as a "spring" connection between the boards, this method gives insulation **at least 5 dB greater than the empirical prediction.**
- The use of glass or rock infill to effectively dampen the air spring in the cavity to produce **a 5 dB improvement to the value.**
- Double layers of wallboard operating as semi independent linings and producing up to **10 dB improvements.**
- Creation of virtually independent linings by fixing a resilient bar to one side of the metal stud frame for **6 dB improvement.**
- It is possible to optimise airspring discontinuity and produce good low frequency improvements by incorporating twin independent frames that increase wall width as well as provide structural discontinuity. Acoustic cross braces optimise the maximum partition heights achievable.



### SOUND INSULATION IN DWELLINGS

#### SEPARATING WALLS, FLOORS AND STAIRS

The airborne sound insulation standard for separating walls, floors and stairs in purpose built dwelling houses and flats is 45 dB, expressed as  $D_{nT,w} + C_{tr}$ . This target, with the addition of  $C_{tr}$ , will ensure substantial sound insulation. Floors and stairs should have maximum values of impact sound insulation of 62 dB  $L_{nT,w}$ .

The figures for dwellings and flats formed by material change of use are 43 dB and 64 dB respectively.

Walls in purpose built rooms for residential purposes carry a standard for airborne sound insulation of 43 dB  $D_{nT,w} + C_{tr}$ , floors and stairs require 45 dB  $D_{nT,w} + C_{tr}$  and 64 dB  $L_{nT,w}$  impact sound requirements.

#### INTERNAL WALLS AND FLOORS

Laboratory values for all categories of internal walls are 40 dB  $R_w$  in both wall and floor calculations. There is no requirement for pre-completion testing under the legislation.

### PART E AND RD SOLUTIONS

Fermacell Board totally satisfies the requirements of Part E. It must be remembered that pre-completion tests must be carried out on site by an accredited third party test body on 10% of all different types of new dwellings.

An alternative to pre-completion testing is the approval of separating (party) walls and floors for new builds only, as Robust Details (RDs). They will be deemed to satisfy Part E if they are built correctly.

RD solutions used in projects other than new build will, however, be subject to pre-completion testing.

#### FERMACELL SOLUTIONS

Application	Solution	Timber frame	Steel frame	Masonry upgrade
Separating Walls	RD*	1H36 or 1H37	1S32/1	3S12 or 3H12
	Part E	1H31RB, 1H35, 1H36 or 1H37	1S31W, 1S32 or 1S32/1	3S11 or 3H11
Internal Walls	Part E	1H13	1S15	3S01, 3H01 or 3TP01
Separating Floors	Part E	2FCH21, 2FCH22	2FCS21	2FCM21 or 2FCM22
Internal Floors	Part E	2H14, 2H15 or 2H16	2S14 or 2S15	

\*RD solutions must be read in conjunction with information supplied by Robust Details Limited.

Fermacell provides dry floor and ceiling solutions to help meet Part E and Robust Detail requirements.

## SOUND INSULATION IN SCHOOLS

Building Bulletin 93 associated with Document E deals specifically with acoustics in new school buildings, covering airborne insulation between teaching and learning spaces, and impact sound insulation of their floors. It does not cover administration and ancillary areas.

The table below shows the performance requirements for airborne sound insulation between rooms expressed in  $D_{nT}(tmf,max)_w$  and impact sound insulation of floors maximum weighted BB93 standardised impact sound pressure level  $L_{nT}(tmf,max)_w$ .

AIRBORNE SOUND INSULATION BETWEEN ROOMS																
	Nursery play room	Nursery quiet room	Primary / secondary classroom	Open plan teaching / resource	Music classroom	Music performance room / recording studio	Lecture room (fewer than 50)	Lecture room (more than 50)	Library	Science laboratory	Drama studio	Metal / woodwork room	Assembly hall	Gymnasium	Dining room	Offices / toilets / corridors
Nursery play room	55															65
Nursery quiet room	55	40														60
Primary / secondary classroom	55	45	45													60
Open plan teaching / resource	50	45	45	40												60
Music classroom	55	55	55	55	55											55
Music performance room / recording studio	60	45	55	55	60	60										55
Lecture room (fewer than 50)	55	45	45	45	55	55	45									60
Lecture room (more than 50)	55	45	50	50	60	60	50	50								55
Library	55	40	45	45	55	55	45	50	45							60
Science laboratory	50	45	45	40	55	55	45	50	45	40						65
Drama studio	55	55	55	50	60	60	55	55	55	50	55					55
Metal / woodwork room	55	55	55	50	55	55	55	55	55	50	55	50				65
Assembly hall	55	55	55	50	55	55	55	55	55	50	55	55	55			60
Gymnasium	55	55	55	50	55	55	55	55	55	50	55	50	55	50		65
Dining room	55	55	55	50	55	55	55	55	55	50	55	50	55	50	45	65
Offices / toilets / corridors	55	55	55	50	55	55	55	55	55	50	55	50	55	50	50	65

### SOUND INSULATION IN HOSPITALS

Hospitals are expected to meet acoustic design and performance criteria as set out in a number of HTM documents.

Performance requirements for airborne sound insulation set out in the table below, range from 43 dB  $R_w$  to 53 dB  $R_w$  depending on the location of the rooms within the building. Designers seeking to achieve these values should also consider the potential for eliminating or minimising flanking sound transmission (sound that might be transferred through surrounding structures, such as plant and mechanical services).

Careful selection of internal surface finishes contributes greatly to the control of reverberation which can also affect acoustic qualities.

Fire requirement in hospitals outlined in HTM81, which is based on Approved Document B of the building regulations, state that partition walls and floors between rooms must be provided with appropriate levels of fire resistance as well as acoustic insulation.

*Robust Fermacell Boards meet the acoustic and fire requirements for walls and floors in hospitals, offering superior strength, resistance to impact damage and pull-out for fixings.*

PERFORMANCE REQUIREMENT FOR AIRBORNE SOUND INSULATION BETWEEN ROOMS IN dB( $R_w$ )

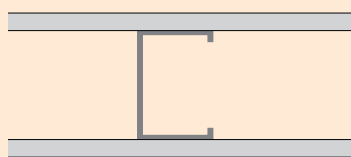
	Consulting room	Examination rooms	Treatment rooms	Speech therapy rooms	Offices	Seminar rooms	Single-bed wards	Multi-bed wards	Day rooms	Nurseries	Toilets and bathrooms	Utility rooms	Ward pantries	Plant motor rooms
Consulting room	43													
Examination rooms	43	43												
Treatment rooms	• 53	43												
Speech therapy rooms	48	48	• 48											
Offices	43	43	53	48	48									
Seminar rooms	48	43	48	53	43	38								
Single-bed wards	43	43	• 48	43	48	43	43							
Multi-bed wards	53	53	48	• 48	43	43	53	43						
Day rooms	53	53	43	• 48	43	43	53	43	48					
Nurseries	• 48	• 48	43	• 53	48	48	• 48	43	43	43				
Toilets and bathrooms	48	48	48	53	43	43	48	48	48	48	43			
Utility rooms	• 48	• 48	43	• 53	48	48	• 48	43	43	43	48	43		
Ward pantries	48	48	48	53	43	38	48	43	43	48	43	48	38	
Plant motor rooms	• 48	• 48	• 48	• 53	• 48	• 48	• 48	• 48	• 48	• 48	• 48	• 48	• 38	• 48

• Special construction may be necessary. Please consult Building Control for details.

FERMACELL SOLUTIONS FOR WALLS				
Acoustic performance (R <sub>w</sub> dB)	Fire resistance (minutes)	Timber frame	Steel frame	Masonry upgrade
38	30	1H13	1S15	3S11
	60	1H22 or 1H21	1S11	3S12
	90	1H31	1S31	–
43	30	1H23 or 1H31	1S11 or 1S16	3S11
	60	1H23 or 1H31	1S21	3S12
	90	1H31	1S31	–
48	30	1H23 or 1H31	1S11 or 1S21	3S11
	60	1H23 or 1H31	1S21	3S12
	90	1H32 or 1H31	1S31	–
53	30	1H32, 1H23 or 1H35	1S21	3S11
	60	1H32, 1H23 or 1H35	1S31 or 1S21	3S12
	90	1H32	1S31	–

### Duty Rating & Impact Performance – Tested to BS 5234-2:1992.

The simplest Fermacell steel stud partition has been tested to BS5234-2 and achieves a SEVERE duty rating.\*



Thus specifying duty rating with Fermacell solutions is a simple process. In addition Fermacell has carried out a vast range of testing, to DIN 4103, for greater wall heights with different board configurations, stud profiles and centres. This allows Fermacell to provide a comprehensive range of rated build heights. This includes soft and hard body impact testing.

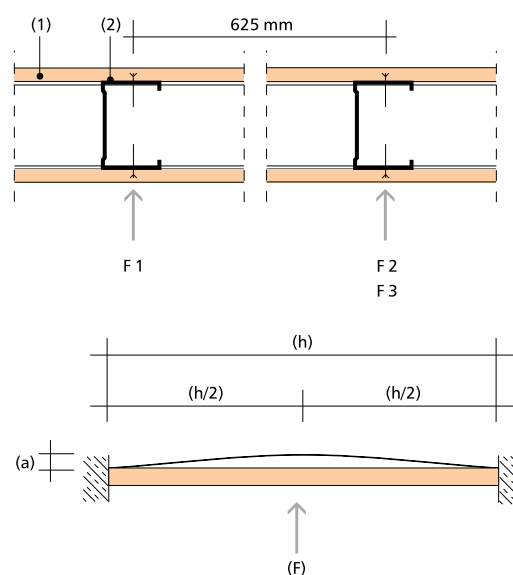


\*up to 3 metres, an assessment is available for greater heights

### FERMACELL SOFT IMPACT TEST TO DIN 4103

The certificate for soft impact is based on an assessment of the ability of the whole partition to withstand a semi static load. A soft impact on light-weight partitions can result from, for example, the impact of a human body or in the case of panic caused by fire as a result of the crowd pressure in corridors that line an escape route.

#### TYPICAL PARTITION TESTING



#### KEY

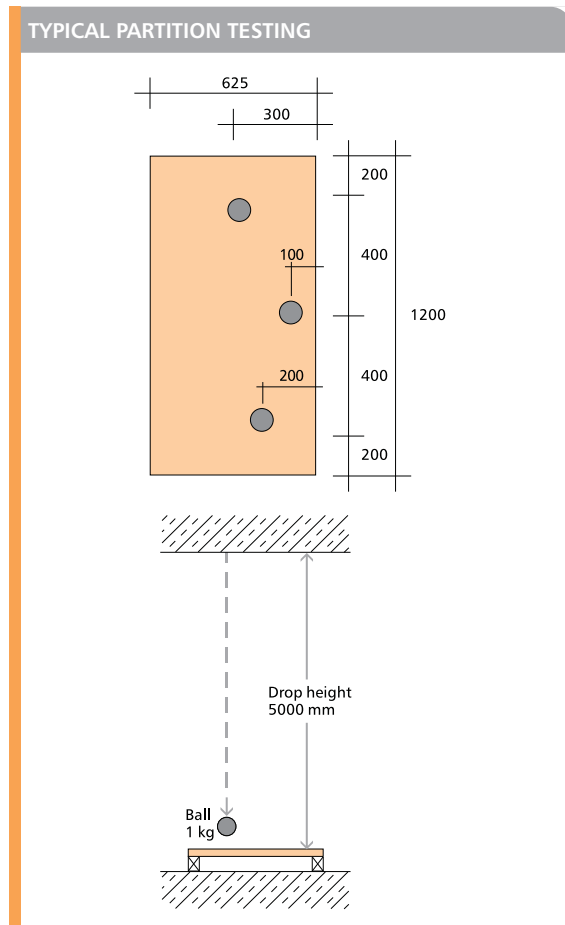
- (1) Fermacell Board 12.5 mm
- (2) C Stud 100 mm x 0.6 mm
- (h) (Height of partition) = 3000 mm
- (a) Deflection of the partition
- (F) Location of force applied with 50 mm diameter ram

Load type	Force
Soft horizontal impact	kN
<b>F1</b> Force applied over stud to create deflection of 5 mm	1.119
<b>F2</b> Force applied between studs to create deflection of 5 mm	0.605
<b>F3</b> Force applied between studs to break through board	1.505



## FERMACELL HARD IMPACT TEST TO DIN 4103

The resistance to hard impact is determined by a drop ball test. A steel ball 63.5 mm in diameter weighing 1030 g is released in free fall on to the face of a 12.5 mm Fermacell Board. The drop ball tests are carried out on 1000 mm wide pieces of board, spanned between two supports at 625 mm. The impact points are in the middle of the board and near the edge of the board.



### SUMMARY OF STRENGTH AND ROBUSTNESS TESTS TO BS 5234-2:1992

**Product:** Fermacell 1515 stud partition wall

**Specimen description:** Partition 4.50 m long by 3.0 m high with overall thickness of 100 mm; comprising 1 layer each side of 12.5 mm Fermacell Board fixed to 0.6 mm 75 mm x 50 mm steel studs at 600 mm centres.

Requirement tested	Grade performance achieved (Pass / Fail)			
	LD	MD	HD	SD
Stiffness				<b>Pass</b>
Surface damage by small hard body impact:				
Straight partition				<b>Pass*</b>
Right-angle junction				<b>Pass*</b>
Resistance to damage by large soft body impact:				
Straight partition				<b>Pass</b>
Right-angle junction				<b>Pass</b>
Perforation by small hard body impact:				
Straight partition				<b>Pass</b>
Right-angle junction				<b>Pass</b>
Resistance to structural damage by large soft body impact				<b>Pass</b>
Determination of the effects of door slamming				<b>Pass</b>
Grade achieved				<b>Pass</b>

\*as determined by the manufacturer (see report for details).

### FERMACELL FIXINGS AND LOADINGS

The flexibility of fixing to Fermacell means you can put your shelves or cupboards where you want to.

#### FIXINGS TO WALLBOARDS

- Fermacell Boards have a great hanging strength.
- Many items can be fixed directly to the boards without fastening to the sub-structure.
- The table below shows the loadbearing capability of a wide range of fittings.
- The loadbearing capability refers to static (dead) loads only.
- For live loads which are subject to increase (eg washbasins or stair-rails), the maximum load should be calculated and patresses of plywood or reinforcing pads of Fermacell added behind the wall.
- Fixing back to the existing studs will provide additional support where required.

#### MAXIMUM WALL LOADING

- With single stud walls a maximum of 150 kg/lm is recommended.
- For separated stud walls and independent wall linings, a maximum of 40 kg/lm is recommended. This figure is increased when the studs are braced.






#### FIXINGS TO CEILINGS

- Ceiling loads can easily be fixed to Fermacell ceilings. Special steel cavity fixings and steel spring fixings can be used.
- Smaller loads may be fixed directly with fully threaded screws.

#### MAXIMUM TILE WEIGHTS

- With Fermacell Boards, tiles can be directly fixed. The maximum load of tiles is 35 kg/m<sup>2</sup>.
- For any weight greater than that please contact our Technical Department on **+44 (0) 870 6090 306** for more details.

#### LOAD-CARRYING CAPACITY OF FERMACELL WALLS

Fermacell Gypsum Fibreboards (thickness) <sup>(1)</sup>	Loadbearing strength in kg <sup>(2)</sup>				
	Picture hooks fixed by nails			Screw with cont. thread 5 mm dia. <sup>(3)</sup>	Toggle Bolt <sup>(4)</sup>
					
10 mm	15	25	35	20	40
12.5 mm	17	27	37	30	50
12.5 + 10 mm	20	30	40	35	60
15 mm	18	28	38	30	55
18 mm	20	30	40	35	60
12.5 H <sub>2</sub> O	N/A	N/A	N/A	N/A	40
12 x 12.5 H <sub>2</sub> O	N/A	N/A	N/A	N/A	50

(1) Maximum stud centres = 50 x board thickness.

N.B. Where fixings are less than 500 mm apart, reduce the load per fixing by 50%. If a stud support separates the fixings, then use the full loadbearing strength shown above.

(2) Safety factor: 2 (Static load with relative humidity of up to 85%).

(3) Depth of cupboard or shelves: max. 350 mm.

(4) Standard toggle bolt with > 4 mm dia. screw.

(The toggle bolt manufacturer's instruction should be observed.)

The stated load values can be added up, if the fixing centres are ≥ 500 mm. For lesser fixing centres, 50% of the relevant permissible load per fixing should be used. The total single loads for walls should not exceed 1.5 kN/m and for free-standing Dry Lining and double studwalls not physically connected to one another, 0.4 kN/m. The stability of the wall or casing should be verified as described above according to DIN 4103 Part 1 and BS 5234.

#### Maximum allowable load in kg <sup>(1)</sup> per Fermacell Board thickness in mm <sup>(2)</sup>

Fermacell Board thickness (mm)	kg <sup>(3)</sup>
10 mm	20
12.5 mm	22
15 mm	23
10 + 10 mm	24
12.5 + 12.5 mm	25
12.5 mm H <sub>2</sub> O	20

(1) Tested to DIN 4103, safety factor 2.

(2) Support spacing of the sub-structure ≤ 35 x board thickness. Board fixed to the sub-structure with Fermacell screws.

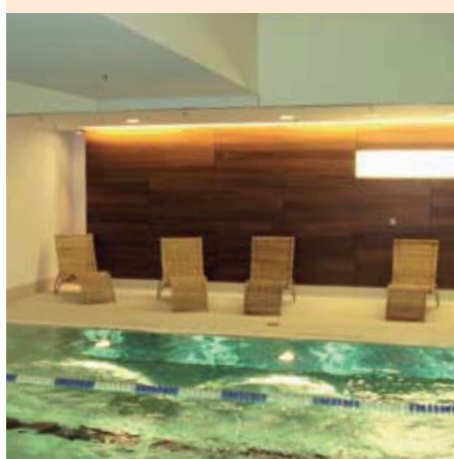
(3) Observe the manufacturers operating and installation instructions.

Where additional loads are to be applied then the loading capability of the sub-structure should be checked.

### The exceptional moisture resistance qualities of Fermacell high density boards have been confirmed by a series of the most uncompromising tests developed specifically for rainscreen evaluation.\*

Simulated cascading rain, 600 kpa wind speeds and intense humidity, far in excess of normal weather conditions that would hit a building in its entire lifetime, have demonstrated that the 12.5 mm Fermacell as a backerboard product is ideal for external use.

It may be applied as a sheathing board on both timber frames and structural steel framed external wall infill panels, used as a liner for unexposed eaves soffits and canopies and also for lining roof trusses used as separating wall frames.



However, the totally environmentally-friendly board is not limited to providing cost effective systems only for external use – its benefits when used internally are equally as impressive. With such a high resistance to moisture and mould it is the first choice for use as a tile backer in bathrooms, laundries, kitchens and shower rooms and as a liner for wet areas like swimming pools and plant rooms. The board also plays a key role lining bathroom pods manufactured off site.

Furthermore, Fermacell Board can make a significant contribution to improved BREEAM ratings of new and refurbished commercial and residential buildings.

The moisture resistance qualities of Fermacell are accompanied by a host of additional advantages including: substantial financial benefits (Fermacell can save up to 50% per m<sup>2</sup> when compared to other boards); its excellent fire and acoustic properties; its ease of fixing, cutting, jointing and general handling; and considerably less remedial problems.

All these benefits are accompanied by Fermacell's commitment to a totally environmentally friendly product manufactured from 100% recyclable materials which therefore makes Fermacell itself also completely recyclable.

Fermacell's nominal density is 1,150 ± 50 kg/m<sup>2</sup> and its bending strength value after drying at 40°C is ≥5.8 N/mm<sup>2</sup> with a transverse strength of ≥0.3 N/mm<sup>2</sup>.

Bending, pressure and shearing tensile values perpendicular to the board surface are 1.2 N/mm<sup>2</sup>, 2.5 N/mm<sup>2</sup> and 0.6 N/mm<sup>2</sup> respectively and bending, pressure and shearing in the board surface are certified as 1.1 N/mm<sup>2</sup>, 2.0 N/mm<sup>2</sup> and 0.3 N/mm<sup>2</sup> respectively. The tension in the board surface is recorded at 0.5 N/mm<sup>2</sup>.

E-Modulus calculations perpendicular to the board surface, parallel to the surface, tension and compression are all 3,800 N/mm<sup>2</sup> while shearing modulus G perpendicular to the board surface and bending in board surface are both 1,600 N/mm<sup>2</sup>.

\*The tests were conducted in accordance with guidelines set down by the Centre for Windows and Cladding Technology and embraced air permeability, static and dynamic watertightness, and wind resistance from both serviceability and safety points of view.

**Fermacell, the high performance Dry Lining board with Class 0 fire rating, excellent acoustic qualities and superb resistance to impact and moisture, brings the highest levels of environmental care and sustainability to the construction industry.**

Fermacell's unique manufacturing technique produces board of quality, flexibility and strength completely from recycled materials, making it a totally sustainable product that is ideal for walls, ceilings or floors.



At a state-of-the-art production facility in Holland, gypsum, a waste product from a nearby power station, and cellulose fibres from recycled paper and magazines collected throughout the Netherlands are mixed with recycled water in an 80%-20% ratio to produce homogenous sheet materials that are cured and cut to size.

All by products are fed back into the production cycle and Fermacell have even instigated a scheme for the collection and recycling of off cuts and waste created on construction sites, giving customers the opportunity to enhance their environmental reputations by demonstrating social responsibility through reduced demand for land fill.

Since its introduction to the U.K. in 1971, Fermacell, one of the brands of world-wide building materials group Xella International, has developed a fine reputation for effective solutions that meet today's challenging building and sustainability requirements.

The product, and its manufacturing process, have been awarded the coveted Rosenheim Institute of Construction Biology and Ecology Certificate and the Low Emissions Product Eco Certificate. In addition Fermacell itself has been defined as a "healthy living building material" for allergy-free environments.

- BBA certificate No 90/2439
- DN EN ISO : 14001
- Recycled content to ISO 14021: newspaper and gypsum recovered from desulphurisation plants (100%)
- ETA – 03/0050: Nr. Z-1/746-1/04
- EWC – European Waste Catalogue Ref listing REF – NO 1708 02
- Life expectancy = life of the building
- Environmental certification: Rosenheim Institute Ecology Certificate
- eco INSTITUT – Quality Assurance
- WRAP – Recycled Content – Fermacell 100%
- LONDON Remade – Green Procurement – Fermacell 100%
- Greenspec – Material Details
- GreenGuide –
  - England
  - Wales
  - Scotland



**Different construction projects naturally have different partitioning requirements, but it is often the case that no matter what the final use of a building, there are common partitioning needs.**

Acoustic, Fire, Impact Performance and Environmental considerations are at the top of the list of partitioning priorities: whether it is an educational establishment; retail store; sport or recreational centre or residential development, partitioning with a demonstrable pedigree such as Fermacell is no longer an option. It is an essential.



Architects, main contractors and installers also have a second common denominator: an installation method that is fast, and easy to schedule into the fitting out programme. Fermacell boasts both those benefits, as well as the unique FST finishing system which ensure a quality finish that eliminates the wet trades such as plastering.

## EDUCATION AND HEALTHCARE

This sector is probably the most demanding of any element of construction today.

As well as calling for high performance levels, sustainability credentials and speedy construction which in many cases allows the partitions to be installed before the building envelope is complete, these projects also demand partitioning that is able to withstand the "treatment" of people as well as objects. In fact impact resistance is as critical as the acoustic properties of Fermacell.

Note: For further guidance please refer to:

### EDUCATION

[www.partnershipsforschools.org.uk](http://www.partnershipsforschools.org.uk)  
'Standard Specifications, Design & Guidance: Partitions In Schools' Fermacell Referenced as Gypsum Fibreboard ISBN: 978-1-88478-923-8

### HOSPITALS

Note: For further guidance on wall requirements to meet radiation protection, please contact our Technical Department on **+44 (0) 870 6090 306**.



## EDUCATION AND HEALTHCARE

The Education and Healthcare construction sectors are alike in many ways and have similar needs when specifying internal partitions, linings and ceilings.

The careful selection of the systems used in these public buildings is vital as they have to perform at the highest level in demanding environments. Particular attention has to be paid to the 'whole life costs' of the products used during the construction as the cost of maintenance of the building has to be managed from strict budgets.

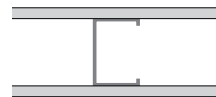
Fermacell Gypsum Fibreboards provide significant benefits and often exceed the requirements in relation to durability and low life costs with such projects. Due to the composition of Fermacell Boards our systems give the Architect, Main Contractor and Client peace of mind as they have the ability to withstand the everyday knocks and impacts that the partitions in these sectors receive everyday.

Fermacell Boards have very high load carrying capabilities which means that the amount of reinforcement within the partition can be drastically reduced, saving cost and on site installation time. Due to the strength of Fermacell, high performance partitions with high fire protection and excellent acoustic performance can be achieved with a narrow width partition which means that the overall footprint of the partitions can be significantly reduced saving space and optimising room space.

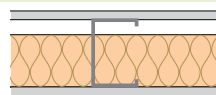
All Fermacell Boards are tested during rigorous performance tests by third party test establishments, listed here are the most commonly specified Fermacell systems in the Education and Healthcare sector.

### MOST POPULAR SYSTEMS

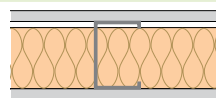
1S15



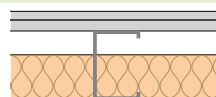
1S21



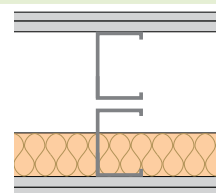
1S29



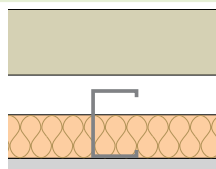
1S31



1S32



3S11



For individual system performance please refer to the Partition performance tables starting on page 40.

### RETAIL

Loadbearing comes high on the list of essentials in retail developments, although an ability to cope with impact is equally as important. An enviable loadbearing performance enables retailers using Fermacell to install most of the fixtures and fittings directly to the Fermacell Board reducing the amount of reinforcement.

### SPORTS, RECREATION AND THE ARTS

The smooth finish of Fermacell, enhanced by the use of Fine Surface Treatment and the even smoother double sanded version, is ideal for arts and cultural centres where large, heavy pictures and paintings are hung and regularly rehung in a quality environment.

These needs for strong partitioning are accompanied by a requirement for high impact resistance, but probably not quite as high as sports and recreation centres where hard ball sports and hefty human impact resistance is paramount. Not only does Fermacell meet all these criteria – it can be supplied in standard size sheets up to 3 m high (special longer boards available) making it ideal for installations of this type.

Note: For further design guidance please refer to:

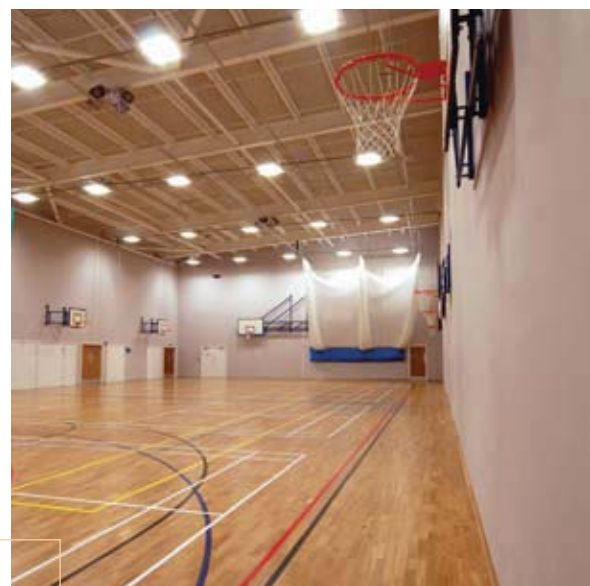
‘Designing Galleries: the complete guide to developing & designing spaces & services for temporary exhibitions’ Author: Mike Sixsmith ISBN: 0728707802 - Fermacell reference section ‘Wall-Lining Material’.

### RESIDENTIAL

The single board solution with fewer layers and less insulation than plasterboard is one of the many attractions that Fermacell holds for the house builder, particularly those operating in the high end of the market and self builders seeking the best for their property. The Fermacell package of superior acoustic performance, strength, speed, quality, ease of finish, and moisture resistance have made it a firm favourite in this market – and even more so with builders of timber frame properties seeking a strong breathing wall construction that eliminates the need for plywood as a racking board at the same time.

### PRISONS AND DETENTION CENTRES

There is no environment more demanding than the HM Prison and Magistrates Court facilities. Fermacell provides an accepted solution with a range of historical and current projects throughout England, Wales & Scotland. Drawing on this expertise Fermacell can provide tailored design and accepted systems to suit all requirements demanded by Home Office or HM Prison Services.



### Fermacell Gypsum Fibreboards are produced for use in commercial and domestic construction projects as a Dry Lining board for partitions, linings, ceilings, fire protection, flooring and a cladding backerboard.

COSHH Data Sheets for all Fermacell products including accessories are available, please contact our Technical Department on **+44 (0) 870 6090 306** or email **fermacell-uk@xella.com**

At Fermacell, we take our responsibilities for the health of people seriously, which is why we strive to ensure that where possible all of our products are safe from an environmental and health viewpoint.



### HEALTH AND SAFETY

Due to the multifunctional nature of Fermacell Gypsum Fibreboards, they are stored and used in both internal and external environments. Care must be taken when using Fermacell and its associated accessories in areas of limited ventilation and around other working personnel. Although Fermacell itself does not contain any dangerous chemicals, it is imperative that safe working practices are followed.

Health and Safety Executive Guidance Note EA44 outlines the general approach to control occupational exposure to airborne dust, but it should always be considered that good working practice will ensure that occupational exposure is minimised. When installing Fermacell Boards these include:

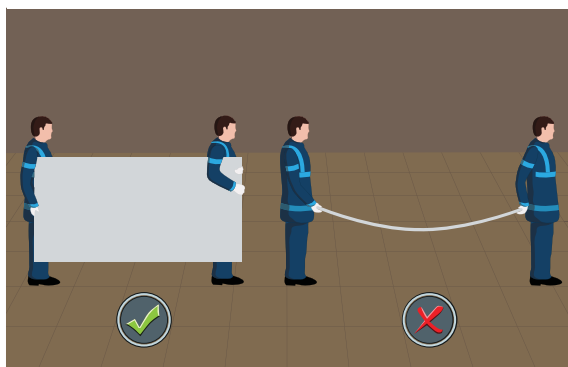
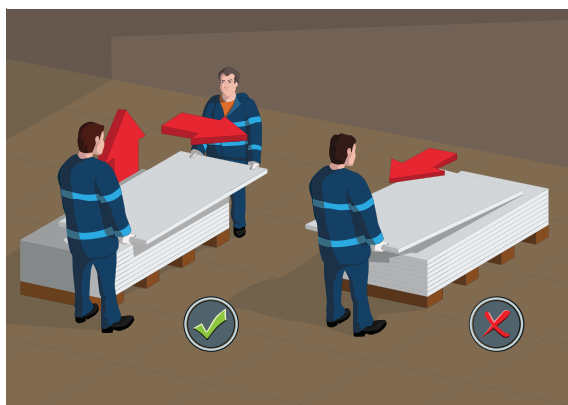
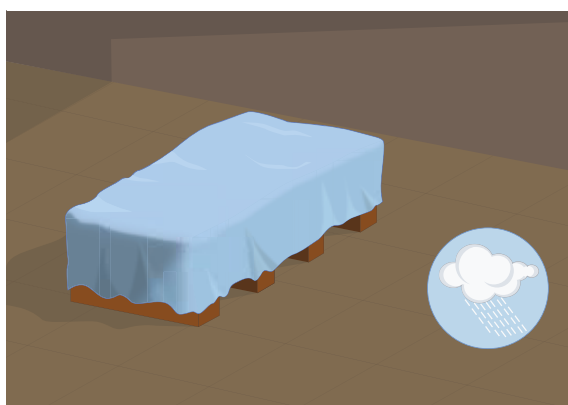
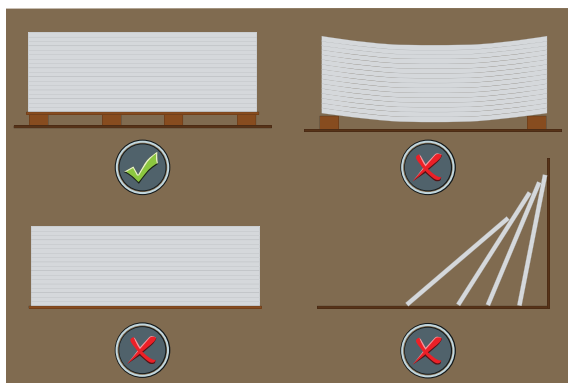
- Ensure good ventilation when cutting Fermacell
- Use dust extractors where possible to minimise airborne dust contamination when cutting with power tools
- Use a dust mask that meets EN 149 specifications
- Avoid contact of the dry products with the skin
- Irrigate eyes immediately with water in the event of contact with dust
- Always wash exposed skin after use

### FERMACELL JOINTSTIK AND FLOOR GLUE

**Skin contact:** Wipe off uncured product with a paper towel or cotton pad. Wash skin thoroughly with soapy water. Cured product should not be removed. Please note: should skin irritation persist obtain medical assistance.

**Eye contact:** Keep the eyelids open and rinse thoroughly with clean running water, and obtain medical assistance immediately.

**Ingestion:** DO NOT induce vomiting. Seek IMMEDIATE medical assistance.



### FERMACELL FINE SURFACE TREATMENT AND JOINT FILLER

**General information:** Wash soiled clothing before reuse.

**Inhalation:** Inhalation of dust when mixing or sanding may cause short term irritation. Use a dust mask that meets EN 149 specifications.

**Skin contact:** Flush and wash with water and soap.

**Eye Contact:** Rinse eyes immediately with clean water.

**Ingestion:** Drink plenty of milk or water.

For further COSHH information for the full range of Fermacell products please contact **+44 (0) 870 6090 306**.

Safe working habits and conditions also embrace subjects such as lifting of heavy materials (which should be undertaken in the correct manner using mechanical handling equipment where appropriate); cutting and handling of metal components (the wearing of gloves to avoid cuts and abrasions is recommended); and the avoidance of contact between the eyes and liquid products.

Please see the diagrams opposite for handling and storage guidance.

Where possible, Fermacell Boards should be stored on a flat level base. They should be protected from moisture; wet boards should be allowed to dry out completely on a level surface before use. The stacking of boards on their edges can lead to deformation of the boards and damage to the edges. Boards should generally be carried upright and the use of board lifters is advised when fitting boards to ceilings.

Occupational Exposure Standards are reviewed annually by the Health and Safety Executive in the light of any new medical evidence. The tables shown indicate the OES values of the constituents of Fermacell Gypsum Fibreboard and demonstrate that exemplary working habits and good working practice are the main health and safety issues associated with the use of the product.

Please contact our Technical Department on **+44 (0) 870 6090 306** or email **fermacell-uk@xella.com** for further COSHH information.










# Partitions


<b>Introduction</b>	<b>29</b>
<b>Components &amp; Accessories</b>	<b>32</b>
<b>Detailed Overview</b>	<b>33</b>
<b>Component Details</b>	<b>34</b>
<b>Installation Overview</b>	<b>39</b>
<b>Performance Details</b>	<b>40</b>








## MARKET SECTORS

	Arts
	Education
	Residential
	Healthcare
	Recreation
	Industrial/Office
	Prisons

## PERFORMANCE RATINGS

	41 dB	68 dB
	30 mins	120 mins

## FERMACELL PERFORMANCE

-  Impact – Severe duty, able to withstand impact from people as well as objects (door handles etc).
-  Acoustics – Greater acoustic performance often with less layers than plasterboard constructions providing slimmer partitions.
-  Loadbearing – The composition of Fermacell allows up to 50 kg per fixing to be hung from Fermacell using a toggle bolt and 30 kg from a single screw.
-  Speed of construction – Fermacell allows the partitions to be installed before the building envelope is complete. Due to the unique finishing system (FST) the overall installation of Fermacell is faster than plasterboard.
-  Environmental – Fermacell Boards are manufactured from 100% recycled content and are recyclable. Decreasing the carbon footprint and increasing the BREEAM rating of the building.

Using Fermacell Boards on either Metal or Timber partitions provides properties associated with solid masonry with the flexibility and speed of drywall, in a construction that is often thinner, quicker and cheaper to install than both.

This is largely achievable due to the all round performance of the Fermacell Boards that provide superior Fire, Acoustic and Impact performance that eliminates wet trades making practical, technical and commercial sense.

## METAL STUD PARTITIONS

Fermacell Boards are fixed to steel studs<sup>(1)</sup>, which have a 0.6 mm gauge metal thickness with a 50 mm fixing face allowing a versatile, high performing and cost effective solution for domestic to commercial applications often achieving superior Fire, Acoustic and Impact resistance over drywall construction. The excellent screw retention properties of Fermacell means that significantly fewer noggings or plywood is needed for dead load fixtures and fittings; this also allows junctions to be started from any point.

## TIMBER STUD PARTITIONS

These are more commonly used in domestic applications. Timber partitions provide versatility and performance including racking strength for timber framed properties. The ability of Fermacell to be stapled to timber studs means increase speed of fixing.

## TWIN FRAME SYSTEMS

Fermacell partitions achieve a number of advantages over masonry construction by reducing the weight, build time and cost often associated with masonry construction. We offer a number of Robust Detail Compliant solutions.

(1) Typically DIN standard

### A key component within the new £28 million AV Hill research facility at the University of Manchester is the Fermacell Dry Lining board.

The building was constructed using a range of internal partition systems developed by Fermacell, Protector and Rockwool. The partitions deliver the highest levels of environmental care and sustainability. The systems components comprise high impact boards, robust metal studs and a thermal/acoustic wool insulation core combining to give excellent sound and fire protection with a severe duty rating.



The six-storey building incorporates laboratories, meeting rooms, cellular offices and open plan areas for researchers. It will house the University's Life Science and Medical facilities for Bio-Medical Science Research. Built between the existing Michael Smith Building, Core Technology Facility and Stopford Building, each neighbouring structure can be accessed via link bridges at third floor level.

Designed by Wilson Mason and Partners, the AV Hill building was orchestrated by Main Contractors Morgan Ashurst. The building is approximately 70 m long and 40 m wide and occupies over 9465 m<sup>2</sup> gross internal areas.

Alan Williams, Partner Architect at Wilson Mason, commented: "The University wanted a high quality, day lit building. The inclusion of the light well at the heart of the building delivers daylight to all levels. The light well extends the full height of the building and is up to 30 m high. We are delighted that the building received an excellent BREEAM (BRE Environmental Assessment Method) rating."



Fermacell recommended contractor Cheshire-based Total Fire Stopping Systems, worked alongside the Architect to develop the use of Fermacell for the scheme. Director Clare Church commented: "Because of the composition of Fermacell we have been able to commence on site 6 months before the building envelope was watertight and thereby accelerate the programme.

We have completed a range of installations, standard partition types 1S21 and 1S31 (XPR reference W1 & W3), Shaftwall, Security walls and wall linings to a height of 26 metres integrating large slot windows and link bridges.

The fact that Fermacell combines all the attributes we are looking for in one board, rather than having to select multiple types of board on site avoids the risk of incorrect board selection.

My colleague Neil Fairhurst managed the Partitions & Ceiling packages and it's great to see a large project from a bare concrete frame to the finished

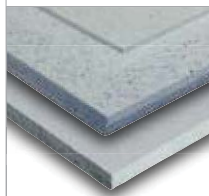
article which has a 'wow factor' with a minimalist concept.

The Fermacell Board was selected for a number of reasons including quicker installation and subsequent Client alterations are easily managed, its environmentally friendly properties, 100% recyclable, water and impact resistance together with the inherent strength for direct fixing of heavy loads i.e. cupboards and shelving without the need for noggings or plywood."

Fermacell offers a range of systems of varying thicknesses and performances. "The versatility assists the Architect when specifying products for fire, acoustics and strength, and eliminates plastering trades with a BBA approval and longevity of 30 years. The recommended contractor Total Firestopping Systems have given the Client, Architect and Main Contractor confidence tackling difficult aspects such as the Atrium wall, lining 26 metre columns and the gable ends."

### STEEL STUDS

#### COMPONENTS



**Fermacell Board**  
Fermacell Square edge or  
Tapered edge for Direct Bond.

Thickness	10 mm, 12.5 mm, 15 mm and 18 mm
Sizes	1200 x 1000 mm to 1200 x 3000 mm



**Fermacell Fine Surface Treatment**  
For giving Fermacell Boards a smoother  
finish if required.

Coverage	6 m <sup>2</sup> per ltr
Pack Size	3 ltr or 10 ltr



**Fermacell Joint Filler**  
For filling 5–7 mm gaps between boards  
& stopping screw heads.

Coverage	5 m <sup>2</sup> per kg for filling Tapered edge joints. 10 m <sup>2</sup> for finishing glue joints and screw heads.
Pack Size	5 kg or 20 kg



**Fermacell Jointstik**  
For edge glueing square edged  
Fermacell Boards.

Coverage	20 lm / 310 ml tube 37 lm / bulk applicator refill
Pack Size	310 ml tubes or 580 ml bulk applicator refills



**Fermacell Mesh Jointing Tape**  
Mesh tape or paper tape can be used to  
reinforce Tapered edge joints.

Pack Size	45 mtr roll
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**Fermacell Paper Jointing Tape**  
Paper tape or mesh tape can be used to  
reinforce Tapered edge joints.

Pack Size	75 mtr roll
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**30/40/55 mm Fermacell Screws**  
For fixing Fermacell Boards to steel  
subframes of 0.7 gauge or greater.

Coverage	13 m <sup>2</sup> for walls
Pack Size	Box of 250 screws or box of 1000 screws

#### ACCESSORIES



**Fermacell Board Knife**  
For scoring and snapping  
Fermacell Boards.

Pack Size	0.05 kg
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**Fermacell Spatula**  
For applying Fine Surface Treatment.

Size	250 mm or 450 mm
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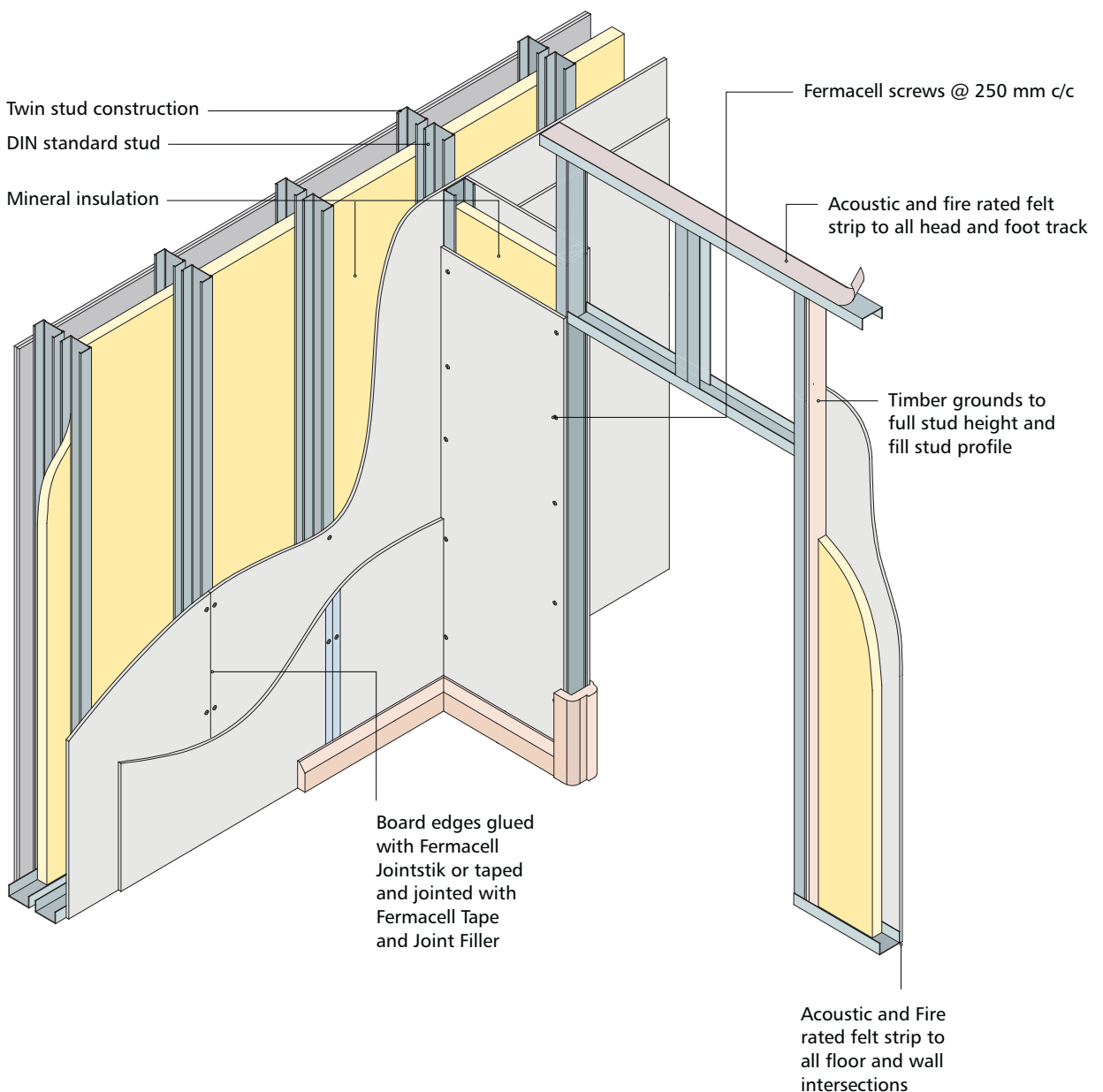


**DIN standard by others  
Metal Stud System**

Size	Nominal 0.6 gauge 50 mm fixing face
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## METAL STUD CONSTRUCTION

Finishing Partitions – following stopping of screws or staples and filling of joints, Fermacell accepts a range of finishes. Fermacell FST or Fine Surface Treatment is used as an alternative to plastering. Refer to finishing section of manual for guidelines on FST, plastering, tiling or wall papering.





### JUNCTIONS, CONNECTIONS, EXPANSION JOINTS

#### WALL AND CEILING JUNCTIONS WITH SINGLE-LAYER FERMACELL BOARDING

##### Separate wall and ceiling connections

Where Fermacell abuts other materials such as plaster, exposed concrete, masonry, steel or wood, care must be taken as each has a different differential movement rate (expansion and contraction with environmental changes).

(1) Junctions with elastic/flexible sealing material.

The back of the profile being fixed to the wall must be backed with an isolation strip (for fire and acoustic purposes). Any gaps can then be filled with a flexible sealant which has a permanent expansion of at least 20 %. Nominally the gap left should be a minimum of 3–5 mm.

(2) Junctions using Fermacell Joint Filler.

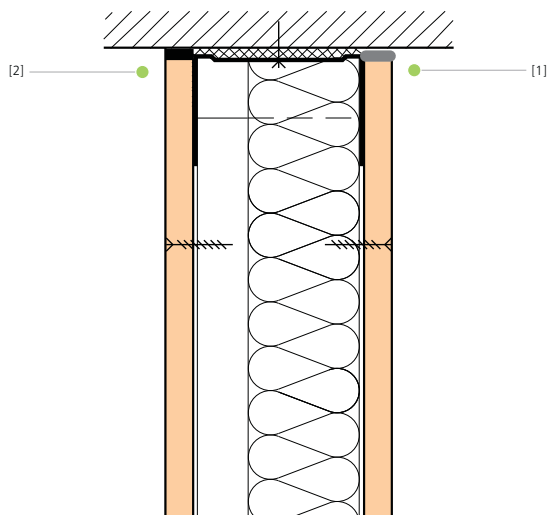
Fit studwork and isolation material. When fixing the boards to the studs, leave a 5–7 mm gap and fill with Fermacell Joint Filler.

For fire resistance requirements:

Use a fire rated isolation strip. Rockwool type material should be of a thickness  $\leq 5$  mm.

(1) Junctions with sealing material

(2) Junctions with Fermacell Joint Filler



#### DEFLECTION CONNECTIONS

##### Deflection head details

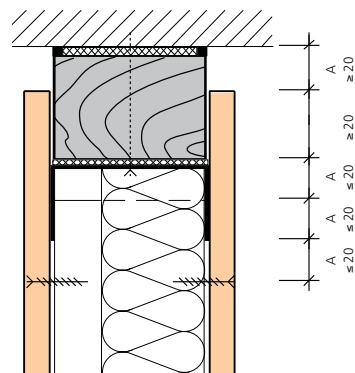
Deflection head details are required where deflection is expected to exceed 10 mm.

There are three sections which must have the same minimum distance left for the deflection head to work. These are:-

1. The distance from the top of the board to the Soffit.
2. The distance from the top of the stud to the head track.
3. The distance from the bottom of the head track leg to the first fixing into the stud.

A = Expansion in mm

Fermacell partition, single-layer boarding, F-30 B/F 60-B, Deflection Head Detail



#### DEFLECTION CONNECTIONS

Deflection head detail can be constructed using Fermacell strips or timber sections. The total thickness of the Fermacell strips or timber section must correspond to the deflection specified/expected, plus the overlap for the boarding.

Minimum timber widths for F30 and F60 solutions are:

F30 = 50 mm wide timber

F60 = 70 mm wide timber

For F90 partitions use Fermacell strips, minimum 50 mm wide.

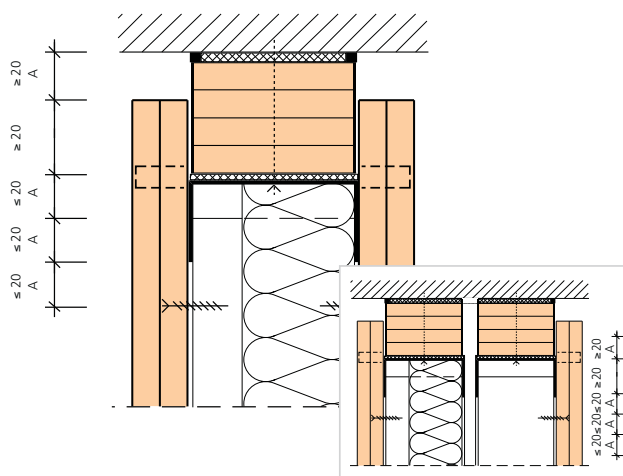
For F120 solution please contact the Fermacell Technical Department.

For wall heights above 5000 mm, the deflection head detail must be mechanically stabilised with appropriate extra measures, such as support brackets.

A = Expansion in mm

Fermacell partition, double-layer boarding, F 90-A, Deflection Head Detail

Fermacell separated stud partition, double-layer boarding, F 90-A, Deflection Head Detail



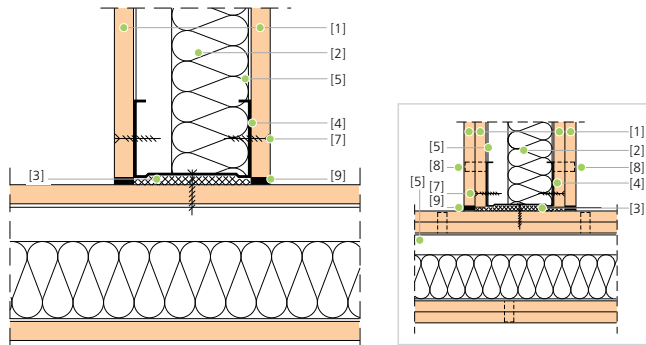


## JUNCTIONS, CONNECTIONS, EXPANSION JOINTS

## CORNER &amp; T-JUNCTIONS

T-junctions with single or double-layer boarding, with C stud fixed to Fermacell Board.

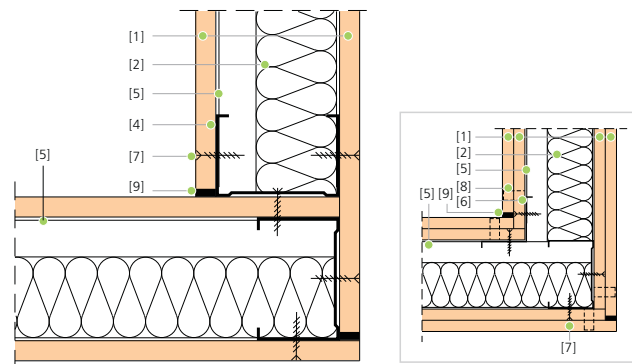
- (1) Fermacell Boards 12.5 or 10 mm
- (2) Insulating material
- (3) Edge insulating strips
- (4) Stud profile
- (5) Header or footer track
- (7) Fermacell screws 3.9 x 30
- (8) Staples, galvanised, for fixing Fermacell in Fermacell
- (9) Fermacell Joint Filler



## CORNER &amp; T-JUNCTIONS

Corner connections with single or double-layer boarding.

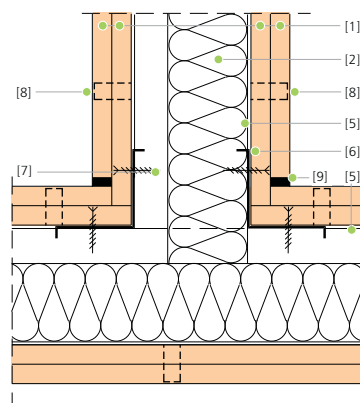
- (1) Fermacell Boards 12.5 or 10 mm
- (2) Insulating material
- (4) Stud profile
- (5) Header or footer track
- (6) Inner corner profile
- (7) Fermacell screws 3.9 x 30
- (8) Staples, galvanised, for fixing Fermacell in Fermacell
- (9) Fermacell Joint Filler



## CORNER &amp; T-JUNCTIONS

Wall T-junction with interrupted longitudinal flanking transmission and inner corner profile.

- (1) Fermacell Boards 12.5 or 10 mm
- (2) Insulating material
- (5) Header or footer track
- (6) Header or footer track
- (7) Fermacell screws 3.9 x 30
- (8) Staples, galvanised, for fixing Fermacell in Fermacell
- (9) Fermacell Joint Filler



### DOORS AND WINDOWS

#### DOOR MOUNTINGS, FRAMES, GLAZING AND WALL OPENINGS

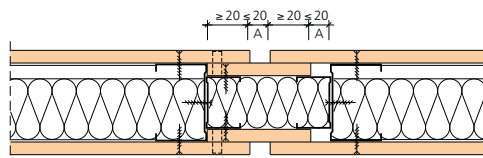
##### Movement control joints

Movement control joints are required in Fermacell steel stud partitions. They should also be placed in linings or partitions to mirror any structural movement joints in the main shell of the building.

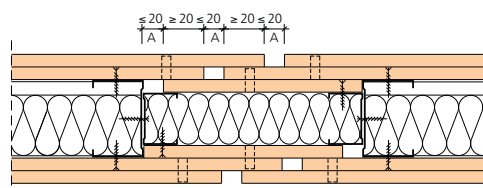
The spacing of movement control joints is dependant on the jointing method used. When using the adhesive Jointstik method then they can be placed at maximum 10 m intervals. When using the Joint filler method or Tapered edge board method then they can be placed at maximum intervals of 8 m.

Where required, movement joints and end wall movement joints can be used together to provide the simplest solution.

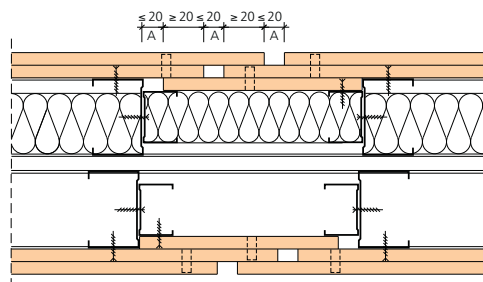
A = Degree of expansion in mm



Fermacell stud partition wall, single-layered boarding F 30-A/F 60-A. Expansion joint



Fermacell stud partition wall, double-layered boarding, F 90-A. Expansion joint



Fermacell separated stud partition wall, double-layer boarding, F 90-A. Expansion joint

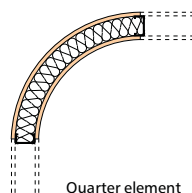
#### CURVED PARTITIONS

##### Bending Fermacell Gypsum Fibreboards

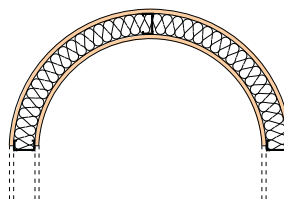
When preparing curved wall and ceiling structures using standard size 10 mm and 12.5 mm Fermacell Boards, there are three methods of application. These depend on the areas where the curved walls are to be used and the required radius.

For a radius  $\geq 4000$  mm, use dry bending with stud spacing  $\leq 300$  mm. In this case, standard size boards are fixed lengthways on to the studs.

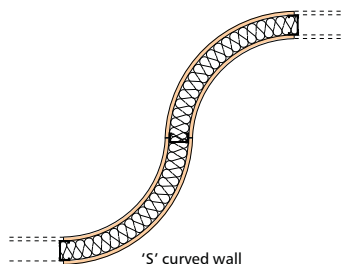
For a radius between  $\leq 4000$  mm to  $\geq 1000$  mm, wet bending (locally, on site) is recommended; the stud centres should be  $\leq 250$  mm. The Fermacell Boards must be humidified/wetted over a period of about 10 hours, placed over pre-formed templates to the required radius. After drying, the Fermacell Boards will regain their original properties, but will be a curved board.



Quarter element



Half element



'S' curved wall

## DOORS AND WINDOWS

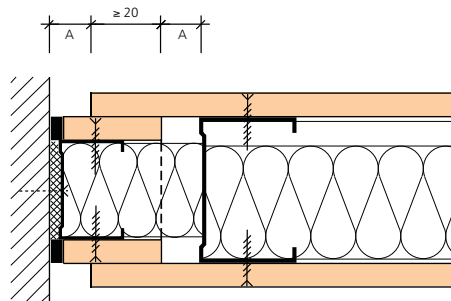
## REDUCTION JUNCTIONS

**Wall movement joints and façade junctions.**

Exterior facades, principally curtain walls, can be subject through wind loads, causing pressure and suction movements, and must be designed accordingly. Ensure that no structural forces affect the Fermacell Boards and that the required sound-reduction and fire resistance characteristics are met.

Fermacell partition, single-layer boarding, F 30-A / F 60-A. Wall movement joint and/or façade junction with a steel stud and strips of board.

A = Expansion in mm

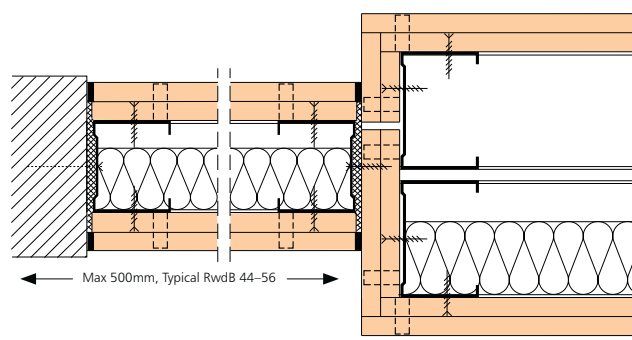


## REDUCTION JUNCTIONS

**Reduction junctions (Tapered wall and façade junctions).**

When joining partitions to narrow building components (such as window posts), the thickness of the partition must be reduced to match the size of the junction section. To compensate acoustically, a lead sheet can be fitted in the reduced wall section on one or both sides.

Reduction junction for a double stud wall with sound reduction requirements



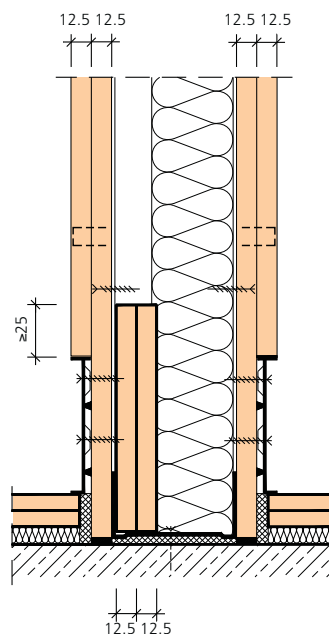
## SKIRTING

**Skirting and Recessed Skirting**

The junction of the Fermacell Boards with the floor can be constructed in various ways to meet function and design requirements.

- Conventional skirting
- Recessed skirting
- Recessed skirting partition with double-layer boarding – to maintain the sound reduction and fire resistance, additional layers of board material should be built into the wall cavity.

Recessed skirting F 90-A according to report on DIN 4102 Part 4 (sizes in mm)



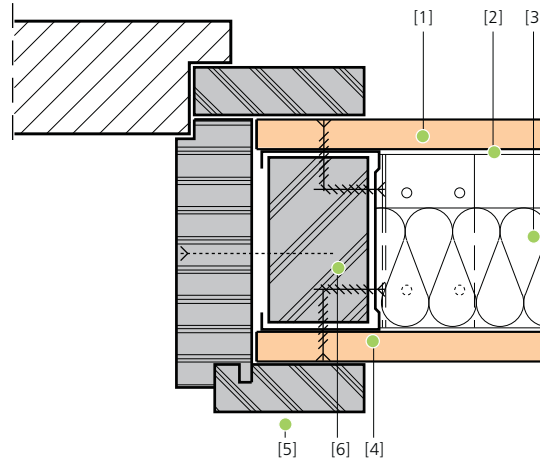
### DOORS AND WINDOWS

#### DOOR MOUNTINGS, FRAMES AND WALL OPENINGS

##### Door mountings, frames, glazing and wall openings

Please refer to the Fermacell Data Sheet about door reinforcement recommendations.

Frame fixing to steel studs with timber inserts  
(1) Fermacell (2) Header/footer track (3) Rockwool  
(4) C stud (5) Door frame (6) Wood stiffening



#### FIXING DOOR FRAMES TO 2 MM THICK DOOR REINFORCEMENT KITS

##### Door frame installation methods

There are many different methods of fixing that can be used for securing door frames to/in Fermacell partitions and fire walls. These depend on the room height (wall height), door width, weight of the door leaf, including door furniture, etc.

Please see the Fermacell datasheet regarding door frame reinforcement.

The guidelines for different door support types are based on the following door weights as a guide. Double door and leaf and a half doors will always require additional support.

≤ 25 kg doors – Timber inserts are required up to 2.5m of the partition height.

25 kg – 50 kg doors – Timber inserts are required to the full partition height. An L bracket is required at the head of the timber support.

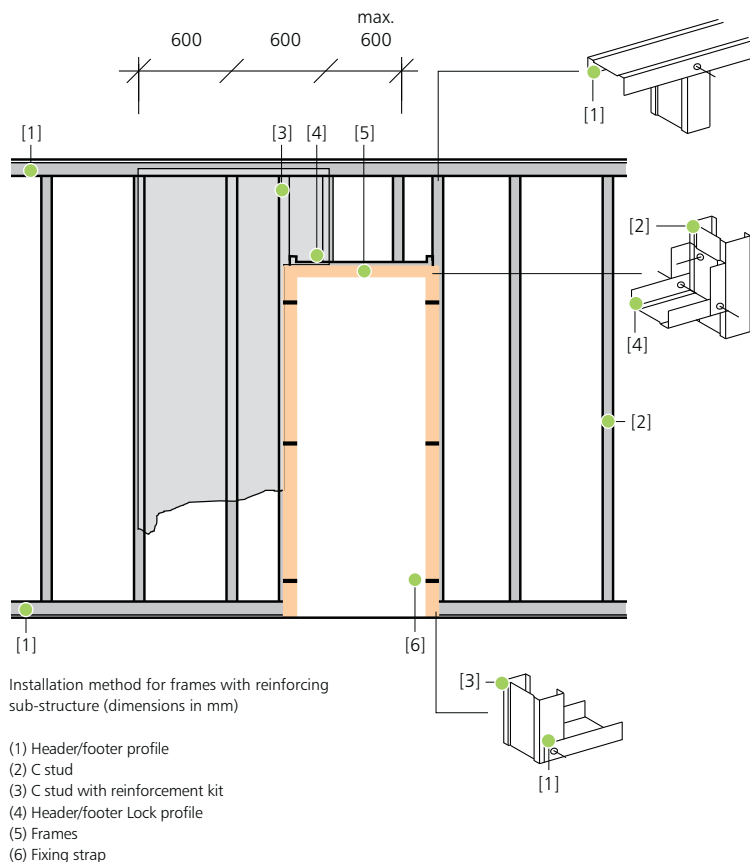
50 kg – 60 kg doors – Timber inserts are required to the full partition height. An L bracket is required at the head and the foot of the timber support.

60 kg + doors – Steel Door Reinforcement kit and timber insert.

When boarding around doors and openings it is imperative that joints do not run vertically from corners. The boards should be cut to allow joints to sit above the door head and offset from the edge of the door/opening by > 200 mm.

##### Installation methods for glazing

Where glazing details are to be installed in Fermacell walls, additional support will be required.



### STEEL STUDS

#### STEP ONE



Ensure the floor is clean and flat; mark out the line of the partition allowing for the width of the Fermacell Boards.

#### STEP TWO



Fix the base track to the floor at 600 mm centres using suitable fixings. Isolating strips must be used to ensure the correct Acoustic and Fire performance.

#### STEP THREE



Once the bottom track is fixed, plumb the top track in to position and fix with Fermacell screws or proprietary fixings. Fix end studs to the substrates ensuring adequate acoustic insulation at 600 mm centres.

#### STEP FOUR



The intermediate studs should be cut no more than 10 mm shorter than the floor to ceiling height and not mechanically fixed. They should be installed facing the same direction. Door openings should be marked and the studs either side of the door opening fixed.

#### STEP FIVE



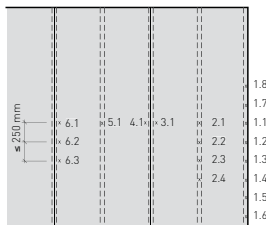
Install insulation (if required) making sure that there is a cavity between the insulation and one face of the Fermacell Boards. Cut the Fermacell Boards 10 mm less than the room height and install tight to the ceiling line.

#### STEP SIX



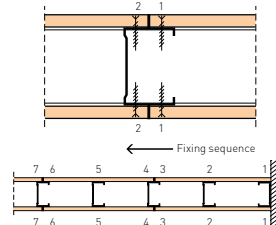
Screw fix the boards as per the fixing sequence (7 & 8) at 250 maximum centers using Fermacell screws. The vertical joints can be "mirrored" through the partition when using Fermacell Jointstik. Do not fix the boards to the top and bottom tracks.

#### STEP SEVEN



Ensure the boards are fixed as per this fixing sequence to ensure a flat and uniform surface.

#### STEP EIGHT



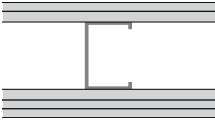
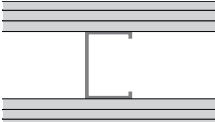
Screw fix to the open side of the stud first working from the end of the partition.

### FERMACELL PARTITION WALLS ON STEEL WALLS WITHOUT INSULATION

			Wall Weight	Wall Height (Without Fire Rating)	Wall Height (With Fire Rating)	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
			kg/m²	m	m	mm	mins	R <sub>w</sub>	Grade
SYSTEM SPECIFICATIONS									
<b>1S15</b>									
	Studs	50 mm DIN standard studs @ 600 mm centres	31	3	3	75	30	41	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side							
	Studs	75 mm DIN standard studs @ 600 mm centres	32	4.5	4.5	100	30	43	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side							
	Studs	100 mm DIN standard studs @ 600 mm centres	33	6	5	125	30	43	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side							
	Studs	125 mm DIN standard studs @ 600 mm centres	34	7.9	5.5	150	30	43	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side							
<b>1S15/2</b>									
	Studs	75 mm DIN standard studs @ 600 mm centres	38	4.5	4.5	105	60	43	Severe
	Facings	1 layer 15 mm Fermacell Board each side							
<b>1S16</b>									
	Studs	75 mm DIN standard studs @ 600 mm centres	44	4.85	4.5	110	30	46	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board outer side							
	Studs	100 mm DIN standard studs @ 600 mm centres	45	6.65	5	135	30	48	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board outer side							
	Studs	125 mm DIN standard studs @ 600 mm centres	46	8.35	5.5	160	30	48	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board outer side							
<b>1S22</b>									
	Studs	75 mm DIN standard studs @ 600 mm centres	63	6.5	5.5	125	60	52	Severe
	Facings	2 layers 12.5 mm Fermacell Board each side							
	Studs	100 mm DIN standard studs @ 600 mm centres	63	8.95	6.5	150	60	54	Severe
	Facings	2 layers 12.5 mm Fermacell Board each side							
	Studs	125 mm DIN standard studs @ 600 mm centres	64	10.8	7.5	175	60	54	Severe
	Facings	2 layers 12.5 mm Fermacell Board each side							



## FERMACELL PARTITION WALLS ON STEEL WALLS WITHOUT INSULATION

SYSTEM SPECIFICATIONS			kg/m <sup>2</sup>	m	m	mm	mins	R <sub>w</sub>	Grade
			Wall Weight	Wall Height (Without Fire Rating)	Wall Height (With Fire Rating)	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
<b>1S23</b>									
	Studs	75 mm DIN standard studs @ 600 mm centres	67	7.65	5.5	130	60	57	Severe
	Facings	1 layer 12.5 mm plus 10 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board outer side	68	9.7	6.5	155	60	59	Severe
	Studs	100 mm DIN standard studs @ 600 mm centres	69	11.25	7.5	180	60	59	Severe
	Facings	1 layer 12.5 mm plus 10 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board outer side							
	Studs	125 mm DIN standard studs @ 600 mm centres							
	Facings	1 layer 12.5 mm plus 10 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board outer side							
<b>1S35</b>									
	Studs	75 mm DIN standard studs @ 600 mm centres	79	9.35	6.5	140	90	60	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 2 layers 10 mm Fermacell Board each outer side	80	11.25	7.5	165	90	62	Severe
	Studs	100 mm DIN standard studs @ 600 mm centres	81	12	8.5	190	90	62	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 2 layers 10 mm Fermacell Board each outer side							
	Studs	125 mm DIN standard studs @ 600 mm centres							
	Facings	1 layer 12.5 mm Fermacell Board each side plus 2 layers 10 mm Fermacell Board each outer side							

1S11

A cross-sectional diagram of a wall assembly. It consists of three main layers: an outer grey layer, a middle orange layer with a wavy pattern representing insulation, and an inner grey layer. A vertical crack is shown passing through the insulation layer, with a small gap at the top and bottom where the crack intersects the insulation.

Studs	50 mm DIN standard studs @ 500 mm centres	27	4	3	70	30	48	Heavy
Facings	1 layer 10 mm Fermacell Board each side							
Insulation	40 mm mineral wool density 40 kg/m³							
Studs	75 mm DIN standard studs @ 500 mm centres	28	4.55	4.5	95	30	48	Heavy
Facings	1 layer 10 mm Fermacell Board each side							
Insulation	40 mm mineral wool density 40 kg/m³							
Studs	100 mm DIN standard studs @ 500 mm centres	28	6.3	5	120	30	48	Heavy
Facings	1 layer 10 mm Fermacell Board each side							
Insulation	40 mm mineral wool density 40 kg/m³							
Studs	50 mm DIN standard studs @ 600 mm centres	34	3.7	3	75	30	48	Severe
Facings	1 layer 12.5 mm Fermacell Board each side							
Insulation	40 mm mineral wool density 40 kg/m³							
Studs	75 mm DIN standard studs @ 600 mm centres	34	4.5	4.5	100	30	52	Severe
Facings	1 layer 12.5 mm Fermacell Board each side							
Insulation	60 mm mineral wool density 20 kg/m³							
Studs	100 mm DIN standard studs @ 600 mm centres	35	6	5	125	30	52	Severe
Facings	1 layer 12.5 mm Fermacell Board each side							
Insulation	60 mm mineral wool density 20 kg/m³							
Studs	125 mm DIN standard studs @ 600 mm centres	37	7.9	5	150	30	54	Severe
Facings	1 layer 12.5 mm Fermacell Board each side							
Insulation	100 mm mineral wool density 20 kg/m³							

1S14

A cross-sectional diagram of a wall. The wall consists of a central brickwork section flanked by two layers of mortar. A vertical crack is shown passing through the mortar on the left, through the brickwork, and through the mortar on the right. The crack is wider at the top and bottom, suggesting water ingress.

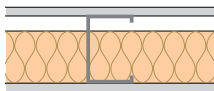


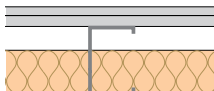

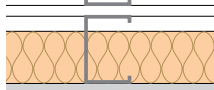
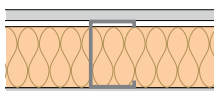


Studs	75 mm DIN standard studs @ 600 mm centres	46	5	4.5	110	30	55	Severe
Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board outer side							
Insulation	60 mm mineral wool density 20 kg/m³							
Studs	100 mm DIN standard studs @ 600 mm centres	46	6.65	5	135	30	57	Severe
Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board outer side							
Insulation	60 mm mineral wool density 20 kg/m³							

1521

A cross-sectional diagram of a wall. The wall is composed of a top layer (concrete or masonry) and a bottom layer (brickwork). A vertical crack runs through the wall. The crack is filled with a material labeled 'Grout'.

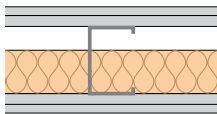
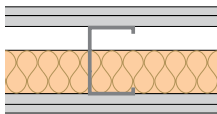
Studs	75 mm DIN standard studs @ 600 mm centres	35	5	4	100	60	52	Severe
Facings	1 layer 12.5 mm Fermacell Board each side							
Insulation	40 mm mineral wool density 45 kg/m³							

## FERMACELL PARTITION WALLS ON STEEL WALLS WITH INSULATION

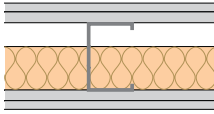
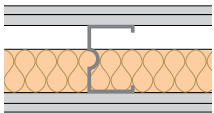
			kg/m <sup>2</sup>	m	m	mm	mins	R <sub>w</sub>	Grade
SYSTEM SPECIFICATIONS			Wall Weight	Wall Height (Without Fire Rating)	Wall Height (With Fire Rating)	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
1S21 (CONTINUED)									
	Studs	75 mm DIN standard studs @ 600 mm centres	35	5	4.5	100	60	54	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side							
	Insulation	60 mm mineral wool density 30 kg/m <sup>3</sup>							
	Studs	100 mm DIN standard studs @ 600 mm centres	35	6	5	125	60	52	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side							
	Insulation	40 mm mineral wool density 45 kg/m <sup>3</sup>							
	Studs	100 mm DIN standard studs @ 600 mm centres	35	6	5	125	60	54	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side							
	Insulation	60 mm mineral wool density 30 kg/m <sup>3</sup>							
1S24									
	Studs	50 mm DIN standard studs @ 600 mm centres	58	4	4	95	60	59	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side							
	Insulation	40 mm mineral wool density 20 kg/m <sup>3</sup>							
1S25									
	Studs	2 x 75 mm DIN standard studs @ 600 mm centres	38	3.5 <sup>(10)</sup>	3.5 <sup>(10)</sup>	≥180	60	60	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side		4 <sup>(9)</sup>	4 <sup>(9)</sup>				
	Insulation	60 mm mineral wool density 30 kg/m <sup>3</sup>		5 <sup>(11)</sup>	5 <sup>(11)</sup>				
	Studs	2 x 75 mm DIN standard studs @ 600 mm centres	38	3.5 <sup>(10)</sup>	3.5 <sup>(10)</sup>	≥180	60	57	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side		5 <sup>(9)</sup>	5 <sup>(9)</sup>				
	Insulation	40 mm mineral wool density 45 kg/m <sup>3</sup>		6 <sup>(11)</sup>	6 <sup>(11)</sup>				
1S29									
	Studs	50 mm DIN standard studs @ 600 mm centres	46	4	3	85	60	54	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board outer side							
	Insulation	40 mm mineral wool density 40 kg/m <sup>3</sup>							
	Studs	75 mm DIN standard studs @ 600 mm centres	46	5	5	110	60	56	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board outer side							
	Insulation	70 mm mineral wool density 30 kg/m <sup>3</sup> or 60 mm mineral wool density 35 kg/m <sup>3</sup>							
	Studs	100 mm DIN standard studs @ 600 mm centres	46	6.65	5	135	60	57	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board outer side							
	Insulation	70 mm mineral wool density 30 kg/m <sup>3</sup> or 60 mm mineral wool density 35 kg/m <sup>3</sup>							

(9) Wall thickness, heights and construction properties quoted are for separated steel stud partitions with U channels and C studs fixed parallel to each other and jointed with an isolation strip (for example a self adhesive insulation strip). No mechanical bracing across studs. (10) Wall thickness, heights and construction properties quoted are for separated steel stud partitions with U channels and C studs fixed parallel to each other without any jointing between the two separated stud sections. (11) Wall thickness, heights and construction properties quoted are for separated steel stud partitions with U channels and C studs fixed parallel to each other and connected to each other at <1/3 height with a fillet of board or an off-cut of steel stud.

### FERMACELL PARTITION WALLS ON STEEL WALLS WITH INSULATION

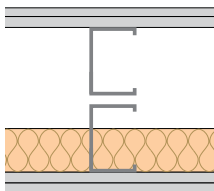
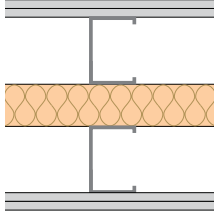
			Wall Weight	Wall Height (Without Fire Rating)	Wall Height (With Fire Rating)	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
SYSTEM SPECIFICATIONS			kg/m <sup>2</sup>	m	m	mm	mins	R <sub>w</sub>	Grade
1S31									
	Studs	50 mm DIN standard studs @ 500 mm centres	57	4.1	4	90	90	52	Severe
	Facings	2 layers 10 mm Fermacell Board each side							
	Insulation	40 mm mineral wool density 100 kg/m <sup>3</sup>							
	Studs	75 mm DIN standard studs @ 500 mm centres	57	6.4	4	115	90	60	Severe
	Facings	2 layers 10 mm Fermacell Board each side							
	Insulation	60 mm mineral wool density 30 kg/m <sup>3</sup>							
	Studs	100 mm DIN standard studs @ 500 mm centres	58	8.6	4	140	90	60	Severe
	Facings	2 layers 10 mm Fermacell Board each side							
	Insulation	60 mm mineral wool density 30 kg/m <sup>3</sup>							
1S31									
	Studs	50 mm DIN standard studs @ 600 mm centres	58	4	4	90	90	50	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side							
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup> or 60 mm mineral wool density 30 kg/m <sup>3</sup>							
	Studs	50 mm DIN standard studs @ 600 mm centres	64	4	4	100	90	50	Severe
	Facings	2 layers 12.5 mm Fermacell Board each side							
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup> or 60 mm mineral wool density 30 kg/m <sup>3</sup>							
	Studs	75 mm DIN standard studs @ 600 mm centres	58	6.1	5.5	120	90	62	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side							
	Insulation	60 mm mineral wool density 30 kg/m <sup>3</sup>							
	Studs	75 mm DIN standard studs @ 600 mm centres	64	6.5	5.5	125	90	62	Severe
	Facings	2 layers 12.5 mm Fermacell Board each side							
	Insulation	60 mm mineral wool density 30 kg/m <sup>3</sup>							
	Studs	100 mm DIN standard studs @ 600 mm centres	59	8.5	6.5	145	90	62	Severe
	Facings	1 layer 12.5 mm Fermacell Board plus 1 layer 10 mm Fermacell Board each outer side							
	Insulation	60 mm mineral wool density 30 kg/m <sup>3</sup>							
	Studs	100 mm DIN standard studs @ 600 mm centres	65	8.95	6.5	150	90	62	Severe
	Facings	2 layers 12.5 mm Fermacell Board each side							
	Insulation	60 mm mineral wool density 30 kg/m <sup>3</sup>							
Studs	100 mm DIN standard studs @ 600 mm centres	65	8.95	4.5	150	120	62	Severe	
Facings	2 layers 12.5 mm Fermacell Board each side								
Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup>								

## FERMACELL PARTITION WALLS ON STEEL WALLS WITH INSULATION

		Wall Weight	Wall Height (Without Fire Rating)	Wall Height (With Fire Rating)	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
SYSTEM SPECIFICATIONS		kg/m <sup>2</sup>	m	m	mm	mins	R <sub>w</sub>	Grade
<b>1S31 (CONTINUED)</b>								
	Studs	125 mm DIN standard studs @ 600 mm centres						
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side						
	Insulation	60 mm mineral wool density 30 kg/m <sup>3</sup>						
	Studs	125 mm DIN standard studs @ 600 mm centres						
	Facings	2 layers 12.5 mm Fermacell Board each side						
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup>						
<b>1S31W</b>								
	Studs	75 mm DIN standard studs @ 600 mm centres						
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side						
	Insulation	60 mm mineral wool density 50 kg/m <sup>3</sup> or 60 mm mineral wool density 35 kg/m <sup>3</sup>						
	Studs	75 mm DIN standard studs @ 600 mm centres						
	Facings	2 layers 12.5 mm Fermacell Board each side						
	Insulation	60 mm mineral wool density 50 kg/m <sup>3</sup> or 60 mm mineral wool density 35 kg/m <sup>3</sup>						
	Studs	100 mm DIN standard studs @ 600 mm centres						
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side						
	Insulation	60 mm mineral wool density 50 kg/m <sup>3</sup> or 60 mm mineral wool density 35 kg/m <sup>3</sup>						
	Studs	100 mm DIN standard studs @ 600 mm centres						
	Facings	2 layers 12.5 mm Fermacell Board each side						
	Insulation	60 mm mineral wool density 50 kg/m <sup>3</sup> or 60 mm mineral wool density 35 kg/m <sup>3</sup>						

(9) Wall thickness, heights and construction properties quoted are for separated steel stud partitions with U channels and C studs fixed parallel to each other and jointed with an isolation strip (for example a self adhesive insulation strip). No mechanical bracing across studs. (10) Wall thickness, heights and construction properties quoted are for separated steel stud partitions with U channels and C studs fixed parallel to each other without any jointing between the two separated stud sections. (11) Wall thickness, heights and construction properties quoted are for separated steel stud partitions with U channels and C studs fixed parallel to each other and connected to each other at <1/3 height with a fillet of board or an off-cut of steel stud.

### FERMACELL PARTITION WALLS ON STEEL WALLS WITH INSULATION

			Wall Weight	Wall Height (Without Fire Rating)	Wall Height (With Fire Rating)	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
SYSTEM SPECIFICATIONS			kg/m <sup>2</sup>	m	m	mm	mins	R <sub>w</sub>	Grade
1S32									
 <p>Robust detail solution must have a minimum cavity gap of 100 mm between inner board faces.</p>	Studs	2 x 50 mm DIN standard studs @ 600 mm centres	60	3.5 <sup>(9)</sup> , 3.15 <sup>(10)</sup> , 4.5 <sup>(11)</sup>	3.5 <sup>(9)</sup> , 3.15 <sup>(10)</sup> , 4.5 <sup>(11)</sup>	≥150	90	62	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side							
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup> or 60 mm mineral wool density 35 kg/m <sup>3</sup>							
	Studs	2 x 50 mm DIN standard studs @ 600 mm centres	68	3.5 <sup>(9)</sup> , 3.2 <sup>(10)</sup> , 4.5 <sup>(11)</sup>	3.5 <sup>(9)</sup> , 3.2 <sup>(10)</sup> , 4.5 <sup>(11)</sup>	≥155	90	62	Severe
	Facings	2 layers 12.5 mm Fermacell Board each side							
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup> or 60 mm mineral wool density 35 kg/m <sup>3</sup>							
	Studs	2 x 75 mm DIN standard studs @ 600 mm centres	60	4.5 <sup>(9)</sup> , 3.5 <sup>(10)</sup> , 6.5 <sup>(11)</sup>	4 <sup>(9)</sup> , 3.5 <sup>(10)</sup> , 5 <sup>(11)</sup>	≥200	90	64	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side							
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup> or 60 mm mineral wool density 35 kg/m <sup>3</sup>							
	Studs	2 x 75 mm DIN standard studs @ 600 mm centres	69	4.5 <sup>(9)</sup> , 3.5 <sup>(10)</sup> , 6.5 <sup>(11)</sup>	4 <sup>(9)</sup> , 3.5 <sup>(10)</sup> , 5 <sup>(11)</sup>	≥205	90	64	Severe
	Facings	2 layers 12.5 mm Fermacell Board each side							
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup> or 60 mm mineral wool density 35 kg/m <sup>3</sup>							
1S32/2									
	Studs	2 x 75 mm DIN standard studs @ 500 mm centres	61	3.5 <sup>(10)</sup> , 3.5 <sup>(11)</sup>	≥205	60	64	Severe	
	Facings	2 layers 10 mm Fermacell Board each side							
	Insulation	50 mm mineral wool density 33–60 kg/m <sup>3</sup>							

(9) Wall thickness, heights and construction properties quoted are for separated steel stud partitions with U channels and C studs fixed parallel to each other and jointed with an isolation strip (for example a self adhesive insulation strip). No mechanical bracing across studs. (10) Wall thickness, heights and construction properties quoted are for separated steel stud partitions with U channels and C studs fixed parallel to each other without any jointing between the two separated stud sections. (11) Wall thickness, heights and construction properties quoted are for separated steel stud partitions with U channels and C studs fixed parallel to each other and connected to each other at <1/3 height with a fillet of board or an off-cut of steel stud.



## FERMACELL PARTITION WALLS ON STEEL WALLS WITH INSULATION

SYSTEM SPECIFICATIONS			kg/m <sup>2</sup>	m	m	mm	mins	R <sub>w</sub>	Grade
			Wall Weight	Wall Height (Without Fire Rating)	Wall Height (With Fire Rating)	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
<b>1S33</b>									
	Studs	75 mm DIN standard studs @ 900 mm centres							
	Facings	1 layer 18 mm Fermacell Board each side	50	4	4	111	90	57	Severe
	Insulation	60 mm mineral wool density 50 kg/m <sup>3</sup>							
	Studs	100 mm DIN standard studs @ 900 mm centres							
	Facings	1 layer 18 mm Fermacell Board each side	50	6.05	5	136	90	57	Severe
	Insulation	60 mm mineral wool density 50 kg/m <sup>3</sup>							
	Studs	100 mm DIN standard studs @ 900 mm centres							
	Facings	1 layer 18 mm Fermacell Board each side	50	4.5	4.5	136	120	57	Severe
	Insulation	80 mm mineral wool density 50 kg/m <sup>3</sup>							
<b>1S34/1</b>									
	Studs	125 mm DIN standard studs @ 600 mm centres							
	Facings	1 layer 12.5 mm plus 10 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board outer side	71	10.8	7	180	90	62	Severe
	Insulation	40 mm mineral wool density 40 kg/m <sup>3</sup>							
<b>1S34/2</b>									
	Studs	125 mm DIN standard studs @ 600 mm centres							
	Facings	1 layer 12.5 mm Fermacell Board each side plus 2 layers 10 mm Fermacell Board each outer side	81	12	9	190	90	63	Severe
	Insulation	40 mm mineral wool density 40 kg/m <sup>3</sup>							
	Studs	125 mm DIN standard studs @ 600 mm centres							
	Facings	1 layer 12.5 mm Fermacell Board each side plus 2 layers 10 mm Fermacell Board each outer side	81	12	7	190	120	63	Severe
	Insulation	40 mm mineral wool density 40 kg/m <sup>3</sup>							
<b>1S36</b>									
	Studs	2 x 75 mm DIN standard studs @ 600 mm centres							
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side	73	4.5	4 <sup>(10)</sup>	≥230 <sup>(10)</sup>	90	70	Severe
	Insulation	2 x 60 mm mineral wool density 30 kg/m <sup>3</sup>							
	Studs	2 x 75 mm DIN standard studs @ 600 mm centres							
	Facings	2 layers 12.5 mm Fermacell Board each side	79	4.5	4 <sup>(10)</sup>	≥235 <sup>(10)</sup>	90	70	Severe
	Insulation	2 x 60 mm mineral wool density 30 kg/m <sup>3</sup>							
	Studs	2 x 100 mm DIN standard studs @ 600 mm centres							
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side	74	4.5	4 <sup>(10)</sup>	≥280 <sup>(10)</sup>	90	71	Severe
	Insulation	2 x 80 mm mineral wool density 90 kg/m <sup>3</sup>							
	Studs	2 x 100 mm DIN standard studs @ 600 mm centres							
	Facings	2 layers 12.5 mm Fermacell Board each side	80	4.5	4 <sup>(10)</sup>	≥285 <sup>(10)</sup>	90	71	Severe
	Insulation	2 x 80 mm mineral wool density 90 kg/m <sup>3</sup>							

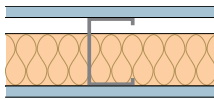
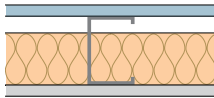
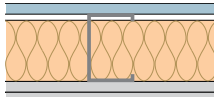
(9) Wall thickness, heights and construction properties quoted are for separated steel stud partitions with U channels and C studs fixed parallel to each other and jointed with an isolation strip (for example a self adhesive insulation strip). No mechanical bracing across studs. (10) Wall thickness, heights and construction properties quoted are for separated steel stud partitions with U channels and C studs fixed parallel to each other without any jointing between the two separated stud sections. (11) Wall thickness, heights and construction properties quoted are for separated steel stud partitions with U channels and C studs fixed parallel to each other and connected to each other at <1/3 height with a fillet of board or an off-cut of steel stud.

### FERMACELL PARTITION WALLS ON STEEL WALLS WITH INSULATION

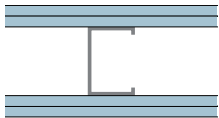
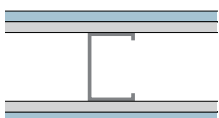
			Wall Weight	Wall Height (Without Fire Rating)	Wall Height (With Fire Rating)	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
SYSTEM SPECIFICATIONS			kg/m <sup>2</sup>	m	m	mm	mins	R <sub>w</sub>	Grade
1S41									
	Studs	75 mm DIN standard studs @ 600 mm centres	76	5.5	5	135	120	62	Severe
	Facings	1 layer 15 mm Fermacell Board each side plus 1 layer 12.5 mm Fermacell Board each outer side							
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup>							
	Studs	100 mm DIN standard studs @ 600 mm centres	77	6.5	6	160	120	62	Severe
	Facings	1 layer 15 mm Fermacell Board each side plus 1 layer 12.5 mm Fermacell Board each outer side							
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup>							
	Studs	125 mm DIN standard studs @ 600 mm centres	77	7	6.5	185	120	62	Severe
	Facings	1 layer 15 mm Fermacell Board each side plus 1 layer 12.5 mm Fermacell Board each outer side							
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup>							
1S42									
	Studs	2 x 75 mm DIN standard studs @ 600 mm centres	72	6.5 (11)	6.5 (11)	≥215	120	62	Severe
	Facings	1 layer 15 mm Fermacell Board each side plus 1 layer 12.5 mm Fermacell Board each outer side							
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup>							
	Studs	2 x 75 mm DIN standard studs @ 600 mm centres	78	6.5 (11)	6.5 (11)	≥220	120	62	Severe
	Facings	2 layers 15 mm Fermacell Board each side							
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup>							
Robust Detail compliant									
1S51									
	Studs	100 mm DIN standard studs @ 600 mm centres	89	6.5	6	170	180	64	Severe
	Facings	2 layers 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side							
	Insulation	80 mm mineral wool density 50 kg/m <sup>3</sup>							
	Studs	125 mm DIN standard studs @ 600 mm centres	89	7	6.5	195	180	64	Severe
	Facings	2 layers 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side							
	Insulation	80 mm mineral wool density 50 kg/m <sup>3</sup>							
1S52									
	Studs	75 mm DIN standard studs @ 600 mm centres	90	6.5	6.5	≥220 (11)	180	64	Severe
	Facings	2 layers 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side							
	Insulation	80 mm mineral wool density 50 kg/m <sup>3</sup>							
Robust Detail compliant									

(9) Wall thickness, heights and construction properties quoted are for separated steel stud partitions with U channels and C studs fixed parallel to each other and jointed with an isolation strip (for example a self adhesive insulation strip). No mechanical bracing across studs. (10) Wall thickness, heights and construction properties quoted are for separated steel stud partitions with U channels and C studs fixed parallel to each other without any jointing between the two separated stud sections. (11) Wall thickness, heights and construction properties quoted are for separated steel stud partitions with U channels and C studs fixed parallel to each other and connected to each other at <1/3 height with a fillet of board or an off-cut of steel stud.

FERMACELL H<sub>2</sub>O PARTITION WALLS ON STEEL STUD

			Wall Weight	Wall Height (Without Fire Rating)	Wall Height (With Fire Rating)	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
SYSTEM SPECIFICATIONS			kg/m <sup>2</sup>	m	m	mm	mins	R <sub>w</sub>	Grade
1S11 H <sub>2</sub> O									
	Studs	75 mm DIN standard studs @ 600 mm centres	30	4.5	4.5	100	30	49	Heavy
	Facings	1 layer 12.5 mm Powerpanel H <sub>2</sub> O each side							
	Insulation	60 mm mineral wool density 25 kg/m <sup>3</sup>							
	Studs	100 mm DIN standard studs @ 600 mm centres	30	5	5	125	30	49	Heavy
	Facings	1 layer 12.5 mm Powerpanel H <sub>2</sub> O each side							
	Insulation	60 mm mineral wool density 25 kg/m <sup>3</sup>							
1S12 H <sub>2</sub> O									
	Studs	50 mm DIN standard studs @ 600 mm centres	33	3.7	3	75	30	49	Heavy
	Facings	1 layer 12.5 mm Powerpanel H <sub>2</sub> O inner side plus 1 layer 12.5 mm Fermacell Board outer side							
	Insulation	40 mm mineral wool density 50 kg/m <sup>3</sup>							
	Studs	75 mm DIN standard studs @ 600 mm centres	33	4.2	4.2	100	30	51	Heavy
	Facings	1 layer 12.5 mm Powerpanel H <sub>2</sub> O inner side plus 1 layer 12.5 mm Fermacell Board outer side							
	Insulation	60 mm mineral wool density 25 kg/m <sup>3</sup>							
	Studs	100 mm DIN standard studs @ 600 mm centres	33	6	5	125	30	51	Heavy
	Facings	1 layer 12.5 mm Powerpanel H <sub>2</sub> O inner side plus 1 layer 12.5 mm Fermacell Board outer side							
	Insulation	60 mm mineral wool density 25 kg/m <sup>3</sup>							
1S13 H <sub>2</sub> O									
	Studs	50 mm DIN standard studs @ 600 mm centres	48	4	3	85	30	56	Severe
	Facings	1 layer 12.5 mm Powerpanel H <sub>2</sub> O on inner side plus 1 layer 12.5 mm plus 10 mm Fermacell Board outer side							
	Insulation	60 mm mineral wool density 25 kg/m <sup>3</sup>							
	Studs	75 mm DIN standard studs @ 600 mm centres	48	5	4.5	110	30	56	Severe
	Facings	1 layer 12.5 mm Powerpanel H <sub>2</sub> O on inner side plus 1 layer 12.5 mm plus 10 mm Fermacell Board outer side							
	Insulation	60 mm mineral wool density 25 kg/m <sup>3</sup>							
	Studs	100 mm DIN standard studs @ 600 mm centres	48	7.2	5	135	30	56	Severe
	Facings	1 layer 12.5 mm Powerpanel H <sub>2</sub> O on inner side plus 1 layer 12.5 mm plus 10 mm Fermacell Board outer side							
	Insulation	60 mm mineral wool density 25 kg/m <sup>3</sup>							

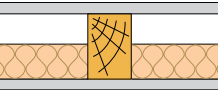

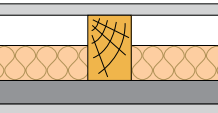
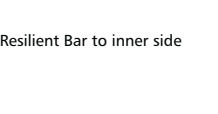
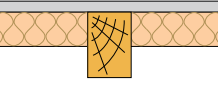
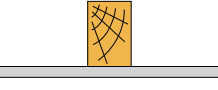

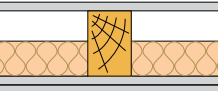

### FERMACELL H<sub>2</sub>O PARTITION WALLS ON STEEL STUDS WITH INSULATION

				Wall Weight	Wall Height (Without Fire Rating)	Wall Height (With Fire Rating)	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
SYSTEM SPECIFICATIONS				kg/m <sup>2</sup>	m	m	mm	mins	R <sub>w</sub>	Grade
1S41 H <sub>2</sub> O										
	Studs	75 mm DIN standard studs @ 600 mm centres		55	4	4	125	90	57	Severe
	Facings	2 layers 12.5 mm Powerpanel H <sub>2</sub> O each side								
	Insulation	60 mm mineral wool density 25 kg/m <sup>3</sup>								
	Studs	100 mm @ 600 mm centres		55	5.85	5.85	150	90	57	Severe
	Facings	2 layers 12.5 mm Powerpanel H <sub>2</sub> O each side								
	Insulation	60 mm mineral wool density 25 kg/m <sup>3</sup>								
1S42 H <sub>2</sub> O										
	Studs	75 mm DIN standard studs @ 600 mm centres		60	4.85	4.85	125	120	60	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 12.5 mm Powerpanel H <sub>2</sub> O each outer side								
	Insulation	60 mm mineral wool density 25 kg/m <sup>3</sup>								
	Studs	100 mm @ 600 mm centres		60	7.45	6.5	150	120	60	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 12.5 mm Powerpanel H <sub>2</sub> O each outer side								
	Insulation	60 mm mineral wool density 25 kg/m <sup>3</sup>								

## FERMACELL TIMBER WALLS WITH INSULATION – NON LOADBEARING

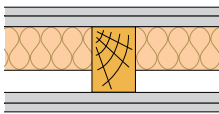
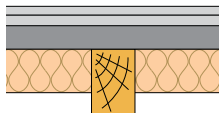
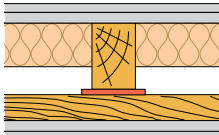
			Wall Weight	Wall Height	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
SYSTEM SPECIFICATIONS			kg/m <sup>2</sup>	m	mm	mins	R <sub>w</sub>	Grade
1H11								
	Studs	60 mm x 40 mm @ 600 mm centres	38	3.1	85	30	44	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side						
	Insulation	40 mm mineral wool density 30 kg/m³						
	Studs	80 mm x 40 mm @ 600 mm centres	40	4.1	105	30	44	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side						
	Insulation	40 mm mineral wool density 30 kg/m³						
	Studs	75 mm x 50 mm @ 600 mm centres	41	4.1	100	30	47	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side						
	Insulation	70 mm mineral wool density 30 kg/m³						
	Studs	89 mm x 38 mm @ 600 mm centres	40	4.1	114	30	44	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side						
	Insulation	40 mm mineral wool density 30 kg/m³						
1H12								
	Studs	60 mm x 40 mm @ 500 mm centres	32	3.1	80	30	44	Heavy
	Facings	1 layer 10 mm Fermacell Board each side						
	Insulation	40 mm mineral wool density 30 kg/m³						
	Studs	80 mm x 40 mm @ 500 mm centres	34	4.1	100	30	44	Heavy
	Facings	1 layer 10 mm Fermacell Board each side						
	Insulation	40 mm mineral wool density 30 kg/m³						
	Studs	75 mm x 50 mm @ 500 mm centres	35	4.1	95	30	44	Heavy
	Facings	1 layer 10 mm Fermacell Board each side						
	Insulation	40 mm mineral wool density 30 kg/m³						
	Studs	89 mm x 38 mm @ 500 mm centres	34	4.1	109	30	44	Heavy
	Facings	1 layer 10 mm Fermacell Board each side						
	Insulation	40 mm mineral wool density 30 kg/m³						
1H15								
	Studs	2 x 60 mm x 40 mm @ 600 mm centres with 30 mm air gap	41	3.1	175	30	57	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side						
	Insulation	2 x 60 mm mineral wool density 20 kg/m³						
	Studs	2 x 50 mm x 75 mm @ 600 mm centres with 30 mm air gap	41	3.1	205	30	57	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side						
	Insulation	2 x 60 mm mineral wool density 20 kg/m³						
	Studs	2 x 38 mm x 89 mm @ 600 mm centres with 30 mm air gap	41	3.1	233	30	57	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side						
	Insulation	2 x 60 mm mineral wool density 20 kg/m³						

### FERMACELL TIMBER WALLS WITH INSULATION – NON LOADBEARING

			Wall Weight	Wall Height	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
			kg/m²	m	mm	mins	R <sub>w</sub>	Grade
<b>SYSTEM SPECIFICATIONS</b>								
<b>1H22</b>								
	Studs	75 mm x 50 mm @ 600 mm centres	40	4.1	100	60	44	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side						
	Insulation	40 mm mineral wool density 45 kg/m³ or 60 mm mineral wool density 30 kg/m³						
	Insulation	70 mm x 30 kg/m³					47	
	Studs	89 mm x 38 @ 600 mm centres	41	4.1	114	60	44	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side						
	Insulation	40 mm mineral wool density 45 kg/m³ or 60 mm mineral wool density 30 kg/m³						
	Insulation	70 mm x 30 kg/m³					47	
<b>1H22RB</b>								
	Studs	75 mm x 50 mm @ 600 mm centres	40	4.1	100	60	52	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side						
	Insulation	40 mm mineral wool density 45 kg/m³ or 60 mm mineral wool density 30 kg/m³						
	Studs	89 mm x 38 @ 600 mm centres	41	4.1	114	60	52	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side						
	Insulation	40 mm mineral wool density 45 kg/m³ or 60 mm mineral wool density 30 kg/m³						
<b>1H23</b>								
	Studs	2 x 60 mm x 40 mm @ 600 mm centres with 30 mm air gap	42	3.1	175	60	57	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side						
	Insulation	70 mm mineral wool density 30 kg/m³						
	Studs	2 x 75 mm x 50 mm @ 600 mm centres with 30 mm air gap	43	3.1	205	60	57	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side						
	Insulation	70 mm mineral wool density 30 kg/m³						
	Studs	2 x 89 mm x 38 mm @ 600 mm centres with 30 mm air gap	43	3.1	233	60	57	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side						
	Insulation	70 mm mineral wool density 30 kg/m³						
<b>1H29</b>								
	Studs	75 mm x 50 mm @ 600 mm centres	53	4.1	110	60	51	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board outer side						
	Insulation	70 mm mineral wool density 30 kg/m³						
	Studs	89 mm x 38 mm @ 600 mm centres	53	4.1	124	60	51	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board outer side						
	Insulation	70 mm mineral wool density 30 kg/m³						




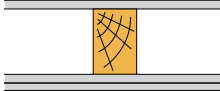
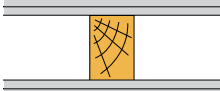
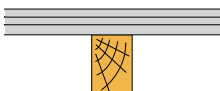
## FERMACELL TIMBER WALLS WITH INSULATION – NON LOADBEARING

			Wall Weight	Wall Height	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
SYSTEM SPECIFICATIONS			kg/m <sup>2</sup>	m	mm	mins	R <sub>w</sub>	Grade
1H31								
	Studs	60 mm x 40 mm @ 600 mm centres	62	3.1	105	90	51	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side						
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup> or 70 mm mineral wool density 30 kg/m <sup>3</sup>						
	Studs	80 mm x 40 mm @ 600 mm centres	64	4.1	125	90	54	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side						
	Insulation	70 mm mineral wool density 30 kg/m <sup>3</sup>						
	Studs	75 mm x 50 mm @ 600 mm centres	64	4.1	120	90	54	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side						
	Insulation	70 mm mineral wool density 30 kg/m <sup>3</sup>						
	Studs	89 mm x 38 mm @ 600 mm centres	64	4.1	134	90	54	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side						
	Insulation	70 mm mineral wool density 30 kg/m <sup>3</sup>						
1H31RB								
 Resilient Bar to inner side	Studs	75 mm x 50 mm @ 600 mm centres	64	4.1	120	90	60	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side						
	Insulation	70 mm mineral wool density 30 kg/m <sup>3</sup>						
	Studs	89 mm x 38 mm @ 600 mm centres	64	4.1	134	90	60	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side						
	Insulation	70 mm mineral wool density 30 kg/m <sup>3</sup>						
1H32								
	Studs	75 mm x 50 @ 600 mm centres (one-sided traverse 30/50 timber without mineral wool strip)	65	3.6	150	90	54	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side						
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup>						
	Studs	75 mm x 50 mm @ 600 mm centres (one-sided traverse 30/50 timber with mineral wool strip)	65	3.6	150	90	57	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side						
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup>						

### FERMACELL TIMBER WALLS WITH INSULATION – NON LOADBEARING

		Wall Weight	Wall Height	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
SYSTEM SPECIFICATIONS		kg/m <sup>2</sup>	m	mm	mins	R <sub>w</sub>	Grade
<b>1H35</b>							
	Studs	2 x 60 mm x 40 mm @ 600 mm centres with 10 mm air gap					
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side	65	3.1	175	90	66
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup>					
	Studs	2 x 75 mm x 50 mm @ 600 mm centres with 10 mm air gap					
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side	69	4.1	205	90	66
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup>					
	Studs	2 x 89 mm x 38 mm @ 500 mm centres with 10 mm air gap					
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side	70	4.1	233	90	66
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup>					
	Insulation	50 mm mineral wool density 50 kg/m <sup>3</sup>					
<b>1H36</b>							
	Studs	2 x 75 mm x 50 mm @ 600 mm centres with 30 mm air gap					
	Facings	2 layers 10 mm Fermacell Board each side	41	4.1	280	60	62
	Insulation	2 x 60 mm mineral wool density 20 kg/m <sup>3</sup>					
	Studs	2 x 50 mm x 100 mm @ 500 mm centres with 30 mm air gap					
	Facings	2 layers 12.5 mm Fermacell Board each side	41	4.1	290	60	62
	Insulation	2 x 60 mm mineral wool density 20 kg/m <sup>3</sup>					
Robust Detail compliant							
<b>1H37</b>							
	Studs	2 x 75 mm x 50 mm @ 500 mm centres with 90 mm air gap					
	Facings	2 layers 12.5 mm Fermacell Board each side	41	4.1	230	60	64
	Insulation	2 x 60 mm mineral wool density 20 kg/m <sup>3</sup>					
	Studs	2 x 89 mm x 38 mm @ 600 mm centres with 90 mm air gap					
	Facings	2 layers 12.5 mm Fermacell Board each side	41	3.1	233	30	57
	Insulation	2 x 60 mm mineral wool density 20 kg/m <sup>3</sup>					
Robust Detail compliant							

## FERMACELL TIMBER WALLS WITHOUT INSULATION – NON LOADBEARING

			Wall Weight	Wall Height	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
SYSTEM SPECIFICATIONS			kg/m <sup>2</sup>	m	mm	mins	R <sub>w</sub>	Grade
1H13								
	Studs	60 mm x 40 mm @ 600 mm centres	37	3.1	85	30	41	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side						
	Studs	80 mm x 40 mm @ 600 mm centres	39	4.1	105	30	41	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side						
	Studs	75 mm x 50 mm @ 600 mm centres	40	4.1	100	30	41	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side						
	Studs	89 mm x 38 mm @ 600 mm centres	40	4.1	114	30	41	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side						
	Studs	75 mm x 50 mm @ 600 mm centres	46	4.1	100	60	41	Severe
	Facings	1 layer 15 mm Fermacell Board each side						
1H14								
	Studs	75 mm x 50 mm @ 600 mm centres	52	4.1	110	30	43	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board outer side						
	Studs	89 mm x 38mm @ 600 mm centres	52	4.1	124	30	43	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board outer side						
1H21								
	Studs	75 mm x 50 mm @ 500 mm centres	61	4.1	115	60	48	Severe
	Facings	2 layers 10 mm Fermacell Board each side						
	Studs	75 mm x 50 mm @ 600 mm centres	67	4.1	120	60	51	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side						
	Studs	89 mm x 38 mm @ 500 mm centres	61	4.1	129	60	48	Severe
	Facings	2 layers 10 mm Fermacell Board each side						
	Studs	89 mm x 38 mm @ 600 mm centres	67	4.1	134	60	51	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 1 layer 10 mm Fermacell Board each outer side						
Similar performance is achievable by using 40 mm x 60 mm studs, and 40 mm x 80 mm studs with the same boarding and insulation configurations.								
1H33								
	Studs	60 mm x 40 mm @ 600 mm centres	83	3.1	125	90	54	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 2 layers 10 mm Fermacell Board each outer side						
	Studs	80 mm x 40 mm @ 600 mm centres	83	4.1	145	90	54	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 2 layers 10 mm Fermacell Board each outer side						
	Studs	75 mm x 50 mm @ 600 mm centres	83	4.1	140	90	54	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 2 layers 10 mm Fermacell Board each outer side						
	Studs	89 mm x 38 mm @ 600 mm centres	83	4.1	154	90	54	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side plus 2 layers 10 mm Fermacell Board each outer side						

# PARTITIONS

## PERFORMANCE DETAILS

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### FERMACELL TIMBER WALLS – H<sub>2</sub>O

Partitions

Introduction

Linings

Components & Accessories

Floorings  
& Ceilings

Fire Protection

Detailed Overview

Timber Frames

Component Details

Rainscreens

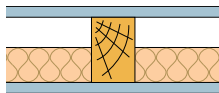
Installation Overview

Fix & Finish

Performance Details

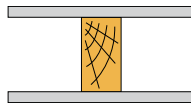
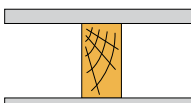
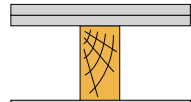
#### SYSTEM SPECIFICATIONS

##### 1H13 H<sub>2</sub>O

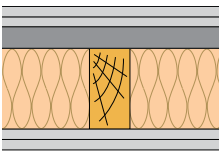
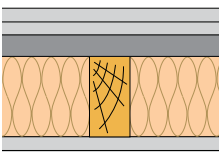
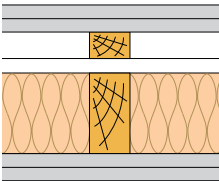


			Wall Weight	Wall Height (Without Fire Rating)	Wall Height (With Fire Rating)	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
			kg/m <sup>2</sup>	m	m	mm	mins	R <sub>w</sub>	Grade
	Studs	60 mm x 40 mm @ 600 mm centres	33	3.1	3.1	85	30	40	Severe
	Facings	1 layer 12.5 mm Fermacell Powerpanel H <sub>2</sub> O Board each side							
	Insulation	60 mm mineral wool density 25 kg/m <sup>3</sup>							
	Studs	75 mm x 50 mm @ 600 mm centres	35	4.1	4.1	100	30	40	Severe
	Facings	1 layer 12.5 mm Fermacell Powerpanel H <sub>2</sub> O Board each side							
	Insulation	60 mm mineral wool density 25 kg/m <sup>3</sup>							
	Studs	89 mm x 38 mm @ 600 mm centres	36	4.1	4.1	114	30	40	Severe
	Facings	1 layer 12.5 mm Fermacell Powerpanel H <sub>2</sub> O Board each side							
	Insulation	60 mm mineral wool density 25 kg/m <sup>3</sup>							

## FERMACELL TIMBER WALLS WITH INSULATION – LOADBEARING

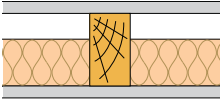

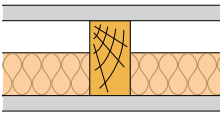
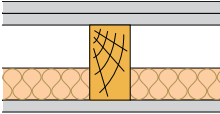
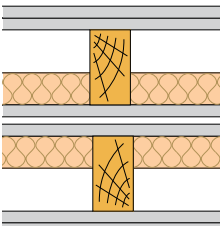
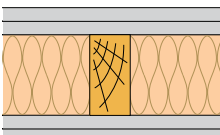
			Applied Load	Wall Weight	Wall Height	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
SYSTEM SPECIFICATIONS			N/mm <sup>2</sup>	kg/m <sup>2</sup>	m	mm	mins	R <sub>w</sub>	Grade
1HT14									
	Studs	80 mm x 60 mm @ 600 mm centres	2.5	35	3	105	30	41	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side							
	Studs	75 mm x 50 mm @ 600 mm centres	N/A	35	3	100	30	41	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side							
	Studs	89 mm x 38 mm @ 600 mm centres	5.56 kN per stud	35	2.6	114	30	41	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side							
1HT15									
	Studs	80 mm x 40 mm @ 600 mm centres	2	39	3	110	30	41	Severe
	Facings	1 layer 15 mm Fermacell Board each side							
	Studs	75 mm x 50 mm @ 600 mm centres	N/A	39	3	105	30	41	Severe
	Facings	1 layer 15 mm Fermacell Board each side							
	Studs	89 mm x 38 mm @ 600 mm centres	5.56 kN per stud	39	2.6	119	30	41	Severe
	Facings	1 layer 15 mm Fermacell Board each side							
1HT21									
	Studs	80 mm x 50 mm @ 600 mm centres	2.5	64	2.6	130	60	47	Severe
	Facings	2 layers 12.5 mm Fermacell Board each side							

### FERMACELL TIMBER WALLS WITH INSULATION – LOADBearing

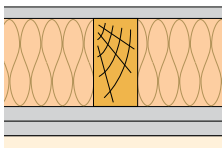
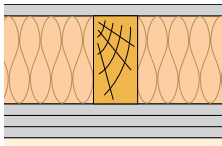
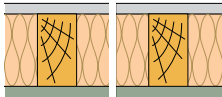
			Applied Load	Wall Weight	Wall Height	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
			N/ mm <sup>2</sup>	kg/m <sup>2</sup>	m	mm	mins	R <sub>w</sub>	Grade
SYSTEM SPECIFICATIONS									
1HT 32-2RB									
	Studs	140 mm x 60 mm @ 600 mm centres	2	78	3.5	≈ 215	90	≥60	Severe
	Facings	2 layers 12.5 mm Fermacell Board each side with a resilient bar to inner side							
	Insulation	140 mm mineral wool density 30 kg/m <sup>3</sup>							
Resilient Bar to inner side									
1HT 32-12RB									
	Studs	140 mm x 60 mm @ 600 mm centres	2	≈ 94	3.5	≈ 225	90	≥60	Severe
	Facings	2 layers 15 mm Fermacell Board each side with a resilient bar to one side							
	Insulation	140 mm Homatherm							
Resilient Bar to inner side									
1HT 35-1									
	Studs	100 mm x 60 mm @ 600 mm centres plus 60 mm x 45 mm @ 600 mm centres	2.5	87	3.5	230	90	66	Severe
	Facings	2 layers 15 mm Fermacell Board each side							
	Insulation	100 mm mineral wool density 30 kg/m <sup>3</sup>							



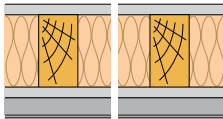
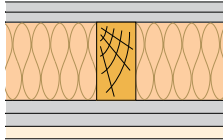
## FERMACELL TIMBER WALLS WITHOUT INSULATION – NON LOADBEARING

SYSTEM SPECIFICATIONS			Applied Load N/mm <sup>2</sup>	Wall Weight kg/m <sup>2</sup>	Wall Height m	Wall Thickness mm	Fire Rating mins	Sound Insulation R <sub>w</sub>	BS 5234/ DIN 4103 Grade
<b>1HT11</b>									
	Studs	80 mm x 40 mm @ 600 mm centres	2.5	40	3	105	30	44	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side							
	Insulation	40 mm mineral wool density 30 kg/m <sup>3</sup>							
	Studs	75 mm x 50 mm @ 600 mm centres	2.5	40	3	100	30	44	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side							
	Insulation	40 mm mineral wool density 30 kg/m <sup>3</sup>							
	Studs	89 mm x 38 mm @ 600 mm centres	5.56 kN per stud	41	2.6	114	30	44	Severe
	Facings	1 layer 12.5 mm Fermacell Board each side							
	Insulation	90 mm mineral wool density 10 kg/m <sup>3</sup> or 40 mm mineral wool density 30 kg/m <sup>3</sup>							
<b>1HT22</b>									
	Studs	120 mm x 45 mm @ 600 mm centres	2	48	3	150	60	≥46	Severe
	Facings	1 layer 15 mm Fermacell Board each side							
	Insulation	120 mm mineral wool density 30 kg/m <sup>3</sup>							
<b>1HT23</b>									
	Studs	89 mm x 38 mm @ 600 mm centres	5.56 kN per stud	56	2.6	127	60/ 30 <sup>†</sup>	≥46	Severe
	Facings	2 layers 12.5 mm Fermacell Board inner side plus 1 layer 12.5 mm Fermacell Board outer side							
	Insulation	90 mm mineral wool density 10 kg/m <sup>3</sup>							
<b>1HT23 – Twin Wall</b>									
	Studs	2 x 89 mm x 38 mm @ 600 mm centres	5.56 kN per stud	112	2.6	270	60	≥66	Severe
	Facings	2 layers 12.5 mm Fermacell Board inner side plus 2 layers 12.5 mm Fermacell Board outer side. Inner cavity single layer may be timber based product. Refer to Fermacell technical information							
	Insulation	2 x 90 mm mineral wool density 10 kg/m <sup>3</sup>							
<b>1HT 31-6</b>									
	Studs	100 mm x 60 mm @ 600 mm centres	2.5	84	3.5	160	90	≥51	Severe
	Facings	2 layers 15 mm Fermacell Board each side							
	Insulation	100 mm mineral wool density 20 kg/m <sup>3</sup>							

## FERMACELL NON EXPOSED SEPARATING WALLS – LOADBEARING

				Applied Load	Wall Weight	Wall Height	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103	
SYSTEM SPECIFICATIONS				N/ mm <sup>2</sup>	kg/m <sup>2</sup>	m	mm	mins	R <sub>w</sub>	Grade	
1HG31-1											
 <p>External protection sheeting material as required. Contact Fermacell technical helpline for further information.</p>	Studs	100 mm x 60 mm @ 600 mm centres			2.5	63	3	142.5	30/ 90**	68 <sup>†</sup>	Severe
	Facings	1 layer 12.5 mm Fermacell Board inner side plus 2 layers 15 mm Fermacell Board outer side									
	Insulation	100 mm mineral wool density 30 kg/m <sup>3</sup>									
	Studs	100 mm x 60 mm @ 600 mm centres			2	62	3	142.5	30/ 90**	68 <sup>†</sup>	Severe
	Facings	1 layer 12.5 mm Fermacell Board inner side plus 2 layers 15 mm Fermacell Board outer side									
	Insulation	100 mm mineral wool density 20 kg/m <sup>3</sup>									
	Studs	120 mm x 45 mm @ 600 mm centres			2	62	2.6	162.5	30/ 90**	68 <sup>†</sup>	Severe
	Facings	1 layer 12.5 mm Fermacell Board inner side plus 2 layers 15 mm Fermacell Board outer side									
	Insulation	120 mm mineral wool density 30 kg/m <sup>3</sup>									
1HG31-8											
 <p>External protection sheeting material as required. Contact Fermacell technical helpline for further information.</p>	Studs	140 mm x 60 mm @ 600 mm centres			2	≈77	3	190	30/ 90**	≥68 <sup>†</sup>	Severe
	Facings	1 layer 12.5 mm Fermacell Board inner side plus 3 layers 12.5 mm Fermacell Board outer side									
	Insulation	140 mm mineral wool density 20 kg/m <sup>3</sup>									
1HG32											
	Studs	140 mm x 80 mm @ 600 mm centres			2	≈53	3	167.5	30/ 90**	≥66 <sup>†</sup>	Severe
	Facings	1 layer 12.5 mm Fermacell Board inner side plus 1 layer 15 mm Fermacell Powerpanel HD Board outer side									
	Insulation	140 mm mineral wool density 20 kg/m <sup>3</sup>									
	Studs	140 mm x 60 mm @ 600 mm centres			2	≈53	3	167.5	30/ 90**	≥66 <sup>†</sup>	Severe
	Facings	1 layer 12.5 mm Fermacell Board inner side plus 1 layer 15 mm Fermacell Powerpanel HD Board outer side									
	Insulation	140 mm mineral wool density 20 kg/m <sup>3</sup>									

## FERMACELL LOADBEARING WALLS

SYSTEM SPECIFICATIONS		Applied Load N/ mm <sup>2</sup>	Wall Weight kg/m <sup>2</sup>	Wall Height m	Wall Thickness mm	Fire Rating mins	Sound Insulation R <sub>w</sub>	BS 5234/ DIN 4103 Grade
<b>1HA11</b>								
	Studs	140 mm x 60 mm @ 600 mm centres						
	Facings	2	54	3	≈ 230	30	48	Severe
	Insulation	140 mm mineral wool density 20 kg/m <sup>3</sup>						
<b>1HA31</b>								
	Studs	140 mm x 60 mm @ 600 mm centres						
	Facings	2	≈ 77 <sup>†</sup>	3	190 <sup>†</sup>	90	≥ 51	Severe
	Insulation	140 mm mineral wool density 30 kg/m <sup>3</sup>						
	Studs	100 mm x 60 mm @ 600 mm centres						
	Facings	2	≈ 77 <sup>†</sup>	3	165	90	≥ 51	Severe
	Insulation	100 mm mineral wool density 20 kg/m <sup>3</sup>						

The background of the entire page is a photograph of a brick wall. Several vertical metal rods, possibly rebar or part of a railing system, run from the top to the bottom of the frame, partially obscuring the bricks. The bricks are a reddish-brown color, and the mortar is a lighter, greyish-tan. The lighting is somewhat uneven, with brighter areas near the top and darker areas towards the bottom.

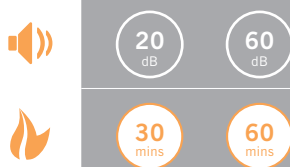
# Initiatives

<b>Introduction</b>	<b>63</b>
<b>Components &amp; Accessories</b>	<b>66</b>
<b>Detailed Overview</b>	<b>67</b>
<b>Component Details</b>	<b>68</b>
<b>Installation Overview</b>	<b>70</b>
<b>Performance Details</b>	<b>71</b>

### MARKET SECTORS

- Refurbishment
- Academic
- Residential
- Healthcare
- Recreation
- Industrial

### PERFORMANCE RATINGS



### FERMACELL PERFORMANCE

- Impact – Able to withstand impact from people as well as objects (door handles etc).
- Acoustics – Enhanced acoustic insulation providing simple solutions to upgrade existing walls.
- Ease of construction – A variety of Shaftwall and variable cavity lining systems allowing simple, cost effective solutions for refurbishment projects eliminating wet trades.
- Environmental – Fermacell Boards are manufactured from 100% recycled content and are recyclable. Decreasing the carbon footprint and increasing the BREEAM rating of the building.

**Fermacell is perfectly suited for wall lining solutions, from lining of proprietary metal systems to traditional timber frame as well as dot and dab fixing.**

The use of Fermacell with wall lining systems creates a quick and simple way to install systems that reduce the wet trades required as the fast and simple jointing systems for Fermacell Boards Fine Surface Treatment (FST).

### METAL FRAME LINING SYSTEMS

The use of Fermacell with metal frame Dry Lining systems allows a dry system to be installed for lining walls where the background may be unsuitable for “dabbing”, where the existing wall may be out of true or the surface may not allow the adhesion of the Fermacell Bonding Compound.

Metal frame systems allow the system to be fixed directly to the existing wall allowing different cavity widths to be accommodated. This can be as little as 15 mm with a metal furring system. Insulation and vapour barriers can be installed behind the Fermacell Boards. Where possible place the insulation between the battens and the wall where there is a narrow cavity otherwise this will reduce its overall effectiveness and may cause cold bridging.





### TIMBER BATTENS

Fermacell may be fixed to timber battens of a minimum size of 50 mm x 30 mm using 30 mm Fermacell screws or Galvanised staples. The use of battens adds little to the lining thickness and provides a service cavity.

Where greater level of thermal insulation are required insulation boards may be sandwiched between the battens and the wall. If possible place the insulation between the battens and the wall otherwise this will reduce its overall effectiveness and may cause cold bridging.

### DIRECT BOND – “DOT AND DAB”

Fermacell can be installed using the dot and dab method; to do so Tapered edge boards must be used.

It is important to note that the surface to which the boards are to be bonded should be clean, dry and mechanically stable. Plaster dabs (Fermacell bonding compound) should be applied to the existing wall (see the Lining Section for spacing). This method will allow a quick and cost effective way of cosmetically lining an existing wall.

### INDEPENDENT WALL LININGS

Independent Wall linings are generally used where a clear cavity is required from the existing background. A DIN standard C stud is used as a framework to support the Fermacell Boards and these are set generally at 400 mm centres for greater stability. Greater centres are allowable, please contact our Technical department for further information. As the C stud is not fixed to the background there is no restriction in the size of cavity and space is allowed for acoustic insulation or services.

Note – on external walls a vapour barrier should be used.



### Fermacell helps BREEAM rating of new Sedgemoor School.

Environmentally friendly Fermacell Dry Lining is an integral part of many of the internal walls within the new Sedgemoor Secondary School in Dorset which is aiming to achieve an "excellent" BREEAM rating.

Pupils continued their education within the old school building during a phased demolition process and the creation of, in effect, a five building campus surrounding a central courtyard.

A feature of the complex is a circular series of six cantilevered barrel vault walkways around the main school courtyard.



The new school, built by Costain Limited, was part of a £210m investment by Dorset to transform secondary education in the borough through the Building Schools for the Future programme.

Designed by the Architects Co-Partnership, the school maximizes the use of natural light and ventilation, offers excellent thermal insulation, as well as night time cooling. Other environmental features include 20% renewable energy and the overall carbon footprint of the new school is around half that of the old one.

Sedgemoor Secondary School opened at the beginning of 2009 and accommodates 1,700 boys and girls aged between 11 and 19 years. A Performing Arts Specialist School, it offers first class amenities including drama and dance facilities comprising four studios as well as a central external performance facility not only for use by the students, but also the local community.

Behrouz Shomali from Architects Co-Partnership, commenting on the project said: "The design concept is based around a sea shell – the idea being to deliver an inclusive learning environment."

A range of Fermacell partition and lining systems were used within the scheme and, in particular, the 3S11 and adjustable cavity wall lining systems.

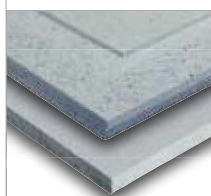
There are a number of major benefits to using the Fermacell 3S11 system. One of these is that it provides a cavity when installed independently to the Metsec structural steel framing allowing the contractor to overcome any protruding fixings and provide a vapour barrier.

Fermacell is not only a high performance, multi-purpose building board providing exceptional fire, impact and moisture resistant properties; but it offers high levels of acoustic and weight carrying capacity.

Also, from a BREEAM viewpoint, it is highly desirable because it is 100% recyclable and manufactured from 80% recycled gypsum and 20% cellulose fibres derived from recycled papers.

### DIRECT BOND & ADJUSTABLE WALL LININGS

#### COMPONENTS



**Fermacell Board**  
Fermacell Square edge or  
Tapered edge for Direct Bond.

Thickness	10 mm, 12.5 mm, 15 mm and 18 mm
Sizes	1200 x 1000 mm to 1200 x 3000 mm



**Fermacell Fine Surface Treatment**  
For giving Fermacell Boards a smoother  
finish if required.

Coverage	6 m <sup>2</sup> per ltr
Pack Size	3 ltr or 10 ltr



**Fermacell Joint Filler**  
For filling 5–7 mm gaps between boards  
& stopping screw heads.

Coverage	5 m <sup>2</sup> per kg for filling Tapered edge joints. 10 m <sup>2</sup> for finishing glue joints and screw heads.
Pack Size	5 kg or 20 kg



**Fermacell Jointstik**  
For edge glueing square edged  
Fermacell Boards.

Coverage	20 lm / 310 ml tube 37 lm / bulk applicator refill
Pack Size	310 ml tubes or 580 ml bulk applicator refills



**30/40/55 mm Fermacell Screws**  
For fixing Fermacell Boards to steel  
subframes of 0.7 gauge or greater.

Coverage	13 m <sup>2</sup> for walls
Pack Size	Box of 250 screws or box of 1000 screws



**Fermacell Bonding Compound**  
For dot & dabbing Tapered edge  
Fermacell Boards.

Coverage	3–4 kg/m <sup>2</sup>
Pack Size	20 kg bag



**Fermacell Mesh Jointing Tape**  
Mesh tape or paper tape can be used to  
reinforce Tapered edge joints.

Pack Size	45 mtr roll
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**Fermacell Paper Jointing Tape**  
Paper tape or mesh tape can be used to  
reinforce Tapered edge joints.

Pack Size	75 mtr roll
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#### ACCESSORIES



**Fermacell Board Knife**  
For scoring and snapping  
Fermacell Boards.

Pack Size	0.05 kg
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**Fermacell Spatula**  
For applying Fine Surface Treatment.

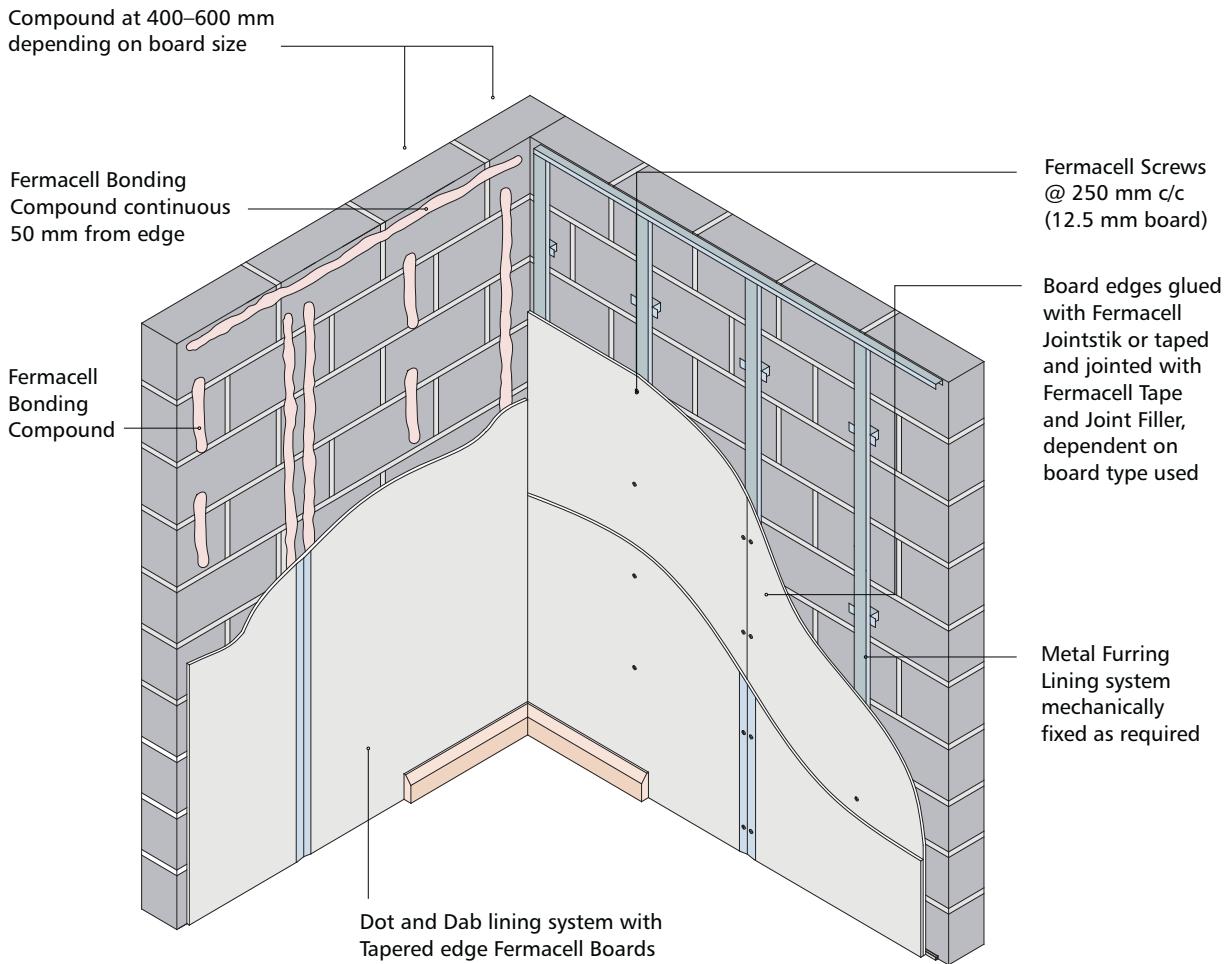
Size	250 mm or 450 mm
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**DIN standard by others  
Lining System**

Size	Nominal 0.6 gauge 50 mm fixing face
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LINING SYSTEM CONSTRUCTION



Introduction	Partitions
Components & Accessories	Linings
	Floors & Ceilings
Detailed Overview	Fire Protection
Component Details	Timber Frames
	Rainscreens
Installation Overview	Fix & Finish
Performance Details	Wet Areas

### DIRECT BOND & ADJUSTABLE WALL LININGS

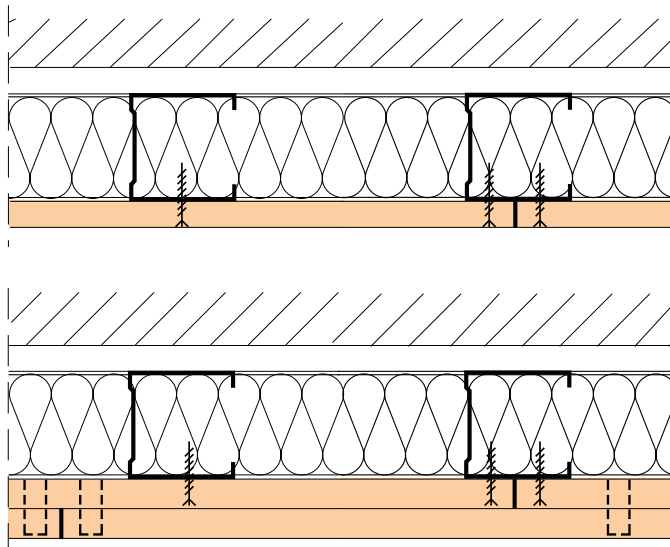
#### LININGS

##### (1) Independent Wall Lining

Independent wall linings can be constructed by using DIN standard C Stud sections

- Allow a minimum cavity of 10 mm; a vapour control barrier should be installed as required
- Fix the bottom track allowing for the desired cavity at 600 mm centres using proprietary fixings. Plumb the ceiling line track in to position and fix
- Cut the DIN standard studs 5 mm shorter than the floor – ceiling height and position at the recommended centres for the board width
- Insulation can be inserted either between the studs or in the cavity providing there is adequate clearance to the existing substrate
- Install the board as per fixing instructions in the Fixing and Finishing section

For double layer systems the second layer can be screw fixed or stapled in to place – please contact our technical department for staple fixing details.

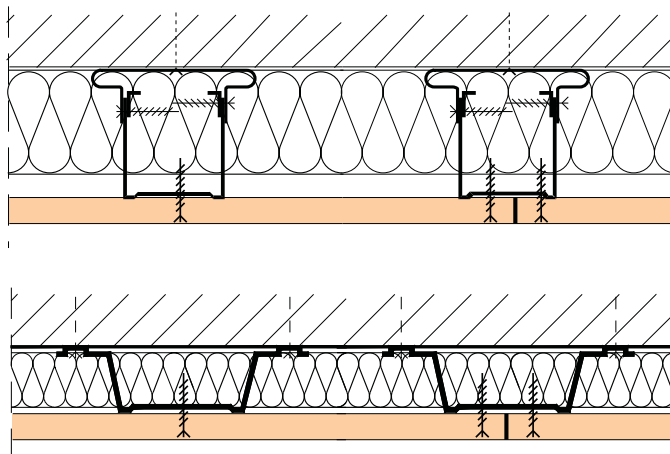


#### LININGS

##### (2) Adjustable cavity steel lining systems

Variable cavity width from 30 – 125 mm can be achieved by using DIN standard Lining systems.

- Mark horizontal lines at 800 mm centres and 600 mm vertical centres on the existing wall
- Fix the bottom track allowing for the desired cavity at 600 mm centres using proprietary fixings. Plumb the ceiling line track and fix
- Install the VCD brackets fixing directly to the wall using proprietary fixings at the intersections of the setting out lines
- Cut the VCD channels 5 mm shorter than the floor – ceiling height and position inline with the brackets. Fix the brackets to the channels, bend back excess
- Install the board as per fixing instructions in the Fixing and Finishing section

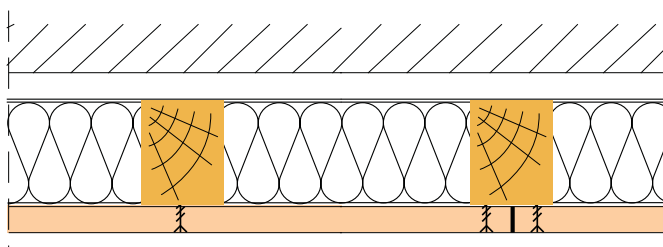


### DIRECT BOND & ADJUSTABLE WALL LININGS

#### LININGS

##### (3) Timber lining systems

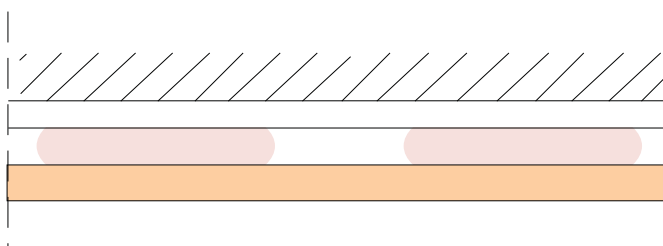
- Allow a minimum cavity of 50 mm and a breather membrane to BS 4016 should be installed for timber frame constructions
- Construct the timber lining as required
- Insulation can be inserted either between the studs or in the cavity allowing adequate clearance to the existing substrate
- Install the board as per fixing instructions in the Fixing and Finishing section. Fermacell Boards can be screw fixed or stapled in to place – please contact our technical department for staple fixing details



#### DOT & DAB

##### (4) Dot and Dab (Direct Bond)

- Ensure the masonry background is dry and dust free
- Direct bonding is not recommended for solid exterior walls prone to moisture ingress, a VCD or independent lining system should be used instead
- The minimum finished dab thickness should be no less than 10mm and not greater than 25 mm
- Apply Fermacell Bonding Compound dabs at 400 mm or 600 mm centres vertically to suit the board width
- Each dab should be 50-75 mm wide x 250 mm long and 25 mm in from the board edge at 30 mm vertical centres
- A continuous ribbon of Fermacell Bonding Compound should be applied around the perimeter of the external walls and around door/window frames and sockets
- The contact area of the dabs should be at least 20% of the board surface



### DIRECT BOND & ADJUSTABLE WALL LININGS

#### STEP ONE



Ensure the floor is clean and flat; mark out the line of the wall lining allowing for the width of the Fermacell Boards and any desired cavity.

If using an adjustable cavity metal system mark out the bracket centres along the channel paths.

Plumb the ceiling line with the floor track and mark out.

Fix the base and ceiling tracks at 600 mm centres using suitable fixings and insert DIN standard studs into the tracks.

If using an adjustable cavity system, fit the brackets and then secure the channels to them.

#### STEP TWO



Insert any desired insulation whilst maintaining a cavity from the background, cut the Fermacell Boards 10 mm less than the room height and install, leaving gaps as required for jointing to the ceiling.

#### STEP THREE



Screw fix the boards at maximum 250 mm centres using Fermacell screws. When direct bonding using a traditional dot & dab method, the use of Tapered edge boards is recommended.

#### STEP FOUR



Square edge boards: Apply Fermacell Jointstik to the board edge, tightly butt the next board and screw fix.

Tapered edge board: Position and fix the next board. Once bonding is dry, apply Fermacell Joint filler, embedding a reinforcement tape, and strike off flush with the taper area.

#### STEP FIVE



After 8 hours remove the excess Jointstik and fill the screw heads, sand the Joint Filler for Tapered edge boards once dry.

#### STEP SIX



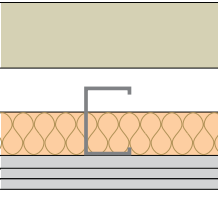
For both Square edge and Taper Edge boards apply Fermacell Fine Surface Treatment to the entire surface for a painted finish. See installation manual for other finishing options.

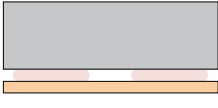


### FERMACELL INDEPENDENT WALL LININGS – STEEL

			Wall Weight	Wall Height	Wall Thickness	Fire Rating	Improved Sound Insulation	BS 5234/ DIN 4103
SYSTEM SPECIFICATIONS			kg/m <sup>2</sup>	m	mm	mins	ΔR <sup>1</sup> <sub>w</sub>	Grade
3S01								
	Studs	50 mm DIN standard studs @ 600 mm centres	20	3	62.5	N/A	20	Heavy
	Facings	1 layer 12.5 mm Fermacell Board one side						
	Insulation	50 mm mineral wool density 40 kg/m³						
	Studs	75 mm DIN standard studs @ 600 mm centres	20	3.5	87.5	N/A	20	Heavy
	Facings	1 layer 12.5 mm Fermacell Board one side						
	Insulation	50 mm mineral wool density 40 kg/m³ or 60 mm mineral wool density 30 kg/m³						
	Studs	100 mm DIN standard studs @ 600 mm centres	20	4.1	112.5	N/A	20	Heavy
	Facings	1 layer 12.5 mm Fermacell Board one side						
	Insulation	50 mm mineral wool density 40 kg/m³ or 60 mm mineral wool density 30 kg/m³						
3S11								
	Studs	50 mm DIN standard studs @ 600 mm centres	23	3	65	30	20	Severe
	Facings	1 layer 15 mm Fermacell Board one side						
	Insulation	50 mm mineral wool density 40 kg/m³						
	Studs	75 mm DIN standard studs @ 600 mm centres	23	3.5	90	30	20	Severe
	Facings	1 layer 15 mm Fermacell Board one side						
	Insulation	50 mm mineral wool density 40 kg/m³						
	Studs	100 mm DIN standard studs @ 600 mm centres	23	4.1	115	30	20	Severe
	Facings	1 layer 15 mm Fermacell Board one side						
	Insulation	50 mm mineral wool density 40 kg/m³						
3S12								
	Studs	50 mm DIN standard studs @ 600 mm centres	32	3	72.5	30 <sup>+</sup>	N/A	Severe
	Facings	1 layer 12.5 mm Fermacell Board plus 1 layer 10 mm Fermacell Board one side						
	Studs	75 mm DIN standard studs @ 600 mm centres	32	3.5	97.5	30 <sup>+</sup>	N/A	Severe
	Facings	1 layer 12.5 mm Fermacell Board plus 1 layer 10 mm Fermacell Board one side						
	Studs	100 mm DIN standard studs @ 600 mm centres	32	4.5	122.5	30 <sup>+</sup>	N/A	Severe
	Facings	1 layer 12.5 mm Fermacell Board plus 1 layer 10 mm Fermacell Board one side						
3S21								
	Studs	50 mm DIN standard studs @ 600 mm centres	41	3	75	60 <sup>+</sup>	22	Severe
	Facings	2 layers 12.5 mm Fermacell Board one side						
	Insulation	50 mm mineral wool density 38 kg/m³						
	Studs	75 mm DIN standard studs @ 600 mm centres	41	3.5	100	60 <sup>+</sup>	22	Severe
	Facings	2 layers 12.5 mm Fermacell Board one side						
	Insulation	50 mm mineral wool density 38 kg/m³						
	Studs	100 mm DIN standard studs @ 600 mm centres	41	4.75	125	60 <sup>+</sup>	22	Severe
	Facings	2 layers 12.5 mm Fermacell Board one side						
	Insulation	50 mm mineral wool density 38 kg/m³						

### FERMACELL INDEPENDENT WALL LININGS – STEEL

						Wall Weight	Wall Height	Wall Thickness	Fire Rating	Improved Sound Insulation	BS 5234/ DIN 4103
SYSTEM SPECIFICATIONS						kg/m <sup>2</sup>	m	mm	mins	ΔR <sub>w</sub>	Grade
<b>3S31</b>											
	Studs	50 mm DIN standard studs @ 600 mm centres									
	Facings	1 layer 15 mm Fermacell Board plus 2 layers 12.5 mm Fermacell Board outer side				53	3.5	90	90 <sup>+</sup>	≥22	Severe
	Insulation	50 mm mineral wool density 40 kg/m <sup>3</sup>									
	Studs	75 mm DIN standard studs @ 600 mm centres									
	Facings	1 layer 15 mm Fermacell Board plus 2 layers 12.5 mm Fermacell Board outer side				53	4	115	90 <sup>+</sup>	≥22	Severe
	Insulation	60 mm mineral wool density 40 kg/m <sup>3</sup>									
	Studs	100 mm DIN standard studs @ 600 mm centres									
	Facings	1 layer 15 mm Fermacell Board plus 2 layers 12.5 mm Fermacell Board outer side				53	4.5	140	90 <sup>+</sup>	≥22	Severe
	Insulation	100 mm mineral wool density 30 kg/m <sup>3</sup>									
	Studs	125 mm DIN standard studs @ 600 mm centres									
	Facings	1 layer 15 mm Fermacell Board plus 2 layers 12.5 mm Fermacell Board outer side				53	5	165	90 <sup>+</sup>	≥22	Severe
	Insulation	100 mm mineral wool density 30 kg/m <sup>3</sup>									

						Wall Weight	Wall Thickness	Thermal Performance
SYSTEM SPECIFICATIONS						kg/m <sup>2</sup>	mm	m <sup>2</sup> k/W
<b>3TP01</b>								
	Facings	1 layer 10 mm Fermacell Board one side				12.5	10	0.03
	Facings	1 layer 12.5 mm Fermacell Board one side				15	12.5	0.03

### FERMACELL INDEPENDENT WALL LININGS – H<sub>2</sub>O

			Wall Weight	Wall Height	Wall Thickness	Fire Rating	Improved Sound Insulation	BS 5234/ DIN 4103
SYSTEM SPECIFICATIONS			kg/m <sup>2</sup>	m	mm	mins	ΔR <sub>w</sub> <sup>†</sup>	Grade
3S01 H <sub>2</sub> O								
	Studs	50 mm DIN standard studs @ 600 mm centres	19	2.55	62.5	N/A	N/A	Heavy
	Facings	1 layer 12.5 mm Fermacell Powerpanel H <sub>2</sub> O Board one side						
	Studs	75 mm @ 600 mm centres	19	3.5	87.5	N/A	N/A	Heavy
	Facings	1 layer 12.5 mm Fermacell Powerpanel H <sub>2</sub> O Board one side						
3S02 H <sub>2</sub> O								
	Studs	75 mm DIN standard studs @ 600 mm centres	32	3.5	100	N/A	N/A	Heavy
	Facings	2 layers 12.5 mm Fermacell Powerpanel H <sub>2</sub> O Board one side						
3S11 H <sub>2</sub> O								
	Studs	75 mm DIN standard studs @ 600 mm centres	37	3.5	100	30 <sup>‡</sup>	21	Severe
	Facings	2 layers 12.5 mm Fermacell Powerpanel H <sub>2</sub> O Board one side						
	Insulation	60 mm mineral wool density 30 kg/m <sup>3</sup>						

### FERMACELL WALL LININGS ON STEEL STUDS

			Wall Weight	Wall Height	Wall Thickness	Fire Rating inc. blockwork mins	Flanking Sound Performance R <sub>LW</sub>	Thermal Performance k² k/W	BS 5234/ DIN 4103
SYSTEM SPECIFICATIONS			kg/m²	m	mm				Grade
3WS01									
	Studs	Wall Liner System 60 mm DIN standard studs @ 600 mm centres	17	8	≥42	n/a	57	0.53	Severe
	Facings	1 layer 12.5 mm Fermacell Board one side							
	Insulation	20 mm mineral wool density 20 kg/m³							
	Studs	CW 50 mm DIN standard studs @ 600 mm centres	20	8	62.5	n/a	57	1.28	Severe
	Facings	1 layer 12.5 mm Fermacell Board one side							
	Insulation	50 mm mineral wool density 20 kg/m³							
	Studs	CW 75 mm DIN standard studs @ 600 mm centres	20	8	87.5	n/a	57	1.28	Severe
	Facings	1 layer 12.5 mm Fermacell Board one side							
	Insulation	50 mm mineral wool density 20 kg/m³							
3WS02									
	Studs	Wall Liner System 60 mm DIN standard studs @ 600 mm centres	32	8	≥55	30	62	0.57	Severe
	Facings	2 layers 12.5 mm Fermacell Board one side							
	Insulation	20 mm mineral wool density 20 kg/m³							
	Studs	50 mm DIN standard studs @ 600 mm centres	35	8	75	30	62	1.31	Severe
	Facings	2 layers 12.5 mm Fermacell Board one side							
	Insulation	50 mm mineral wool density 20 kg/m³							
	Studs	75 mm DIN standard studs @ 600 mm centres	35	8	100	30	62	1.31	Severe
	Facings	2 layers 12.5 mm Fermacell Board one side							
	Insulation	50 mm mineral wool density 20 kg/m³							
3WS11									
	Studs	Wall Liner System 60 mm DIN standard studs @ 600 mm centres	17	8	≥62.5	30	57	1.31	Severe
	Facings	1 layer 12.5 mm Fermacell Board one side							
	Insulation	50 mm mineral wool density 40 kg/m³							
	Studs	50 mm DIN standard studs @ 600 mm centres	20	8	62.5	30	57	1.31	Severe
	Facings	1 layer 12.5 mm Fermacell Board one side							
	Insulation	50 mm mineral wool density 40 kg/m³							
3WS12									
	Studs	Wall Liner System 50 mm DIN standard studs @ 600 mm centres	32	8	≥75	60	62	1.31	Severe
	Facings	2 layers 12.5 mm Fermacell Board one side							
	Insulation	50 mm mineral wool density 40 kg/m³							
	Studs	50 mm DIN standard studs @ 600 mm centres	35	8	75	60	62	1.31	Severe
	Facings	2 layers 12.5 mm Fermacell Board one side							
	Insulation	50 mm mineral wool density 40 kg/m³							

\*Classification from both sides

### FERMACELL WALL LINING ON TIMBER

		Wall Weight	Wall Height	Wall Thickness	Fire Rating inc. blockwork	Flanking Sound Performance	Thermal Performance	BS 5234/ DIN 4103
SYSTEM SPECIFICATIONS		kg/m <sup>2</sup>	m	mm	mins	R <sub>LW</sub>	k <sup>2</sup> kW	Grade
<b>3WH01</b>								
	Battens	30 mm x 50 mm @ 600 mm centres						
	Facings	1 layer 12.5 mm Fermacell Board one side	16	8	42.5	30	59	0.78
	Insulation	30 mm mineral wool density 20 kg/m <sup>3</sup>						Severe
	Battens	40 mm x 50 mm @ 600 mm centres						
	Facings	1 layer 12.5 mm Fermacell Board one side	16	8	52.5	30	59	1.03
	Insulation	40 mm mineral wool density 20 kg/m <sup>3</sup>						Severe
	Battens	60 mm x 40 mm @ 600 mm centres						
	Facings	1 layer 12.5 mm Fermacell Board one side	17	8	72.5	30	59	1.53
	Insulation	60 mm mineral wool density 20 kg/m <sup>3</sup>						Severe
<b>3WH02</b>								
	Battens	30 mm x 50 mm @ 600 mm centres						
	Facings	1 layer 12.5 mm Fermacell Board plus 1 layer 10 mm Fermacell Board one side	26	8	52.5	60	63	0.81
	Insulation	30 mm mineral wool density 20 kg/m <sup>3</sup>						Severe
	Battens	40 mm x 50 mm @ 600 mm centres						
	Facings	1 layer 12.5 mm Fermacell Board plus 1 layer 10 mm Fermacell Board one side	26	8	62.5	60	63	1.06
	Insulation	40 mm mineral wool density 20 kg/m <sup>3</sup>						Severe
	Battens	60 mm x 40 mm @ 600 mm centres						
	Facings	1 layer 12.5 mm Fermacell Board plus 1 layer 10 mm Fermacell Board one side	27	8	82.5	60	63	1.56
	Insulation	60 mm mineral wool density 20 kg/m <sup>3</sup>						Severe
	Battens	30 mm x 50 mm @ 600 mm centres						
	Facings	2 layers 12.5 mm Fermacell Board one side	29.5	8	55	60	63	0.82
	Insulation	30 mm mineral wool density 20 kg/m <sup>3</sup>						Severe
	Battens	40 mm x 50 mm @ 600 mm centres						
	Facings	2 layers 12.5 mm Fermacell Board one side	31	8	65	60	63	1.07
	Insulation	40 mm mineral wool density 20 kg/m <sup>3</sup>						Severe
	Battens	60 mm x 40 mm @ 600 mm centres						
	Facings	2 layers 12.5 mm Fermacell Board one side	32	8	85	60	63	1.57
	Insulation	60 mm mineral wool density 20 kg/m <sup>3</sup>						Severe



# Floors & Ceilings

Introduction	77
Components & Accessories	80
Detailed Overview	81
Component Details	82
Installation Overview	84
Performance Details	86



## MARKET SECTORS



Residential &  
Self build



Refurbishment



Healthcare



Education



Timber Frame

## PERFORMANCE RATINGS



17  
dB

69  
dB



30  
mins

90  
mins

## FERMACELL PERFORMANCE



Impact sound insulation – Fermacell flooring systems offer a variety of cost effective, simple to install solutions for improving the acoustic insulation of solid masonry floors and timber floor constructions.



Airborne sound insulation – The use of Fermacell with resilient or suspended ceiling systems to the underside of the joists will greatly enhance the airborne acoustic performance.



Fire protection – Using the floor elements along with our ceiling systems provide superior fire protection from above and below the structure.



Speed of installation – The Fermacell dry flooring systems allows a dry screed to be laid on uneven floors and heating systems, eliminating drying times and reducing installation time and cost.



Environmental – Fermacell Boards are manufactured from 100% recycled content and are recyclable, decreasing the carbon footprint and increasing the BREEAM rating of the building.

## Using Fermacell Flooring and Ceiling systems provide simple solutions to acoustic and fire requirements.

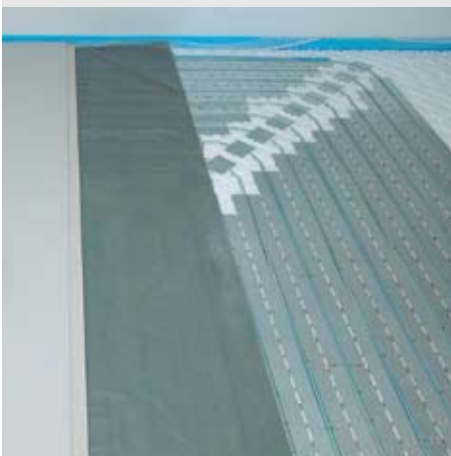
The flooring systems offer a dry screed system solution which provides impact acoustic performance for refurbishment as well as new build and timber frame.

The range of systems we produce not only increase sound insulation but also a dry screed solution to overlay underfloor heating and levelling solutions to uneven floors.

Fermacell's ceiling systems provide superior acoustic and fire performance to timber and concrete ceilings by using either a resilient bar or a suspended ceiling system, decreasing the airborne acoustic transmission.

### Fermacell and Jupiter provide innovative Underfloor heating solution.

A luxury Swanage apartment development by Swan Country Homes is benefiting from a unique solution utilising the Jupiter Ideal ECO underfloor heating system in conjunction with Fermacell Flooring Elements over suspended timber floors.



Fermacell 2E22 25 mm thick Flooring Elements, combined with Jupiter recycled wood fibre heating elements, has created a low-height underfloor heating solution that substantially outperformed the acoustic requirements of Part E of the Building Regulations for separating floors. Not only this, but it has also saved a brick course at each floor level.

Swan Country Homes, developers of the eight expensively appointed 2 bed apartments and two luxury penthouses on Broad Leys, opted for the Jupiter/Fermacell solution in preference to a more complex Robust Detail solution. The latter option required either pipework being installed in between joists and putting a floating floor on top, or laying down a resilient batten, or cradle and batten system with chipboard on top.

This innovative new approach has paid dividends for the developer. Only two overlaid components were needed - dramatically reducing build time and providing the perfect substrate for a multitude of floor finishes; whilst maintaining the thermal transparency required by modern efficient underfloor heating systems.



Pre-completion testing produced acoustic performances which comfortably exceeded Part E requirements. The minimum airborne sound result was 11 dB over the requirement, whilst the minimum impact sound result surpassed the guidelines by 14 dB.

Chris Smith, Managing Director of Jupiter Underfloor Heating, commented: "On the face of it our quote appeared to be more expensive than that of the competitors. However, our proposal required only 55 mm depth compared to the minimum 100 to 145 mm depth needed for the Robust Detail construction. By saving a brick course at each floor level, Swan Homes was able to make substantial savings on build cost.

"We worked very closely with Fermacell on this project in order to come up with an alternative solution to the traditional tried and tested route."

Andrew Richardson, Technical Manager with Fermacell commented: "The Fermacell UFH overlay 2E22 combines the heat transfer benefits of a wet screed system with the speed and installation and flexibility of wooden board systems such as chipboard.

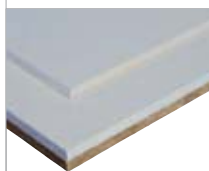
"Fermacell Flooring Elements have a much lower thermal resistance than chipboard, therefore the response time of the heating system is much quicker, and when you turn the heating down – or off – there is minimal delay.

In addition, Fermacell is not an insulator, and so can make UFH systems more efficient – the pipe temperature can be up to 5 degrees lower, saving energy and money."

Mark Swan commented: "Floor heating system components need to be compatible in order to provide an efficient, integrated solution. We certainly achieved that through the joint initiative put forward by Fermacell and Jupiter. Not only did the Fermacell Gypsum Fibreboard enable us to save a brick course at each level of the building, but it enabled us to comfortably surpass the required acoustic sound test standards laid down by Part E requirements."

### FLOORING ELEMENTS

#### COMPONENTS



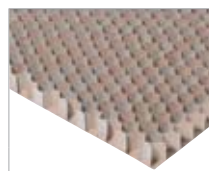
##### Fermacell Flooring Element

For screeding, levelling and insulating floors.

**Pack Size** 20 mm, 25 mm, 30 mm, 40 mm, 45 mm and 50 mm. 5-6 per pack depending on thickness

**Coverage** 1500 mm x 500 mm per sheet

#### COMPONENTS



##### 30 mm, 50 mm Fermacell Honeycomb sheets 1500 mm x 1000 mm

A retaining sheet for honeycombing infill.

**Pack Size** 30 mm – 30 sheets, 50 mm – 15 sheets

**Coverage** 1.5 m<sup>2</sup> per board



##### Fermacell Floor Glue

For bonding floor elements.

**Pack Size** 1 kg bottle

**Coverage** 25 m – 28 m<sup>2</sup>/bottle



##### Honeycomb Infill

Mass providing infill for honeycomb sheets.

**Pack Size** 22.5 kg bag/48 per pallet

**Coverage** 2 bags per m<sup>2</sup> for 30 mm infill



##### Fermacell Joint Filler

For stopping screw heads.

**Pack Size** 5 kg or 20 kg

**Coverage** 10 m<sup>2</sup> for fine finishing glue joints and stopping screw heads



##### Fermacell Bonded Levelling Compound

Cement base levelling compound for levelling from 40 mm to 2000 mm.

**Pack Size** 80 lt bag (22 kg) /16 per pallet

**Coverage** 10m<sup>2</sup> per 10mm of levelling



##### 19 mm or 22 mm Fermacell Floor Screws

For securing flooring elements.

**Pack Size** 1000 or 250

**Coverage** 11m<sup>2</sup>



##### Fermacell Self Levelling Compound

To level uneven floors.

**Pack Size** 5 ltr bag/25 kg

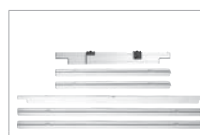
**Coverage** 10 lm<sup>2</sup> per 10 mm of levelling



##### 30 mm, 50 mm, 100 mm Fermacell Perimeter Strip

To reduce flanking transmission between flooring and walls.

**Pack Size** 60 lm



##### Fermacell Levelling Set

For levelling dry flooring compound.

**Pack Size** Each 15 kg



##### Fermacell Dry Levelling Compound

To level uneven floors 10 mm – 60 mm.

**Pack Size** 50 ltr bag

**Coverage** 5 m<sup>2</sup>/bag @ 10 mm thick



##### Fermacell H<sub>2</sub>O Flooring Element 25 mm

For use in wet areas.

**Pack Size** 60 per pack

**Coverage** 1500 mm x 500 mm per sheet



##### Fermacell Trickle Protection Sheet

For use under Fermacell Dry Levelling Compound.

**Pack Size** 1.5 m x 50 m Roll

**Coverage** 75 m<sup>2</sup>



##### 23 mm Fermacell H<sub>2</sub>O Flooring Screws

For fixing H<sub>2</sub>O flooring elements.

**Pack Size** 500

**Coverage** 20 m<sup>2</sup>

## TIMBER STUD CONSTRUCTION

### FERMACELL FLOORING SOLUTIONS

Fermacell flooring solutions are designed for use as floating floors in a wide variety of applications. Manufactured from Fermacell Gypsum Fibreboards, they give a dry, robust and simple solution to your flooring requirements.

Used in conjunction with Fermacell to the ceiling, the flooring elements give a wide variety of solutions as a complete floor/ceiling specification.

There are five main areas of use for Fermacell flooring, and the constructions vary slightly according to the specific application. All the systems share the same basic technology which produces a continuous floating membrane capable of installation and use in 24 hours, and which is ready to accept a wide range of floor finishes.

1. Improving acoustic insulation:  
Types 2E31 & 2E32
2. Over floor heating: Types 2E22 & 2E11
3. Levelling uneven floors: A range of solutions from 0 – 2000 mm are available.
4. Improving thermal insulation:  
Types 2E13 & 2E14
5. Wet-room floors: TE Powerpanel H<sub>2</sub>O Flooring element.

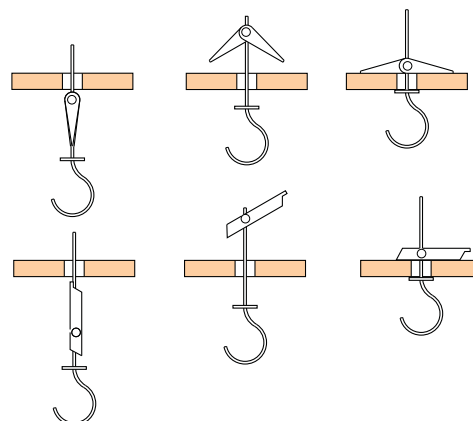
### FERMACELL CEILING SOLUTIONS

Fermacell ceiling solutions give simple solutions to timber, steel and concrete floors by providing acoustic, fire, thermal mass and fixing performance. Due to the nature of the Fermacell Robust details can be easily achieved as 2 layers of 10 mm board to the ceiling, giving the minimum mass requirement. This mass is used in multiple layers in thermal mass applications giving a fast dry solution.

Due to the screw holding ability, simple fittings can be screwed directly into the ceiling board, or where greater loads are required, specialist fittings can be used. Please see table opposite, or contact our Technical Department for more details on **+44 (0) 870 6090 306**.



#### CEILING LOADS



#### Maximum allowable load in kg <sup>(1)</sup> per Fermacell Board thickness in mm <sup>(2)</sup>

Fermacell Board thickness (mm)	kg <sup>(3)</sup>
10 mm	25
12.5 mm	30
15 mm	35
18 mm	40
12.5 + 10 mm	40

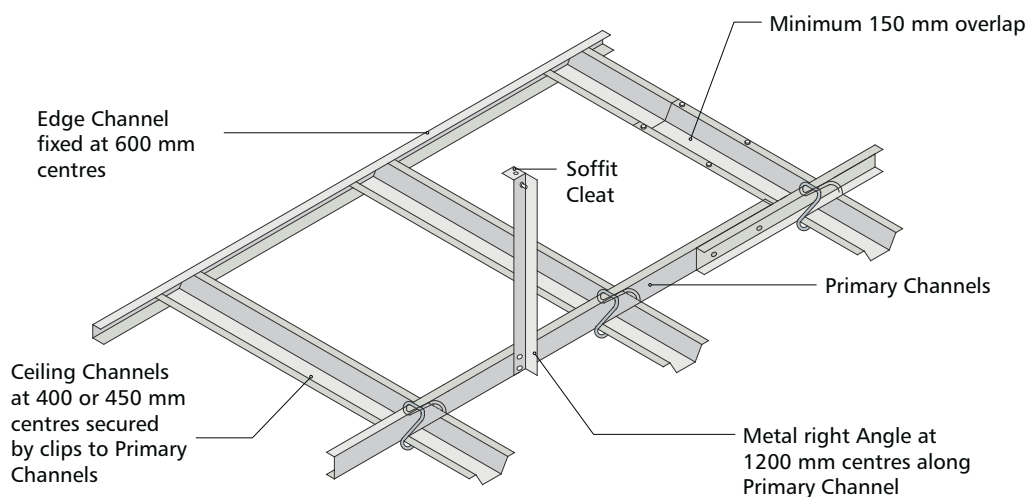
(1) Tested to DIN 4103, safety factor 2.

(2) Support spacing of the sub-structure  $\leq 35 \times$  board thickness.  
Board fixed to the sub-structure with Fermacell screws.

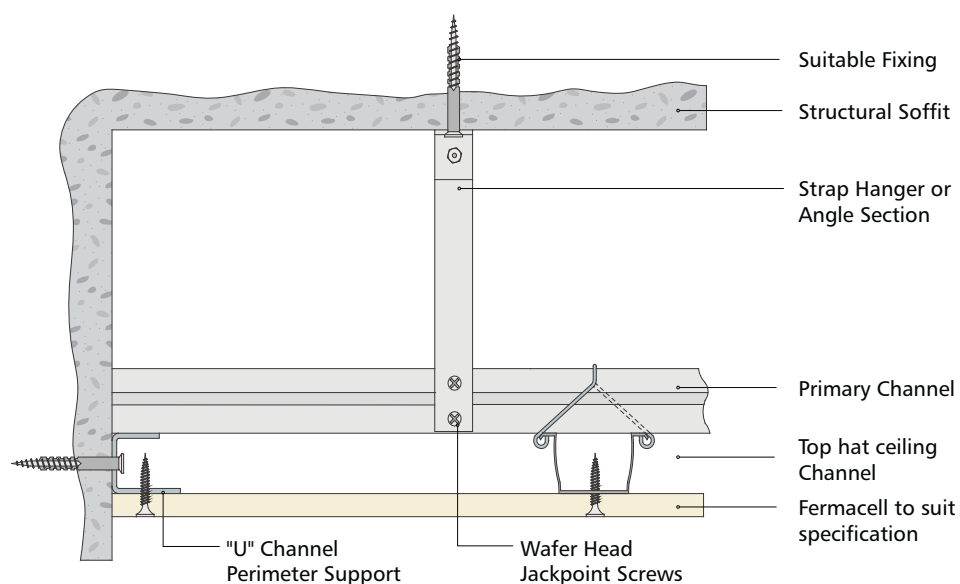
(3) Observe the manufacturers operating and installation instructions.

Where additional loads are to be applied then the loading capability of the sub-structure should be checked.

### MF CEILING CONSTRUCTION

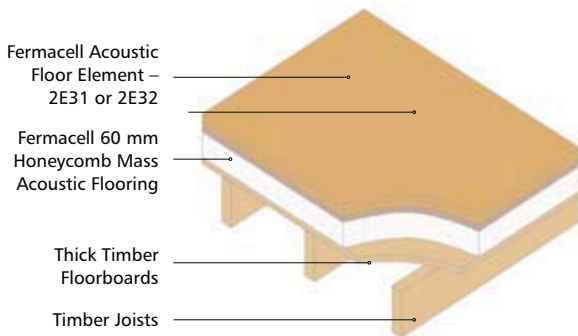
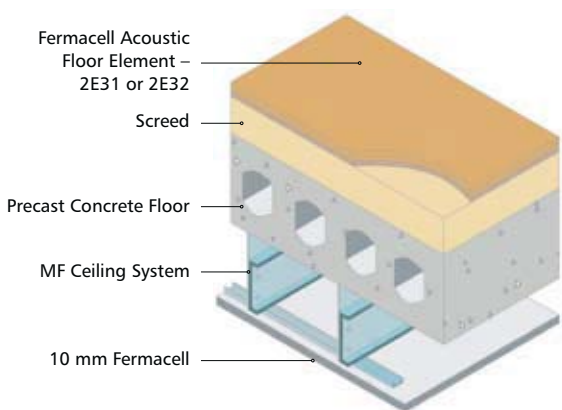
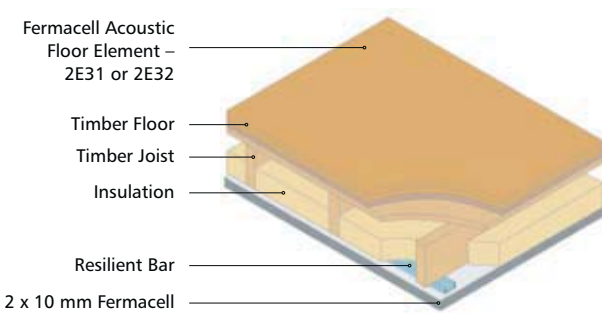
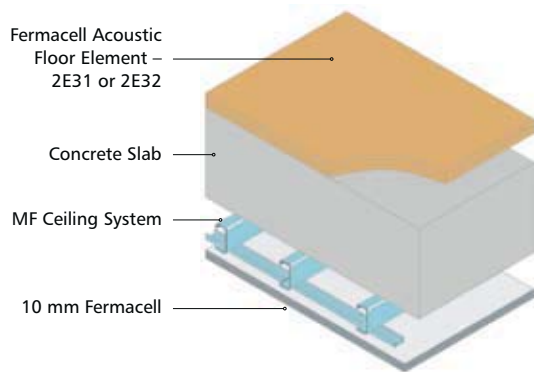
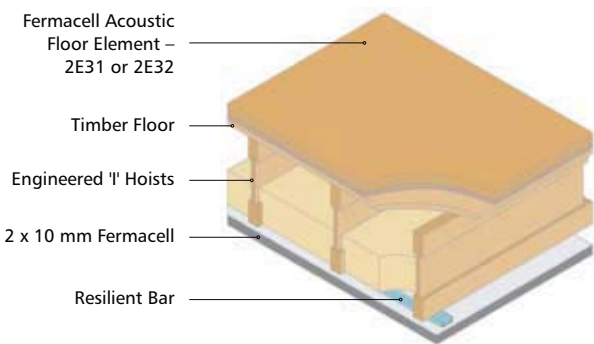
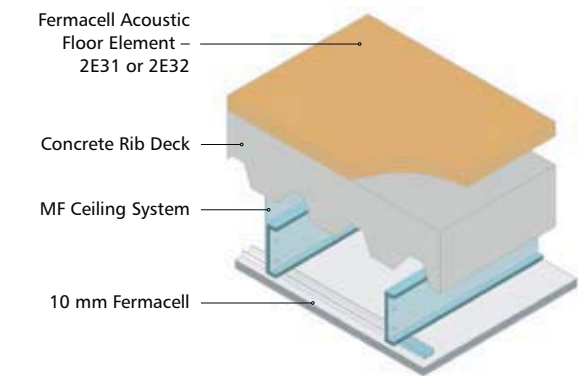


Note: Where ceiling weight exceeds 20 kg/m<sup>2</sup> use Wafer Head Self Drilling Screws in lieu of Connecting Clips. It is recommended that all double board systems are screw fixed. 25 mm flat strap may be used on ceiling drops up to 1 metre deep.





FLOORING & CEILING CONSTRUCTIONS





### FLOOR LEVELLING SYSTEM

#### ACOUSTIC FLOORING

##### STEP ONE



Place an edging strip along the walls to avoid flanking acoustic transmission, and to allow for differential movement.

##### STEP TWO



For the first row of boarding remove the overlaps to ensure a close fit against the perimeter strip. An off cut from the first row can be used to start the next row but must be a minimum of 250 mm in length, avoid cruciform (cross) joints.

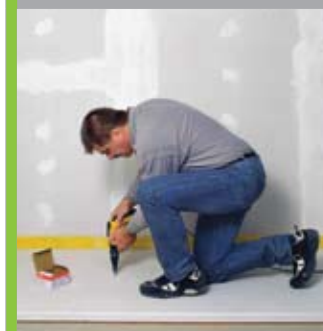
##### STEP TWO



Lay the Fermacell flooring boards as shown in step 1 and glue the overlaps with Fermacell flooring adhesive.

If the Fermacell flooring boards are being laid on levelling compound, we recommend that you work from the door to avoid disturbing the granules. This method is shown in step 2.

##### STEP FOUR



The Fermacell flooring system must be screwed or stapled together at 200 mm centres to apply clamping pressure whilst the glue sets.

##### STEP FIVE



When the glue is dry and the excess has been scraped off, Fermacell Joint Filler should be used for finishing the joints and filling screw heads.

### FLOOR LEVELLING SYSTEMS & HONEYCOMB FLOORING

#### FLOOR LEVELLING SYSTEMS

##### STEP ONE



Mark on the walls the finished floor level. The thickness of the Floor Elements must be taken into account when calculating the finished floor level ('FFL'). Repeat step 1 Acoustic Flooring.

##### STEP TWO



Lay the Fermacell levelling compound to a minimum of 10 mm deep a maximum of 60 mm.

##### STEP THREE



Level using the Fermacell floor levelling set, strips of graded timber may be used to set the height of the compound. The Fermacell Trickle Protection Sheet must be used for timber floors to avoid loss of the granules.

##### STEP FOUR



Using pads of Fermacell to spread body weight lay the appropriate Fermacell Flooring element as steps 2-5 Acoustic Flooring.

\*when using Fermacell Self Levelling Compound the compound must be completely dry before installing the Fermacell Flooring Elements.

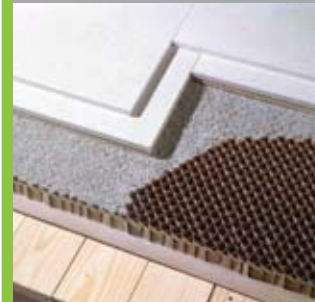
#### ACOUSTIC HONEYCOMB FLOORING

##### STEP ONE



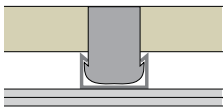

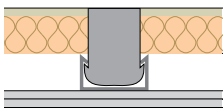

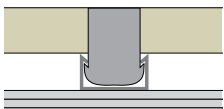

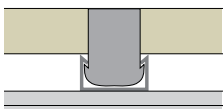

Place an edging strip along the walls to avoid flanking acoustic transmission, and to allow for differential movement. The Fermacell Trickle Protection Sheet must be used for timber floors to avoid loss of the granules.

##### STEP TWO

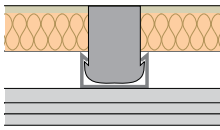
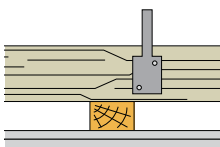
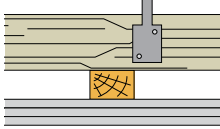
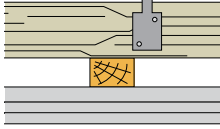


Lay the Honeycomb flooring element and infill with the honeycomb infill, level and repeat steps 2-5.

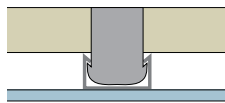
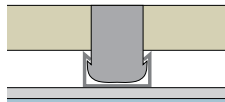
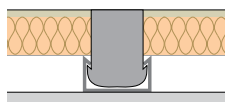
### FERMACELL CEILINGS IN STEEL AND TIMBER SUBSTRUCTURES

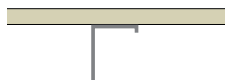
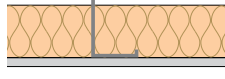

			Ceiling Weight kg/m <sup>2</sup>	Construction Height mm	Fire Rating mins
<b>SYSTEM SPECIFICATIONS</b>					
<b>2S11↑U</b>					
	Channels	60 mm x 0.6 @ max 400 mm centres	27	75	30
	Facings	2 layers 10 mm Fermacell Board one side			
	Insulation	Optional			
	Type	Suspended steel ceiling system with fire protection from below. Min 0.6 gauge. Confirm hanging and layout first			
	Channels	60 mm x 0.6 @ max 500 mm centres	33	80	30
	Facings	2 layers 12.5 mm Fermacell Board one side			
	Insulation	Optional			
	Type	Suspended steel ceiling system with fire protection from below. Min 0.6 gauge. Confirm hanging and layout first			
<b>2S11↑U↓O</b>					
	Channels	60 mm x 0.6 @ max 400 mm centres	28	130	30
	Facings	2 layers 10 mm Fermacell Board one side			
	Insulation	40 mm mineral wool density 30 kg/m <sup>3</sup>			
	Type	Suspended steel ceiling system with fire protection from above and below. Min 0.6 gauge. Confirm hanging and layout first			
	Channels	60 mm x 0.6 @ max 500 mm centres	35	135	30
	Facings	2 layers 12.5 mm Fermacell Board one side			
	Insulation	40 mm mineral wool density 30 kg/m <sup>3</sup>			
	Type	Suspended steel ceiling system with fire protection from above and below. Min 0.6 gauge. Confirm hanging and layout first			
<b>2S21↑U</b>					
	Channels	60 mm x 0.6 @ max 400 mm centres	39	85	60
	Facings	3 layers 10 mm Fermacell Board one side			
	Insulation	None			
	Type	Suspended steel ceiling system with fire protection from below. Min 0.6 gauge. Confirm hanging and layout first			
	Channels	60 mm x 0.6 @ max 500 mm centres	38	85	60
	Facings	2 layers 15 mm Fermacell Board one side			
	Insulation	None			
	Type	Suspended steel ceiling system with fire protection from below. Min 0.6 gauge. Confirm hanging and layout first			
<b>2S34↑U</b>					
	Channels	60 mm x 0.6 @ max 500 mm centres	51	95	90
	Facings	1 layer 15 mm Fermacell Board plus 2 layers 12.5 mm Fermacell Board one side			
	Insulation	None			
	Type	Suspended steel ceiling system with fire protection from below. Min 0.6 gauge. Confirm hanging and layout first			
	Channels	60 mm x 0.6 @ max 400 mm centres	52	95	90
	Facings	4 layers 10 mm Fermacell Board one side			
	Insulation	None			
	Type	Suspended steel ceiling system with fire protection from below. Min 0.6 gauge. Confirm hanging and layout first			

## FERMACELL CEILINGS IN STEEL AND TIMBER SUBSTRUCTURES

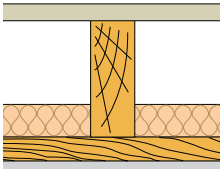
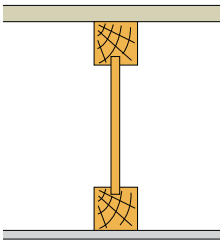
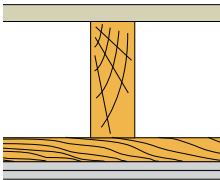
			Ceiling Weight	Construction Height	Fire Rating
SYSTEM SPECIFICATIONS			kg/m <sup>2</sup>	mm	mins
2S34↑U↓O					
	Channels	60 mm x 0.6 @ max 500 mm centres	52	140	90
	Facings	1 layer 15 mm Fermacell Board plus 2 layers 12.5 mm Fermacell Board one side			
	Insulation	40 mm mineral wool density 40 kg/m <sup>3</sup>			
	Type	Suspended steel ceiling system with fire protection from above and below. Min 0.6 gauge. Confirm hanging and layout first			
	Channels	60 mm x 0.6 @ max 400 mm centres	53	140	90
	Facings	4 layers 10 mm Fermacell Board one side			
	Insulation	40 mm mineral wool density 40 kg/m <sup>3</sup>			
	Type	Suspended steel ceiling system with fire protection from above and below. Min 0.6 gauge. Confirm hanging and layout first			
2H13↑U					
	Battens	Min primary timber size 60 mm x 40 mm and min batten size 24 mm x 48 mm at max 400 mm centres. Confirm support layout as required	28	85	30
	Facings	2 layers 10 mm Fermacell Board one side			
	Insulation	None			
	Type	Suspended timber ceiling system with fire protection from below			
	Battens	Min primary timber size 60 mm x 40 mm and min batten size 24 mm x 48 mm at max 450 mm centres. Confirm support layout as required	37	90	30
	Facings	2 layers 12.5 mm Fermacell Board one side			
	Insulation	None			
	Type	Suspended timber ceiling system with fire protection from below			
2H23↑U					
	Battens	Min primary timber size 60 mm x 40 mm and min batten size 24 mm x 48 mm at max 400 mm centres. Confirm support layout as required	46	95	60
	Facings	3 layers 10 mm Fermacell Board one side			
	Insulation	None			
	Type	Suspended timber ceiling system with fire protection from below			
	Battens	Min primary timber size 60 mm x 40 mm and min batten size 24 mm x 48 mm at max 500 mm centres. Confirm support layout as required	40	95	60
	Facings	2 layers 15 mm Fermacell Board one side			
	Insulation	None			
	Type	Suspended timber ceiling system with fire protection from below			
2H34↑U					
	Battens	Min primary timber size 60 mm x 40 mm and min batten size 24 mm x 48 mm at max 500 mm centres. Confirm support layout as required	57	95	90
	Facings	1 layer 15 mm Fermacell Board plus 2 layers 12.5 mm Fermacell Board one side			
	Insulation	None			
	Type	Suspended timber ceiling system with fire protection from below			
	Battens	Min primary timber size 60 mm x 40 mm and min batten size 24 mm x 48 mm at max 400 mm centres. Confirm support layout as required	63	105	90
	Facings	4 layers 10 mm Fermacell Board one side			
	Insulation	None			
	Type	Suspended timber ceiling system with fire protection from below			

### FERMACELL CEILINGS WITH STEEL AND TIMBER SUBSTRUCTURES

			Ceiling Weight	Construction Depth	Fire Rating
SYSTEM SPECIFICATIONS			kg/m <sup>2</sup>	mm	mins
2S01 H <sub>2</sub> O					
	Channels	60 mm x 0.6 @ max 500 mm centres	16	70	N/A
	Facings	1 layer 12.5 mm Powerpanel H <sub>2</sub> O one side			
	Insulation	None			
	Type	Suspended steel ceiling system with fire protection from below. Min 0.6 gauge. Confirm hanging and layout first			
2S11 H <sub>2</sub> O↑U					
	Channels	60 mm x 0.6 @ max 500 mm centres	32	80	30
	Facings	1 layer 12.5 mm Fermacell Board plus 1 layer 12.5 mm Powerpanel H <sub>2</sub> O one side			
	Insulation	None			
	Type	Suspended steel ceiling system with fire protection from below. Min 0.6 gauge. Confirm hanging and layout first			
2S11 H <sub>2</sub> O↑U↓O					
	Channels	60 mm x 0.6 @ max 500 mm centres	34	135	30
	Facings	1 layer 12.5 mm Fermacell Board plus 1 layer 12.5 mm Powerpanel H <sub>2</sub> O one side			
	Insulation	40 mm mineral wool density 30 kg/m <sup>3</sup>			
	Type	Suspended steel ceiling system with fire protection from above and below. Min 0.6 gauge. Confirm hanging and layout first			

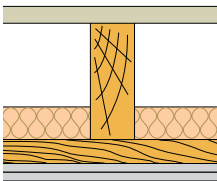
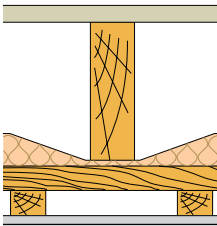
			Ceiling Weight	Sound Insulation	Fire Rating
SYSTEM SPECIFICATIONS			kg/m <sup>2</sup>	R <sub>w</sub>	mins
2S14					
	Studs	225 mm Steel Joists set at 400 mm Centres with structural floorboard	11.5	>40	30
	Facings	1 layer 10 mm Fermacell Board one side			
	Insulation	100 mm mineral wool density 40 kg/m <sup>3</sup>			
	Studs	225 mm Steel Joists set at 400 mm Centres with structural floorboard	15	N/A	30
	Facings	1 layer 12.5 mm Fermacell Board one side			
	Insulation	None			
2S16					
	Studs	225 mm Steel Joists set at 400 mm Centres with structural floorboard	23	>40	60
	Facings	2 layers 10 mm Fermacell Board one side			
	Insulation	100 mm mineral wool density 40 kg/m <sup>3</sup>			

## FERMACELL TIMBER CEILING LININGS

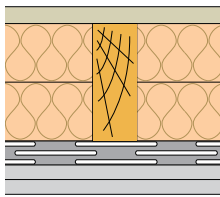
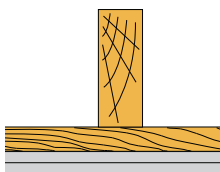
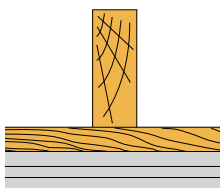
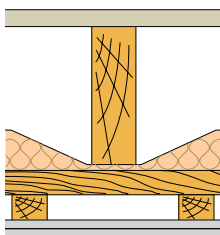
SYSTEM SPECIFICATIONS				Ceiling Weight kg/m <sup>2</sup>	Sound Insulation R <sub>w</sub>	Fire Rating from below
<b>2H12</b> 	Battens	Timber battens min 48 mm x 24 mm, steel resilient bar or MF suspended ceiling at max 400 mm centres				
	Facings	1 layer 10 mm Fermacell Board one side				
	Insulation	Optional				
	Type	Timber joisted ceiling systems with a layer of structural overlay board				
			16	35	30	
<b>2H15</b> 	Battens	TGI timber joists min 235 mm deep/without timber battens minimum 50 mm x 30 mm at max 400 mm centres				
	Facings	1 layer 12.5 mm Fermacell Board one side				
	Insulation	Optional				
	Type	Timber joisted ceiling systems with a layer of structural overlay board	35	40	60	
<b>2H21</b> 	Battens	Timber battens min 48 mm x 24 mm, steel resilient bar or MF suspended ceiling at max 425 mm centres				
	Facings	2 layers 12.5 mm Fermacell Board one side				
	Insulation	Optional				
	Type	Timber joisted ceiling systems with a layer of structural overlay board	35	Part E min. 40 dB	60	



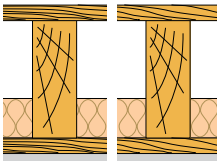
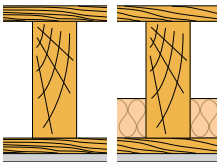
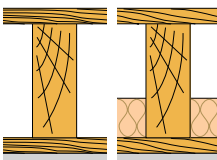
### FERMACELL TIMBER CEILING LININGS

			Ceiling Weight	Sound Insulation	Fire Rating from below
SYSTEM SPECIFICATIONS			kg/m <sup>2</sup>	R <sub>w</sub>	mins
2H23					
	Battens	Timber battens min 48 mm x 24 mm, steel resilient bar or MF suspended ceiling at max 400 mm centres	29	45	60
	Facings	2 layers 10 mm Fermacell Board one side			
	Insulation	50 mm mineral wool density 60 kg/m <sup>3</sup> or 100 mm mineral wool density 30 kg/m <sup>3</sup>			
	Type	Timber joisted ceiling systems with a layer of structural overlay board			
	Battens	Timber battens min 48 mm x 24 mm, steel resilient bar or MF suspended ceiling at max 400 mm centres	35	50	60
	Facings	2 layers 12.5 mm Fermacell Board one side			
	Insulation	50 mm mineral wool density 60 kg/m <sup>3</sup> or 100 mm mineral wool density 30 kg/m <sup>3</sup>			
	Type	Timber joisted ceiling systems with a layer of structural overlay board			
2H31					
	Battens	Timber joists with 2 sets of battens min 60 mm x 40 mm, or for lower batten steel resilient bar or MF suspended Ceiling at max 350 mm centres	38	N/A	90
	Facings	2 layers 10 mm Fermacell Board one side			
	Insulation	50 mm mineral wool density 80 kg/m <sup>3</sup> with wire netting to hold up insulation			
	Type	Timber joisted ceiling systems with a layer of structural overlay board			
	Battens	Timber joists with 2 sets of battens min 60 mm x 40 mm, or for lower batten steel resilient bar or MF suspended Ceiling at max 350 mm centres	44	N/A	90
	Facings	2 layers 12.5 mm Fermacell Board one side			
	Insulation	50 mm mineral wool density 80 kg/m <sup>3</sup> with wire netting to hold up insulation			
	Type	Timber joisted ceiling systems with a layer of structural overlay board			
Resilient Bar optional					

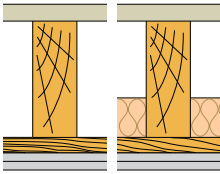

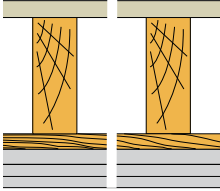

## FERMACELL TIMBER CEILING LININGS

			Ceiling Weight	Construction Height below joist	Fire Rating from below
SYSTEM SPECIFICATIONS			kg/m <sup>2</sup>	mm	mins
2H32					
	Battens	Steel resilient bar or MF suspended ceiling at max 400 mm centres	46	≥60	90
	Facings	2 layers 15 mm Fermacell Board one side			
	Insulation	2 layers 100 mm mineral wool density 30 kg/m <sup>3</sup>			
	Type	Timber joisted ceiling systems with a layer of structural overlay board			
2H33					
	Battens	Timber battens (60/40) on steel acoustic hangers at 350 mm centres	34	70	90
	Facings	2 layers 10 mm Fermacell Board one side			
	Insulation	None			
	Type	Glulam floors	40	75	90
	Battens	Timber battens (60/40) on steel acoustic hangers at 400 mm centres			
	Facings	2 layers 12.5 mm Fermacell Board one side			
	Insulation	None			
	Type	Glulam floors			
2H34					
	Battens	Timber battens min 48 mm x 24 mm, steel resilient bar or MF suspended ceiling at max 350 mm centres	54	≥65	90
	Facings	1 layer 15 mm Fermacell Board plus 2 layers 12.5 mm Fermacell Board one side			
	Insulation	None			
	Type	Timber joisted ceiling irrespective of any overlay system	54	≥65	90
	Battens	Timber battens min 48 mm x 24 mm, steel resilient bar or MF suspended ceiling at max 425 mm centres			
	Facings	4 layers 10 mm Fermacell Board one side			
	Insulation	None			
	Type	Timber joisted ceiling irrespective of any overlay system			
2H41					
	Battens	Timber joists with 2 sets of battens min 60 mm x 40 mm, or for lower batten steel resilient bar or MF suspended Ceiling at max 350 mm centres	38	110	120
	Facings	2 layers 10 mm Fermacell Board one side			
	Insulation	50 mm mineral wool density 100 kg/m <sup>3</sup> with wire netting to hold up insulation			
	Type	Timber joisted ceiling systems with a layer of structural overlay board	44	115	120
	Battens	Timber joists with 2 sets of battens min 60 mm x 40 mm, or for lower batten steel resilient bar or MF suspended Ceiling at max 350 mm centres			
	Facings	2 layers 12.5 mm Fermacell Board one side			
	Insulation	50 mm mineral wool density 100 kg/m <sup>3</sup> with wire netting to hold up insulation			
	Type	Timber joisted ceiling systems with a layer of structural overlay board			

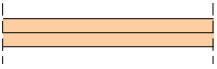
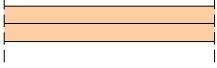
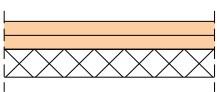
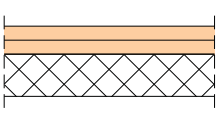
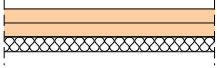
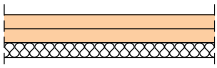
### FERMACELL TIMBER ROOF CONSTRUCTIONS

				Ceiling Weight	Construction Height	Fire Rating from below
SYSTEM SPECIFICATIONS				kg/m <sup>2</sup>	mm	mins
2HD11						
	Battens	Timber battens min 50 mm x 30 mm, steel resilient bar or MF suspended ceiling at max 400 mm centres	17	40	30	
	Facings	1 layer 10 mm Fermacell Board one side				
	Insulation	100 mm mineral wool density 15 kg/m <sup>3</sup>				
	Type	Timber joisted ceiling systems without a layer of structural overlay board				
	Battens	Timber battens min 48 mm x 24 mm, steel resilient bar or MF suspended ceiling at max 500 mm centres	20	45	30	
	Facings	1 layer 12.5 mm Fermacell Board one side				
	Insulation	100 mm mineral wool density 15 kg/m <sup>3</sup>				
	Type	Timber joisted ceiling systems without a layer of structural overlay board				
2HD12						
	Battens	Timber battens min 48 mm x 24 mm, steel resilient bar or MF suspended ceiling at max 400 mm centres	29	45	30	
	Facings	2 layers 10 mm Fermacell Board one side				
	Insulation	Optional				
	Type	Timber joisted ceiling systems without a layer of structural overlay board				
	Battens	Timber battens min 48 mm x 24 mm, steel resilient bar or MF suspended ceiling at max 500 mm centres	35	50	30	
	Facings	2 layers 12.5 mm Fermacell Board one side				
	Insulation	Optional				
	Type	Timber joisted ceiling systems without a layer of structural overlay board				
2HD13						
	Battens	Timber battens min 48 mm x 24 mm, steel resilient bar or MF suspended ceiling at max 400 mm centres	16	35	30	
	Facings	1 layer 10 mm Fermacell Board one side				
	Insulation	Optional				
	Type	Timber joisted ceiling systems with a layer of structural overlay board				
	Battens	Timber battens min 48 mm x 24 mm, steel resilient bar or MF suspended ceiling at max 500 mm centres	19	40	30	
	Facings	1 layer 12.5 mm Fermacell Board one side				
	Insulation	Optional				
	Type	Timber joisted ceiling systems with a layer of structural overlay board				

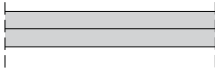
## FERMACELL TIMBER ROOF CONSTRUCTIONS

SYSTEM SPECIFICATIONS				Ceiling Weight kg/m <sup>2</sup>	Construction Height mm	Fire Rating mins from below
<b>2HD21</b>						
	Battens	Timber battens min 48 mm x 24 mm, steel resilient bar or MF suspended ceiling at max 400 mm centres		29	45	60
	Facings	2 layers 10 mm Fermacell Board one side				
	Insulation	Optional				
	Type	Timber joisted ceiling systems with a layer of structural overlay board				
	Battens	Timber battens min 48 mm x 24 mm, steel resilient bar or MF suspended ceiling at max 500 mm centres		35	50	60
	Facings	2 layers 12.5 mm Fermacell Board one side				
	Insulation	Optional				
	Type	Timber joisted ceiling systems with a layer of structural overlay board				
<b>2HD34</b>						
	Battens	Timber battens min 48 mm x 24 mm, steel resilient bar or MF suspended ceiling at max 500 mm centres		54	≥65	90
	Facings	1 layer 15 mm Fermacell Board plus 2 layers 12.5 mm Fermacell Board one side				
	Insulation	None				
	Type	Timber joisted ceiling systems without a layer of structural overlay board				
	Battens	Timber battens min 48 mm x 24 mm, steel resilient bar or MF suspended ceiling at max 3500 mm centres		54	≥65	90
	Facings	4 layers 10 mm Fermacell Board one side				
	Insulation	None				
	Type	Timber joisted ceiling systems without a layer of structural overlay board				

### FERMACELL FLOORING

			Element Weight	Admissible Point Loading	Thickness	Fire Rating from above	Thermal Performance
			kN/m <sup>2</sup>	kN	mm	mins	[1/Δ] m <sup>2</sup> K/W
<b>SYSTEM SPECIFICATIONS</b>							
<b>2E11</b>							
	Type	20 mm dry flooring element	0.23	2	20	30	0.06
	Areas of Application	1 + 2					
<b>2E22</b>							
	Type	25 mm dry flooring element	0.29	3	25	60	0.075
	Areas of Application	1 + 2 + 3					
<b>2E13</b>							
	Type	20 mm dry flooring element + 20 mm rigid foamed polystyrene	0.23	2	40	30	0.56
	Areas of Application	1 + 2					
<b>2E14</b>							
	Type	20 mm dry flooring element + 30 mm rigid foamed polystyrene	0.23	2	50	30	0.81
	Areas of Application	1 + 2					
<b>2E31</b>							
	Type	20 mm dry flooring element + 10 mm wood fibre insulating slab	0.25	3	30	90	0.26
	Areas of Application	1 + 2 + 3					
<b>2E32</b>							
	Type	20 mm dry flooring element + 10 mm mineral wool insulating slab	0.25	1	30	90	0.31
	Areas of Application	1					

FERMACELL POWERPANEL FLOORING

SYSTEM SPECIFICATIONS		Element Weight	Admissible Point Loading	Thickness	Fire Rating from above	Thermal Performance
		kN/m²	kN	mm	mins	[1/Δ] m²kW
<div>H<sub>2</sub>O TE Flooring</div> <div></div>	Type	25 mm Powerpanel dry flooring element for wet areas				
	Areas of Application	1 + 2 + 3				
		0.25	3	25	90	0.15

Introduction

Components & Accessories

Detailed Overview

Component Details

Installation Overview

Performance Details

Partitions

Linings

Floorings & Ceilings

Fire Protection

Timber Frames

Rainscreens

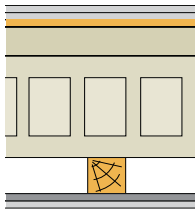
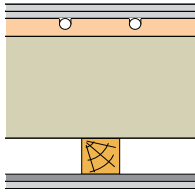
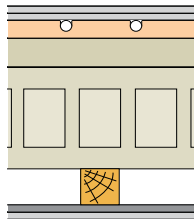
Fix & Finish

Wet Areas



The diagram shows a cross-section of a composite floor system. At the top, there is a concrete slab with a wavy texture. Below the slab is a layer of insulation, represented by a series of horizontal lines. Underneath the insulation is a steel beam, shown as a solid black horizontal bar. The beam is supported by a concrete foundation, which is also shown as a solid black horizontal bar at the bottom. The entire assembly is labeled 'Composite Floor System'.

## FERMACELL COMPLETE ACOUSTIC FLOOR-CEILING SOLUTIONS







			Overall Thickness	Fire Rating	Airborne Sound Insulation	Impact Sound Performance
SYSTEM SPECIFICATIONS			mm	mins	$D_{n,w} + C_w$	$(L'_{n,w})$
2FCM22						
 Robust Detail compliant	Facings	1 layer 10 mm Fermacell Board one side	As required	60	≥50	≤62
	Insulation	As required				
	Main Floor	Precast concrete floor 300 kg/m² min + 40 mm screed				
	Flooring Solution	2E31 or 2E32 Fermacell acoustic flooring element				
	Ceiling Solution	50 mm x 50 mm timber battens at 400 mm centres. Min 75 mm ceiling void				
	Facings	1 layer 10 mm Fermacell Board one side	As required	60	≥50	≤62
	Insulation	As required				
	Main Floor	Precast concrete floor 300 kg/m² min + 40 mm screed				
	Flooring Solution	2E31 or 2E32 Fermacell acoustic flooring element				
	Ceiling Solution	MF ceiling system at 400 mm centres. Min 75 mm ceiling void				
2FCM23						
	Facings	1 layer 10 mm Fermacell Board one side	As required	60	≥45	≤62
	Insulation	As required				
	Main Floor	Mass concrete floor 300 kg/m² min				
	Flooring Solution	2E22 Fermacell flooring element with proprietary hot water floor heating system				
	Ceiling Solution	50 mm x 50 mm timber battens at 400 mm centres. Min 75 mm ceiling void				
	Facings	1 layer 10 mm Fermacell Board one side	As required	60	≥45	≤62
	Insulation	As required				
	Main Floor	Mass concrete floor 300 kg/m² min				
	Flooring Solution	2E22 Fermacell flooring element with proprietary hot water floor heating system				
	Ceiling Solution	MF ceiling system at 400 mm centres. Min 75 mm ceiling void				
2FCM24						
	Facings	1 layer 10 mm Fermacell Board one side	As required	60	≥50	≤62
	Insulation	As required				
	Main Floor	Precast concrete floor 300 kg/m² min + 40 mm screed				
	Flooring Solution	2E22 Fermacell flooring element with proprietary hot water floor heating system				
	Ceiling Solution	50 mm x 50 mm timber battens at 400 mm centres. Min 75 mm ceiling void				
	Facings	1 layer 10 mm Fermacell Board one side	As required	60	≥50	≤62
	Insulation	As required				
	Main Floor	Precast concrete floor 300 kg/m² min + 40 mm screed				
	Flooring Solution	2E22 Fermacell flooring element with proprietary hot water floor heating system				
	Ceiling Solution	MF ceiling system at 400 mm centres. Min 75 mm ceiling void				





# Fire Protection

Introduction	99
Components & Accessories	102
Component Details	103
Performance Details	105






## MARKET SECTORS

	Healthcare
	Education
	Commercial property
	Recreation
	Retail
	Prisons and detention

## PERFORMANCE RATINGS

	20 dB	52 dB
	30 mins	240 mins

## FERMACELL PERFORMANCE

-  Impact – Severe duty, able to withstand impact from people as well as objects (door handles etc).
-  Acoustics – Greater performance often with less layers than plasterboard constructions.
-  Load bearing – The composition of Fermacell allows up to 50 kg per fixing to be hung from Fermacell using a toggle bolt and 30 kg from a single screw.
-  Speed of construction – Fermacell allows Fire Protection systems to be installed before the building envelope is complete. Due to the unique finishing system (FST) the overall installation of Fermacell is faster than plasterboard systems.
-  Environmental – Fermacell Boards are manufactured from 100% recycled content and are recyclable. Decreasing the carbon footprint and increasing the BREEAM rating of the building.

## Fermacell provides simpler solutions for Shaftwall and Beam and Column Encasement.

### BEAM & COLUMN ENCASEMENT

A 30 minute construction is achieved using a single layer of 10 mm Fermacell for beam and column encasement. Using only a single Hp/A rating, Fermacell's solution is easier to specify. Due to the unique composition of Fermacell Boards the installation time of the encasement systems can be reduced by stapling the boards together or to timber sections and beams.

### SHAFTWALL

From simple fire rated independent linings to full Shaftwall solutions, Fermacell offers a range of performance systems from 30 minutes to 2 hours. Using simple stud systems and standard Fermacell Boards, without the need for any specialist board, the Fermacell Shaftwall system offers speed of installation, whilst retaining our excellent environmental credentials.

**The resplendent and gently curving six storey University Campus Suffolk (UCS) waterfront building – located alongside the Orwell Quay – has been designed by architects RMJM.**

Martin Lardner Burke from RMJM commented: “The simplicity and flexibility of the Fermacell system allowed us to easily meet and overcome requirements and potential issues on site”. The development is Suffolk’s first University and is a joint initiative between the Universities of East Anglia and Essex. The scheme has established a new university student hub and administration HQ.



Main contractors on the scheme were Willmott Dixon Construction, with Essex-based BG Contracts as sub contractors. Fermacell is a product that Willmott Dixon has used on various projects enabling them to meet and exceed all of the performance requirements.

Through the construction stage the Fermacell Boards were robust enough to take the day-to-day knocks of site conditions. This eliminated the co-ordination and setting out issues giving the Client and design teams greater scope. The hub has been awarded an ‘excellent’ rating by BREEAM. Fermacell’s environmental credentials certainly contributed to this award.





The centre pieces of the building are two art lecture theatres – each able to accommodate 140 people. It also comprises an impressive reception area and restaurant, as well as two exhibition areas. Throughout the building are a further three 80 seater and six 60 seater classrooms, with a host of inter-changeable rooms available.

Fermacell was not only specified for the internal walling because of its durability and robustness. As with any public building, protection against fire was a major consideration when designing the partitions. Fermacell carries Class O classification as standard which means that it achieves high levels of fire protection. Even with slim partitions it is possible to achieve up to 120 minutes fire protection and a single layer can achieve 60 minutes protection up to 10 m high.

Fermacell Technical Manager Andy Richardson commented: "The level of fire protection will depend on a number of factors. These include whether the Fermacell Boards are integrated within a timber or steel structure, if there is insulation present and the height of the walls. We can react very quickly to given design requirements and provide solutions for walls up to 15 metres high."

Simple to install – although the technique is slightly different to plasterboard – Fermacell does not need a wet plaster skim to produce a suitable surface for painting. It is inherently stronger than conventional plasterboard and, as well as its strength and fire properties, it also provides acoustic, impact and moisture resistance.

# FIRE PROTECTION

## COMPONENTS & ACCESSORIES

www.fermacell.co.uk

Partitions

Introduction

Linings

Components & Accessories

Floorings  
& Ceilings

Fire Protection

Timber Frames

Component Details

Rainscreens

Fix & Finish

Wet Areas

Performance Details

### COMPONENTS



#### Fermacell Board

Fermacell Square edge or Tapered edge.

Thickness	10 mm, 12.5 mm, 15 mm and 18 mm
Sizes	1200 x 1000 mm to 1200 x 3000 mm



#### Fermacell Fine Surface Treatment

For giving Fermacell Boards a smoother finish if required.

Coverage	6 m <sup>2</sup> per ltr
Pack Size	3 ltr or 10 ltr



#### Fermacell Joint Filler

For filling 5–7 mm gaps between boards & stopping screw heads.

Coverage	5 m <sup>2</sup> per kg for filling Tapered edge joints. 10 m <sup>2</sup> for finishing glue joints and screw heads.
Pack Size	5 kg or 20 kg



#### Fermacell Jointstik

For edge glueing square edged Fermacell Boards.

Coverage	20 lm / 310 ml tube 37 lm / bulk applicator refill
Pack Size	310 ml tubes or 580 ml bulk applicator refills



#### 30/40/55 mm Fermacell Screws

For fixing Fermacell Boards to steel subframes of 0.7 gauge or greater.

Coverage	13 m <sup>2</sup> for walls
Pack Size	Box of 250 screws or box of 1000 screws

### ACCESSORIES



#### Fermacell Board Knife

For scoring and snapping Fermacell Boards.

Pack Size	0.05 kg
-----------	---------



#### Fermacell Spatula

For applying Fine Surface Treatment.

Size	250 mm or 450 mm
------	------------------

### Metal Framing Systems or Timber by others



### BEAM & COLUMN ENCASEMENT

#### BEAM & COLUMN ENCASEMENT

Using only a single Hp/A rating, Fermacell's solution is easier to specify (see tables below).

The following tables are valid for steel sections with a section factor of  $H_p/A \leq 300 \text{ m}^{-1}$  according to the formula:  $H_p/A = \frac{2b - 2h - b_2}{A}$

Where  $H_p$  = Heated perimeter and  
A = Cross Sectional Area of Metal Element

#### Timber Solution

Fire resistance category	
F 30-B	F 60-B
Fermacell in mm	
10	10 + 10

Minimum lining thickness of timber beams and columns

#### Steel Solution

BEAM ENCASEMENT			
Fire resistance category			
F 30-A	F 60-A	F 90-A	F 120-A
Fermacell in mm			
10	10 + 10	15 + 12.5	18 + 18

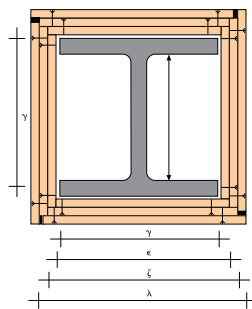
Minimum lining thickness for steel girders with  $H_p/A \leq 300 \text{ m}^{-1}$

COLUMN ENCASEMENT				
Fire resistance category				
F 30-A	F 60-A	F 90-A	F 120-A	F 180-A
Fermacell in mm				
10	2 x 10	2 x 15 + 1 x 12.5	4 x 15	5 x 15

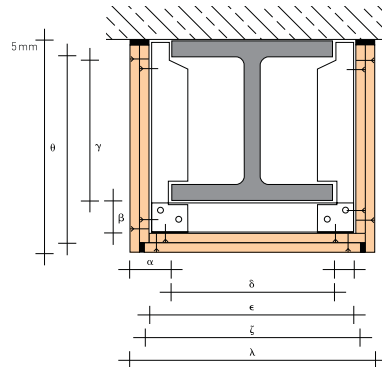
Minimum lining thickness for steel supports with  $H_p/A \leq 300 \text{ m}^{-1}$

#### HOW TO CALCULATE BOARD DIMENSIONS

Calculation of board dimensions must take into account the board thickness needed to achieve the required fire rating.



Width  $\epsilon = \gamma + (1 \times 1 \text{st layer thickness})$   
 Width  $\zeta = \epsilon + (1 \times 1 \text{st layer thickness}) + (1 \times 2 \text{nd layer thickness})$   
 Width  $\lambda = \zeta + (1 \times 2 \text{nd layer thickness}) + (1 \times 3 \text{rd layer thickness}) + 5 \text{ mm for joint filler}$

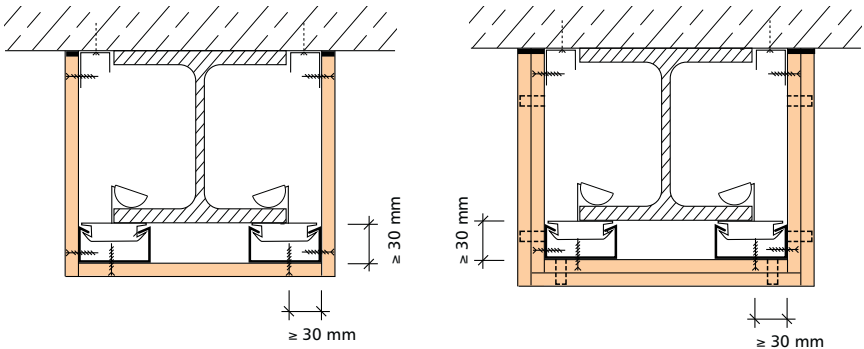


Width  $\epsilon = \delta + (\alpha \times 2)$   
 Width  $\zeta = \epsilon + (2 \times 1 \text{st layer thickness}) - (2 \times 5 \text{mm joint filler})$   
 Width  $\eta = \gamma + \beta - 5 \text{mm joint filler} + 1 \text{st layer thickness of board}$   
 Width  $\theta = \eta + 2 \text{nd layer thickness of board}$

Proprietary steel encasement systems are suitable for use with Fermacell. Timber grounds may be placed in the web as supports. These must be set at a maximum of 400 mm centres.

BEAM & COLUMN ENCASEMENT

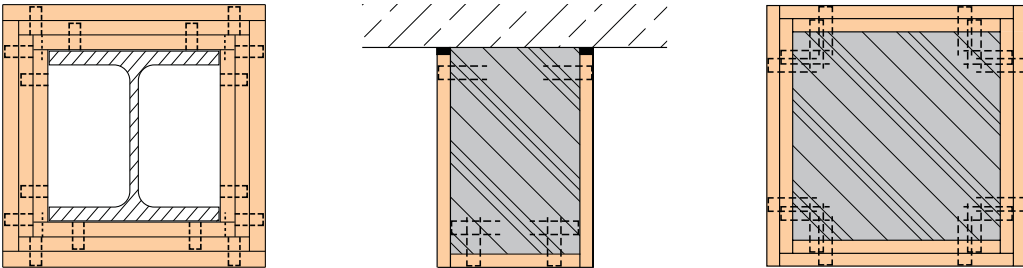
3 SIDED BEAM CONSTRUCTIONS



Single-layer steel beam encasement for 3-sided exposure to fire

2 layer steel beam encasement for 3-sided exposure to fire

Multiple layers can be stapled board to board using proprietary diverging staples, refer to the Fermacell Dry Lining Walls and Ceilings guide for further details, or contact our Technical Department on +44 (0) 870 6090 306.

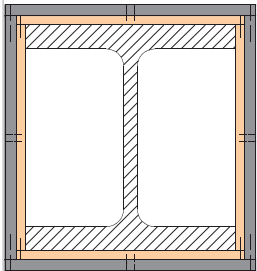


1 layer timber beam lining F30-B for 3-sided exposure to fire

2 layer support lining F60-B for 4-sided exposure to fire

For 30 minute constructions with one layer of Fermacell, edge joints should be sealed with a fire rated mastic. For multiple layer constructions, the outer layer should be jointed with Fermacell Joint filler or Jointstik.

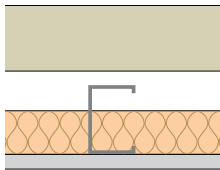
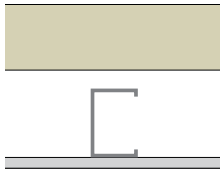
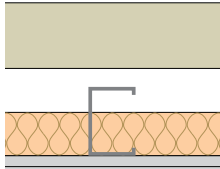
USING FERMACELL POWERPANEL HD BOARD



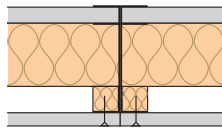
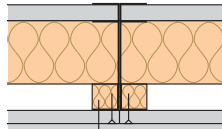

Fire resistance/ Fire test category	Hp/A	Fermacell Powerpanel HD	Fermacell Gypsum Fibreboard	Report
F 30-A	≤ 300	15 mm	–	P-30004/1293
F 60-A	≤ 300	15 mm	–	
F 90-A	≤ 160	15 mm	–	
F 120-A	≤ 120	15 mm	12.5 mm	

Layer buildup dependent on Hp/A rating.

### FIRE PROTECTION WITH INDEPENDENT LINING SYSTEMS

			Wall Weight	Wall Height	Wall Thickness	Fire Rating	Improved Sound Insulation	BS 5234/ DIN 4103
SYSTEM SPECIFICATIONS			kg/m <sup>2</sup>	m	mm	mins	ΔR <sup>1</sup> <sub>w</sub>	Grade
3S11								
	Studs	50 mm DIN standard studs @ 600 mm centres	23	3	65	30	20	Severe
	Facings	1 layer 15 mm Fermacell Board one side						
	Insulation	50 mm mineral wool density 40 kg/m <sup>3</sup>						
	Studs	75 mm DIN standard studs @ 600 mm centres	23	3.5	90	30	20	Severe
	Facings	1 layer 15 mm Fermacell Board one side						
	Insulation	50 mm mineral wool density 40 kg/m <sup>3</sup>						
	Studs	100 mm DIN standard studs @ 600 mm centres	23	4.1	115	30	20	Severe
	Facings	1 layer 15 mm Fermacell Board one side						
	Insulation	50 mm mineral wool density 40 kg/m <sup>3</sup>						
3S12								
	Studs	50 mm DIN standard studs @ 600 mm centres	32	3	72.5	30 <sup>+</sup>	N/A	Severe
	Facings	1 layer 12.5 mm Fermacell Board plus 1 layer 10 mm Fermacell Board one side						
	Studs	75 mm DIN standard studs @ 600 mm centres	32	3.5	97.5	30 <sup>+</sup>	N/A	Severe
	Facings	1 layer 12.5 mm Fermacell Board plus 1 layer 10 mm Fermacell Board one side						
	Studs	100 mm DIN standard studs @ 600 mm centres	32	4.5	122.5	30 <sup>+</sup>	N/A	Severe
	Facings	1 layer 12.5 mm Fermacell Board plus 1 layer 10 mm Fermacell Board one side						
3S21								
	Studs	50 mm DIN standard studs @ 600 mm centres	41	3	75	60 <sup>+</sup>	22	Severe
	Facings	2 layers 12.5 mm Fermacell Board one side						
	Insulation	50 mm mineral wool density 38 kg/m <sup>3</sup>						
	Studs	75 mm DIN standard studs @ 600 mm centres	41	3.5	100	60 <sup>+</sup>	22	Severe
	Facings	2 layers 12.5 mm Fermacell Board one side						
	Insulation	50 mm mineral wool density 38 kg/m <sup>3</sup>						
	Studs	100 mm DIN standard studs @ 600 mm centres	41	4.75	125	60 <sup>+</sup>	22	Severe
	Facings	2 layers 12.5 mm Fermacell Board one side						
	Insulation	50 mm mineral wool density 38 kg/m <sup>3</sup>						

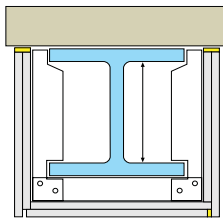
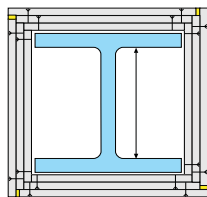
### FIRE PROTECTION WITH SHAFTWALL SYSTEMS

		Wall Height without Fire Rating	Wall Height with Fire Rating	Wall Thickness	Fire Rating	Sound Insulation	BS 5234/ DIN 4103
SYSTEM SPECIFICATIONS		m	m	mm	mins	R <sub>w</sub>	Grade
SHAFTWALL 1							
	Studs	Back to Back 100 mm x 0.7 mm Shaftwall profile stud at max 400 mm centres					
	Facings	1 layer 15 mm Fermacell Board plus 1 layer 12.5 mm Fermacell Board one side					
	Insulation	60 mm mineral wool density 33 kg/m³ with infill strips					
SHAFTWALL 2							
	Studs	Back to Back 100 mm x 0.7 mm Shaftwall profile stud at max 400 mm centres					
	Facings	1 layer 15 mm Fermacell Board plus 2 layers 12.5 mm Fermacell Board one side					
	Insulation	60 mm mineral wool density 33 kg/m³ with infill strips					
	Studs	Back to Back 100 mm x 0.7 mm Shaftwall profile stud at max 400 mm centres					
	Facings	1 layer 15 mm Fermacell Board plus 3 layers 12.5 mm Fermacell Board one side					
	Insulation	60 mm mineral wool density 33 kg/m³ with infill strips					

### SHAFTWALL

From simple fire rated independent linings to full shaftwall solutions, Fermacell offers a range of performance systems from 30 minutes to 2 hours. Using simple stud systems and standard Fermacell Boards, without the need for any specialist board, the Fermacell Shaftwall system offers speed of installation, whilst retaining our excellent environmental credentials.

## BEAM & COLUMN ENCASEMENT

SYSTEM SPECIFICATIONS			Board Weight kg/m <sup>2</sup>	Fire Rating mins from below
<b>BEAM ENCASEMENT</b>				
 <p>For <math>H_p/A &gt; 300m^{-1}</math></p>	SubFrame	Steel clip system, timber grounds	11.5	30
	Facings	1 layer 10 mm Fermacell Board one side		
	SubFrame	Steel clip system, timber grounds	23	60
	Facings	2 layers 10 mm Fermacell Board one side		
	SubFrame	Steel clip system, timber grounds	33	90
	Facings	1 layer 15 mm Fermacell Board plus 1 layer 12.5 mm Fermacell Board one side		
	SubFrame	Steel clip system, timber grounds	42	120
	Facings	2 layers 18 mm Fermacell Board one side		
<b>COLUMN ENCASEMENT</b>				
 <p>For <math>H_p/A &gt; 300m^{-1}</math></p>	SubFrame	Steel clip system, timber grounds or frameless casing	11.5	30
	Facings	1 layer 10 mm Fermacell Board one side		
	SubFrame	Steel clip system, timber grounds or frameless casing	23	60
	Facings	2 layers 10 mm Fermacell Board one side		
	SubFrame	Steel clip system, timber grounds or frameless casing	51	90
	Facings	2 layer 15 mm Fermacell Board plus 1 layer 12.5 mm Fermacell Board one side		
	SubFrame	Steel clip system, timber grounds or frameless casing	72	120
	Facings	4 layers 15 mm Fermacell Board one side		
	SubFrame	Steel clip system, timber grounds or frameless casing	90	180
	Facings	5 layers 15 mm Fermacell Board one side		

# Timberframes

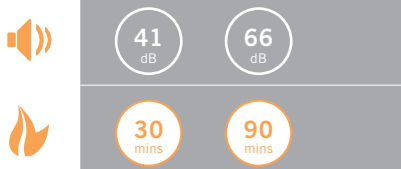
Introduction	109
Detailed Overview	111



## MARKET SECTORS

- Self build
- Factory built/Offsite
- Education/Healthcare
- Social housing

## PERFORMANCE RATINGS



## FERMACELL PERFORMANCE

- Impact – Severe duty, able to withstand impact from people as well as objects (door handles etc).
- Acoustics – Greater acoustic performance often with less layers than plasterboard constructions providing slimmer partitions.
- Loadbearing – The composition of Fermacell allows up to 50 kg per fixing to be hung from Fermacell using a toggle bolt and 30 kg from a single screw.
- Speed of construction – Fermacell allows the partitions to be installed before the building envelope is complete. Due to the unique finishing system (FST) the overall installation of Fermacell is faster than plasterboard.
- Environmental – Fermacell Boards are manufactured from 100% recycled content and are recyclable. Decreasing the carbon footprint and increasing the BREEAM rating of the building.

## TIMBER STUD PARTITIONS

These are more commonly used in domestic applications. Fermacell Timber stud partitions provide versatility and performance including Category 1 racking strength for Timber Framed properties.

The ability of Fermacell to be stapled or nailed to timber studs means a significantly increased speed of fixing.

## TWIN FRAME SYSTEMS

Fermacell partitions achieve a number of advantages over masonry construction by reducing the weight, build time and cost often associated with masonry construction. Fermacell also meets Part E and a number of Robust Detail Compliant systems as a gypsum based board.

## RACKING STRENGTH

Testing carried out at the CERAM testing centre confirmed that Fermacell can replace timber sheet materials when used in timber frame constructions as the racking board adding lateral structural strength to the building. This means that Fermacell can be used as a Dry Lining board giving fire and acoustic properties, and a structural board also saving time and money on fixing separate gypsum and timber sheet materials. The table on page 8 shows the racking test data.



**Advanced Panel Systems (APS) manufacture an innovative range of products for the house-builder which improves speed, efficiency of construction and ultimately cost, whilst delivering consistently high quality homes with a low environmental impact.**

APS are at the forefront of the construction industry's quest of 'seeking improvement through re-engineering construction'.



Their closed panel system is a high performance fully closed wall system which incorporates a service zone. The superior quality of the system ensures quality, speed and productivity on site. This is achieved by installing many components in the factory, including a range of Fermacell's Gypsum Fibreboard.

Wendy Berry, Managing Director of APS, commented: "We manufacture to the highest standards of quality and accuracy and only use components that can meet the highest of standards. The density and strength of the Fermacell Board means it can be used as a racking board, together with excellent fire, acoustic and environmental properties and the extensive product range in both square and Tapered edge meant it met all our requirements. We chose Fermacell for this very reason".

## TIMBER FRAME SYSTEMS

### BREATHING WALL

Breathing walls rely on the racking board to be positioned on the inside of the timber frame, unlike traditional timber frame systems where it is normally positioned to the cold cavity side. A vapour control layer is not needed in a breathing wall construction as the structure allows the free passage of moisture. Such constructions can include a natural fibre insulation board or a breather membrane holding the thermal insulation in place. Using a natural fibre insulation board will add to the air tightness of the building and will also add to the thermal mass of the building.

### EXTERNAL WALLS WITH FERMACELL POWERPANEL HD

Fermacell Powerpanel HD Boards are for external cladding on timber-framed construction providing weatherproofing, structural rigidity, fire protection and sound proofing. Powerpanel HD can be directly rendered on to (please see the Fixing & Finishing Section for details). Note – a breather membrane is required.

### TIMBER FRAME SYSTEMS

Fermacell has a number of Timber Frame solutions to suit loadbearing and non loadbearing applications.

Our timber frame systems provide simple solutions for internal partitions and party walls including Part E and Robust Detail compliant systems.

By using Fermacell the construction time of Timber Frame can be reduced by stapling or nailing Fermacell to the timber substrate; in addition the use of Fermacell Jointstik and Fine Surface Treatment (FST) reduces the drying times associated with traditional Dry Lining/plastering methods.

We have a large range of Fermacell Timber Frame systems, the full selection is listed in the Partition section of this manual. Listed here are the most commonly specified Timber Frame systems.

TIMBER FRAME SYSTEMS	
1H13	
1H22	
1H35	
	Robust Detail compliant
1H36	
	Robust Detail compliant
1HT11	
1HT23	
1HA11	
1HG32	

For individual system performances please see Partition section, starting on page 40.



# Paints Screens

Introduction	113
Detailed Overview	114



## Fermacell provides outstanding performance in new gateway building.

More than 20,000 m<sup>2</sup> of Fermacell Boards has been used in the construction of the new £5.6 million Gateway Building at the University of Cumbria, Lancaster Campus.

Not only was Fermacell selected for the internal walls but has also been utilised as an external carrier board for the structure's rainscreen cladding.



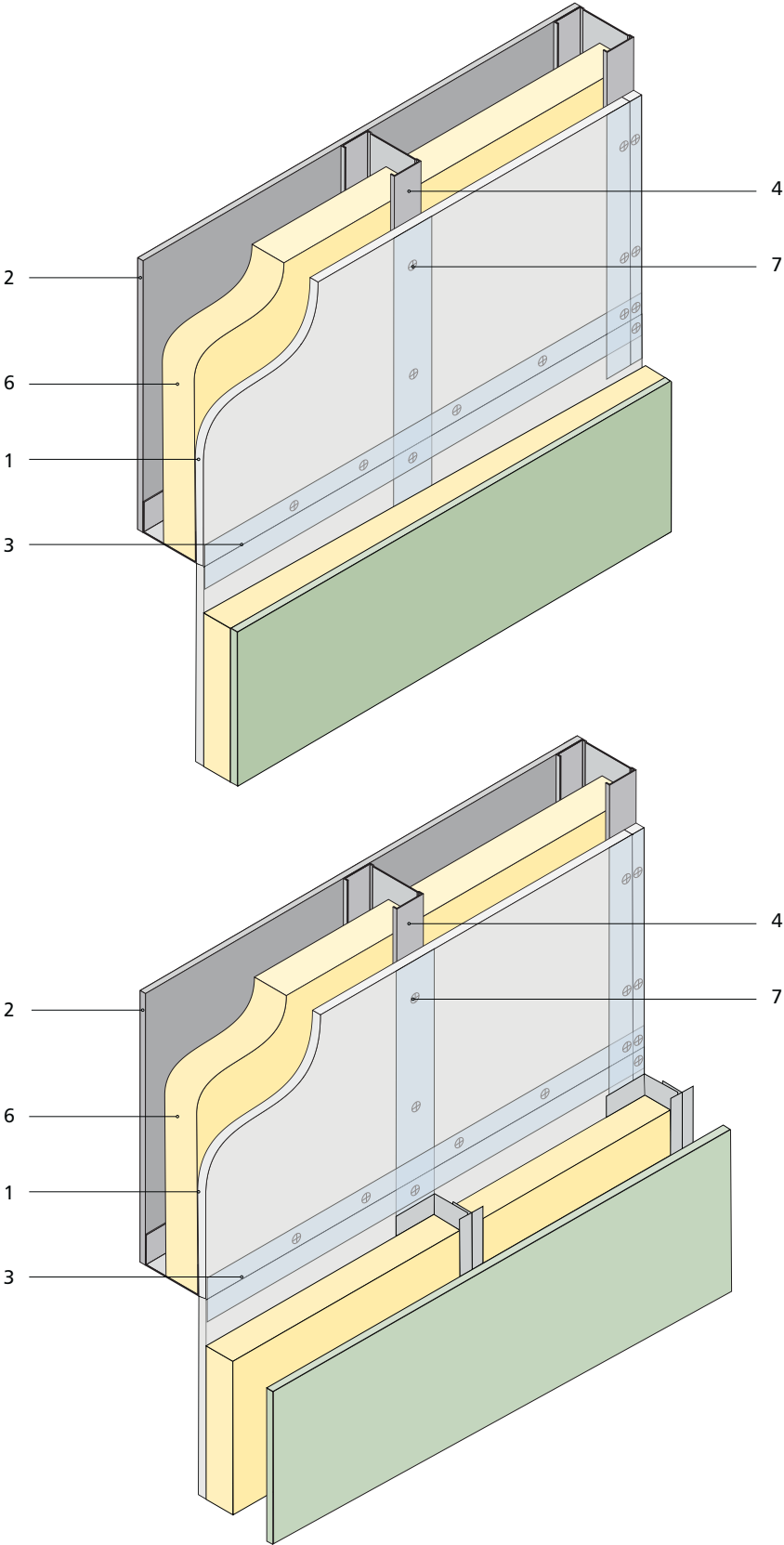
Fermacell has been widely used in rainscreen applications on timber frame constructions throughout Europe for the past 20 years.

The environmentally friendly design of the University of Cumbria incorporates natural ventilation and the integration – wherever possible - of local natural materials such as Cumbrian Stone and Zinc cladding.

The use of 12.5 mm Fermacell as an external backer board proved very successful in this application. It was exposed to the rain for nearly three months before the rainscreen cladding was installed and coped admirably with the conditions. Rigorous testing of Fermacell as an external backing board was undertaken at the Taylor Woodrow Technology Centre in Leighton Buzzard in accordance with strict guidelines set down by the CWCT (Centre for Windows and Cladding Technology).

No other competitive board systems – to our knowledge - have gone through this test process, which has been developed specifically for rainscreen evaluation. Fermacell passed the tests with flying colours, and with a cost saving per m<sup>2</sup> when compared with established products.

INSULATED & VENTILATED RAINSCREENS



## INSULATED & VENTILATED RAINSCREENS

Fermacell Gypsum Fibreboard has been tested independently for use as a backer board in vented rainscreen applications. Testing has shown it to be weather resistant, and that it does not degrade with permanent exposure. Discolouration may occur due to moisture absorption in the board surface. A surface treatment or other protection is recommended for prolonged exposure prior to the installation of the cladding system.

Test in accordance with CWCT Standard Test Methods at UKAS accredited facility.  
Taylor Woodrow Technology  
Leighton Buzzard  
LU7 4OH

### Test Sequence

- (i) Water tightness : Static
- (ii) Air Permeability : Pressure Cycling
- (iii) Wind Resistance : up to 1.5 kN (+Ve & -Ve)
- (iv) Air Permeability : Pressure Cycling
- (v) Water tightness : Static
- (vi) Wind Resistance : Above 2.1 kN (+Ve & -Ve)
- (vii) Dynamic Water Test : 600 Kpa

1. 12.5 mm Fermacell Square edge board
2. Dry Lining (Fermacell / Internal Lining Board) with vapour control layer where required
3. Fermacell Jointstik adhesive to horizontal joints and minimum 50 mm foil tape over all joints and screws.
4. Metal or Timber stud to suit loading requirements.
5. Head & Foot Track
6. Insulation
7. Screws wafer head zinc plated 4.2 mm gauge with 10.5 mm Head. eg Hilti S-DD03Z 4.2 x 25 mm @ 150 mm c/c.
8. Anchor Fixing

A Shown is an indicative cladding system using brackets and rails, and an insulated system. Suitable system to be specified by architect or specifier

Fermacell is not only an excellent Rainscreen backer material, Fermacell is also a high performance, multipurpose building board. It combines in a single product exceptional fire, impact and moisture resistant properties with high levels of acoustic insulation and weight carrying capacity.

### 12.5 mm Fermacell

Fixing type	Material condition	Applied load
6 mm Woodscrew	Dry	0.8 KN
6 H Insulation screw	Dry	0.9 KN
5 mm Woodscrew	Dry	0.8 KN
6 mm Woodscrew	Soaked	0.7 KN
6 H Insulation screw	Soaked	0.9 KN
5 mm Woodscrew	Soaked	0.7 KN

### 15 mm Fermacell

Fixing type	Material condition	Applied load
6 mm Woodscrew	Dry	1.1 KN
6 H Insulation screw	Dry	1.0 KN
5 mm Woodscrew	Dry	1.1 KN
6 mm Woodscrew	Soaked	1.0 KN
6 H Insulation screw	Soaked	0.9 KN
5 mm Woodscrew	Soaked	1.0 KN

For technical data on Fermacell Board properties please see page 8.





# Fix & Finish

Introduction	117
Components & Accessories	118
Detailed Overview	120
Installation Overview	122



Fermacell Boards are fitted and finished slightly differently to traditional plasterboard; thus speeding up the installation time by reducing drying out times and providing a more user friendly finishing system with our FST (Fine Surface Treatment).



The use of Fermacell Gypsum Fibreboards alleviates the majority of the fitting and finishing problems associated with traditional Dry Lining methods.

The screw retention capabilities of Fermacell allows most fixtures to be fitted directly to the board (see table below).

### BOARD FITTING

Fermacell Boards are cut and fitted in a similar way to plasterboard eliminating the need for specialist tools and skills.

### BOARD JOINT REINFORCEMENT

Fermacell's Joint filler or Jointstik provides quicker and more simple application versus traditional Dry Lining methods; with Jointstik a stronger joint can be achieved without the need for further reinforcement.

### SURFACE FINISH

With Fermacell's FST (Fine Surface Treatment) a skim plaster type finish can be achieved in a fraction of the time without the need of specialist skills; allowing the experienced tradesman, self builder or DIY enthusiast to achieve a flawless finish.

#### LOAD-CARRYING CAPACITY OF FERMACELL WALLS

Fermacell Gypsum Fibreboards (thickness) <sup>(1)</sup>	Loadbearing strength in kg <sup>(2)</sup>				
	Picture hooks fixed by nails			Screw with cont. thread 5 mm dia. <sup>(3)</sup>	Toggle Bolt/ Cavity Fixing <sup>(4)</sup>
10 mm	15	25	35	20	40
12.5 mm	17	27	37	30	50
12.5 + 10 mm	20	30	40	35	60
15 mm	18	28	38	30	55
18 mm	20	30	40	35	60

(1) Maximum stud centres = 50 x board thickness. N.B. Where fixings are less than 500 mm apart, reduce the load per fixing by 50%. If a stud support separates the fixings, then use the full loadbearing strength shown above.

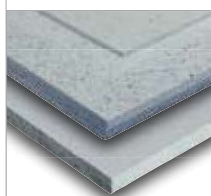
(2) Safety factor: 2 (Static load with relative humidity of up to 85%).

(3) Depth of cupboard or shelves: max. 350 mm.

(4) Standard toggle bolt with > 4 mm dia. screw. (The toggle bolt manufacturer's instruction should be followed.)

### FOR ALL FERMACELL SYSTEMS

#### COMPONENTS



##### Fermacell Board

Fermacell Square edge or Tapered edge.

Thickness	10 mm, 12.5 mm, 15 mm and 18 mm
Sizes	1200 x 1000 mm to 1200 x 3000 mm



##### Fermacell Fine Surface Treatment

For giving Fermacell Boards a smoother finish if required.

Coverage	6 m <sup>2</sup> per ltr
Pack Size	3 ltr or 10 ltr



##### Fermacell Joint Filler

For filling 5–7 mm gaps between boards & stopping screw heads.

Coverage	5 m <sup>2</sup> per kg for filling Tapered edge joints. 10 m <sup>2</sup> for finishing glue joints and screw heads.
Pack Size	5 kg or 20 kg



##### Fermacell Jointstik

For edge glueing square edged Fermacell Boards.

Coverage	20 lm / 310 ml tube 37 lm / bulk applicator refill
Pack Size	310 ml tubes or 580 ml bulk applicator refills



##### 30/40/55 mm Fermacell Screws

For fixing Fermacell Boards to steel subframes of 0.7 gauge or greater.

Coverage	13 m <sup>2</sup> for walls
Pack Size	Box of 250 screws or box of 1000 screws

#### ACCESSORIES



##### Fermacell Board Knife

For scoring and snapping Fermacell Boards.

Pack Size	0.05 kg
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##### Fermacell Spatula

For applying Fine Surface Treatment.

Size	250 mm or 450 mm
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#### Metal Framing Systems or Timber by others

### FITTING FERMACELL BOARDS

#### TOOLS YOU WILL NEED



##### Electric Screwdriver

Electric screwdriver with a minimum speed of 3500 rpm. A cordless screwdriver may be used, but check the speed first. Slower speed tools may cause lipping when installing boards on steel studwork.



##### Pneumatic Gun

If using staples or nails, a pneumatic gun and compressor operating at 7 bar will be needed. (This equipment is available from many hire centers).



##### Plumb Line

Plumb line or long spirit level.



##### Mastic Gun

Mastic gun for Jointstik tubes.



##### Decorator's Scraper

Decorator's scraper or similar for removing excess Fermacell Jointstik (after curing).



##### Taping knife

Taping knife or plastering trowel for applying Fermacell Joint filler to the joint.



##### Rigid Bladed Scoring Knife

Rigid bladed scoring knife, such as a Fermacell knife, for scoring and snapping the boards.



##### A Circular or Jig Saw

A circular or jig saw may also be used. If using a hand-held electric circular saw, we recommend using a vacuum attachment to collect dust.



##### Steel Trowel

A steel trowel for applying Fermacell FST (Fine Surface Treatment). Special Fermacell applicators are available from selected distributors.

Fermacell Boards can be installed on to a variety of backgrounds; typically Metal studs, Timber studs, directly bonded, or mounted on a SFS frame to exterior walls.

#### GENERAL SITE GUIDELINES.

Fermacell components should not be installed when the mean relative humidity is  $\geq 80\%$ .

Fermacell Boards should be fixed at a mean relative humidity of  $\leq 80\%$  and a room temperature of  $+5^{\circ}\text{C}$ . The temperature of the adhesive should be  $+10^{\circ}\text{C}$ .

The boards must be acclimatised to the installation area, and in the 12 hours after jointing the relative room climate should not change significantly. Lower temperatures prolong curing times.

Filling joints with Joint filler and the application of FST should only be carried out at a mean relative humidity of  $\geq 70\%$  (corresponding to a board moisture content of  $\leq 1.3\%$ ), and the room temperature should be  $+5^{\circ}\text{C}$ .

Wet trades or wet screeding, or asphaltting should be completed prior to joint filling.

The adhesive method of jointing can be used prior to these applications, however, check with the our Technical Department first on **+44 (0) 870 6090 306**.

Gas burner heating can damage the boards due to the risk condensation and thermal shock. This applies particularly to cold interiors with poor ventilation. Rapid heating, which can result in thermal shock, must be avoided.

### FINISHING



#### PLASTERS AND TEXTURED PLASTERS

A smooth plaster or finish is not normally recommended as the same finish can be achieved using FST, which is much faster and a fraction of the cost. Where plaster is being applied, all joints must be reinforced with a fibre tape fixed with PVA adhesive, and a sealant must be applied to the surface of the whole board. In addition a test area must be tried first as we do not manufacture plaster finishes.

#### PAINTING

Fermacell Boards can be painted directly. Refer to our instruction manual for recommendations for joint treatment in this case. Fermacell FST gives a smooth surface ready to accept a paint finish. Typically a mist coat and two undiluted top coats are required. Where vinyl or oil based paints are to be used without the prior application of FST, we recommend the boards are sealed first.

We do not recommend the use of eggshell paint finishes. However, where eggshell paints are used, a minimum of two coats of FST must be applied first, followed by a sealant. In all cases, refer to the relevant British standards. In all cases, the paint manufacturers recommendations should be followed.

## FINISHING



## TILING

Before tiling, all areas should be clean and free from dust. If a priming coat is required, this should be allowed to dry for 24 hours before tiling work starts.

Wet areas like showers and bathrooms, which are subject to frequent splashing, should be treated with a waterproofing system such as the Fermacell Waterproofing system. This is a paintable system suitable for use with cement based adhesives. Tile adhesives with a low water content should be used and tiles fixed with a thin bed adhesive method, without pre-wetting.

Generally tiles should not be grouted for a 24 hour period after fixing. Follow the adhesive and tile manufacturer's recommendations. Wall surfaces

that require sealing must be protected against the penetration of water to a height of 2000 mm above the bath floor, with adequate spacing above the actual shower and bath areas. For showers, waterproofing must extend to at least 300 mm above the shower head.

Corners and penetration should be sealed with recommended sealing tapes or collars. It is recommended that all walls in any shower or bathroom are sealed against rising moisture to a height of 150mm. In all cases refer to manufacturers instructions. Fermacell recommends a maximum tile size of 300 mm x 300 mm. For larger tiles please contact our Technical Department on **+44 (0) 870 6090 306**.



### FITTING FERMACELL BOARDS

#### 1. STUDWORK



If you are using a steel subframe, a minimum 50 mm fixing face and a 0.6 mm gauge stud must be used, with associated head and floor track to suit.

If you are using timber for the subframe, you will need (75 mm x 50 mm) P.S.E. well seasoned timber for both the vertical studwork and the head and floor track. An 89 mm x 38 mm studs may be used, but only with the adhesive or Tapered edge jointing system.

Allow for full height stud every 500 mm of wall length when using 1500 mm x 1000 mm one-man boards, or every 600 mm of wall length when using other sizes in 12.5 mm thickness or every 400 mm of wall length when using 10 mm thickness, plus one extra stud for the final wall fix. Allow two times the wall length for the head and floor tracks. In all cases ensure that studwork spacing is suitable for the size of board to be used.

#### 2. FIXING



For the steel frame use  $\geq 40$  mm screws with wall plugs (if appropriate) for fixing head and floor tracks, and end studs to the existing structure. Allow for fixing frame anchors at  $\leq 600$  mm centres. Intermediate studs are not fixed to the head and floor track.

For timber frame use  $\geq 80$  mm screws with wall plugs (if appropriate) for fixing head and floor tracks and end studs to the existing structure. Allow for fixing frame anchors at  $\leq 600$  mm centres. Use 100 mm round headed nails for screw fixing the studs to the head and sole plate (3 per fixing, 6 per stud).

#### 3. MINERAL FIBRE INSULATION



For most general applications we recommend 40 mm thick, 45 kg/m<sup>3</sup> mineral fibre insulation in batt or roll form. The width of the insulation should match the stud spacing (see note 1).

This grade of insulation gives excellent all round thermal and acoustic properties and when used in conjunction with 12.5 mm board provides F60 partitions (see Fermacell systems 1S21 and 1H22).

#### 4. FERMACELL BOARDS



Fermacell Boards available in both Square and Tapered edge (2 sides and 4). For board sizes please refer to board size table on page 8. Square edge boards can be easily fitted and finished using Fermacell Jointstik and Fine Surface Treatment.

Our Tapered edge boards are designed to accommodate a joint reinforcement tape as with traditional Dry Lining. Once the tape has been bedded into place and the Tapered area filled and the Fermacell Filler is set the entire surface is then coated with Fine Surface Treatment.

#### 5. FERMACELL SCREWS



The boards should be screwed to the studs or frame using Fermacell screws (3.9 x 30 mm) at 250 mm centres along the studs. Staples should be 38 mm long, have a head width of 10mm and be a minimum of 1.4 mm gauge.

Nails should be galvanised, 45 mm long and a minimum of 2.2 mm gauge. Staples and nails should be fixed at 200 mm centres. Refer to the fixings tables for specific fixings information dependant on Fermacell thickness and application. Fixings should be 10 mm from the edge of the board, and 50 mm from corners. Please fixing sequence in table 5b.

For screw spacing and usage for wall and ceilings please refer to our Dry Lining Wall & Ceilings Guide.

### FITTING FERMACELL BOARDS

#### 5b. FIXING SEQUENCE

When fixing boards in a double height partition, cross joints must be avoided by installing boards as shown in *Diagram A*. When fixing boards, work from one side of the board to the other (e.g. from left to right) or from the centre outwards. Don't fix the four corners first as this can set up stresses in the board. Ensure that there is a gap at junctions with other adjoining surfaces. This applies to both layers of a double layer partition system. See *Diagram B*.

When using Fermacell square edge one-man boards (1500 mm x 1000 mm), you should alternate the orientation of the boards as shown in *Diagram C*. This sequence prevents cross joints. A similar system for using 1200 mm x 1200 mm taper edge boards (Tapered on 4 sides) is shown in *Diagram D*. All joints should be staggered by a minimum of 200 mm both horizontally and vertically.

Typically strips 50 mm to 75 mm wide and 10 mm thick, these should be sized to suit the wall thickness. These can be either purchased as a roll or may be offcuts from the insulation material from the wall.

These strips are placed between the head and floor track and the end studs, and adjoining surfaces to prevent flanking sound transmission. Alternative materials may be used, but these must be suitable for the performance of the partition in regard to fire and acoustics.

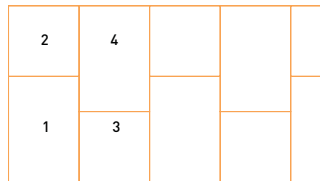


Diagram A

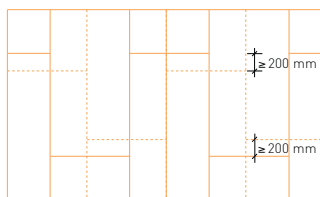


Diagram B

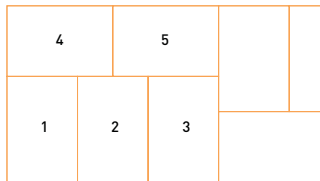


Diagram C

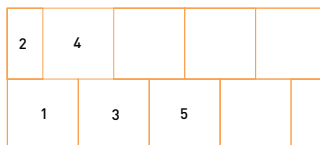


Diagram D

#### 6a. FERMACELL JOINTSTIK



Jointstik is used for gluing square edge boards together. Each cartridge will cover 20 linear meters of joint using a 3 mm bead. This equates to approximately 8 boards.

Fermacell Jointstik adhesive is applied to the edge of the board in a continuous 3 mm bead prior to fixing the next board.

Because the adhesive expands on contact with air, the bead should be applied to the edge of square edge boards and not the 'V' between the tapers of Tapered edge boards.

If the bead is applied incorrectly, excess Jointstik may be trapped between board and subframe causing subsequent lipping.

#### 6b. FERMACELL JOINTSTIK



Once Jointstik is applied the next board is then fitted to the subframe, spreading the adhesive across the face of the board edge and ensuring a tight fit of less than 1 mm. Allow the adhesive to harden fully before attempting to remove any excess (typically 24 hours). Once hardened, the excess can be struck off with a decorator's scraper. There is no requirement for noggings behind these joints. The final gap between boards with Jointstik should be less than 1 mm.

Any greater than this may result in weaker joints. If Jointstik has been for a long period it may be hard to remove, a Surform or any similar tool may be used to remove it. The joint and screw heads should then be filled with Fermacell Joint Filler. All joints above 2500 mm partition height must be jointed using Jointstik or reinforced with noggings. Horizontal joints are jointed in the same manner as vertical joints.



### FITTING FERMACELL BOARDS

#### 7a. FERMACELL JOINT FILLER



A hard filler used for jointing Tapered edge boards, jointing the gaps between cut edges and for filling screw heads. As well as an alternative to Jointstik when using square edge boards.

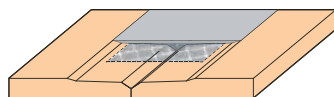
If using Tapered edge boards, jointing tape will be required. We recommend a paper tape rather than a self adhesive fibre tape as this gives a stronger joint. When using Fermacell Joint Filler for Tapered edge boards, allow 1 kg per 4 meters of joint length, and 1 kg per 7–8 meters of joint length for jointing off cuts.

#### 7b. FERMACELL JOINT FILLER

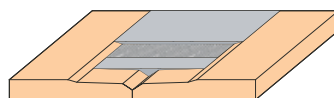
##### Fixing and jointing Tapered edge boards

Tapered edge boards are fitted to the subframe with the board edges touching. The boards are jointed using Fermacell Joint Filler and is applied to the joint, ensuring that the central 'V' of the joint is fully filled, paper tape is bedded into the joint and the filler is struck off flush with the taper.

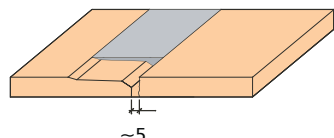
Self adhesive fibre tape may be used instead of paper tape and the filler pushed through the mesh to the back of the joint. Please note that the joint strength when using fibre tape is less than paper tapes and cracking may occur in certain circumstances. Once the filler is dry, a second fill may be necessary to take up any shrinkage, fill the screw heads and apply Fine Surface Treatment to the entire surface.



Joint variation 1: Two factory Tapered edge boards with Fermacell Jointing Tape and Fermacell Joint Filler



Joint variation 2: Two factory Tapered edge boards with paper tape and Fermacell Joint Filler



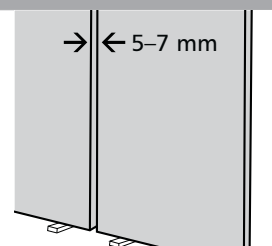
Joint variation 3: One factory Tapered edge board and one edge cut on-site, bevelled and chamfered, with Fermacell Jointing Tape and Fermacell Joint Filler

#### 7c. FERMACELL JOINT FILLER



##### Offcuts and Square edge boards

Fermacell Joint Filler may be used to joint square Edge boards and off cuts. Where square edge boards or offcuts are installed prior to jointing. A 7 mm gap is left between boards, which is then filled with Fermacell Joint Filler ensuring that The joint filler is pushed fully through the gap. (Fermacell Jointstik adhesive is not a gap filler). The filler can then be rubbed down prior to final decoration.



#### 8. FLEXIBLE SEALANT



For use in sealing the gap between boards and other material surfaces such as walls, floors and ceilings. Typically, this should be where any building movement is expected on internal corners or abutments.

The edges of the boards must be primed prior to application, and the sealant should be fire or acoustic rated as required.

## FINISHING

We do not recommend the use of a skim plaster finish to the board as our simple FST system gives a fast and easy equivalent that this dry in 45 minutes, ready to accept a paint finish.

## SURFACE PREPARATION

The surface should be dry and free of stains and dirt. Any damage or indentations must be filled with Fermacell Joint filler and allowed to dry. Before any decoration, the moisture content of the boards must be less than 1.3%. This moisture content will be achieved automatically within 48 hours if the relative humidity of the air is kept below 70%, the air temperature is over 15°C and the boards are stored off the ground in well ventilated conditions.

FERMACELL FST  
(FINE SURFACE TREATMENT)

FST is a ready-mixed face filler used for smoothing the surface of the boards, and for filling screw heads. A 10 litre tub will cover approximately 60 m<sup>2</sup> of wallboard. FST is used where an equivalent of skim-coat smoothness is required. FST can also be used for a feather fill over Tapered edge board joints, prior to the final finish coat as described above.



## USE OF FST

Apply straight from the tub using a trowel or a Fermacell FST applicator. Work on 1-2m<sup>2</sup> at a time and ensure that the surface is fully covered. Then remove the excess FST in a smoothing out motion using a trowel or a FST applicator. Do not scrape off too hard or too much will be removed. The FST will dry within 45 minutes and subsequent layers can be applied as required. If necessary, smooth the surface with 'fine 240 grit' sandpaper, prior to final decoration. For larger projects or modular applications, FST is available in a sprayable format for use with airless spray equipment. Spray nozzle sizes should be 431-435 (i.e. a 40° spray angle with an opening size of 31-35).

## WALLPAPERING





With the exception of vinyl wallpapers, all types of paper can be applied to Fermacell using standard trade pastes, without priming the surface. When using vinyl papers, it is recommended that the board is primed and a suitable paste is used.



# Wet Areas

Introduction	127
Components & Accessories	130
Detailed Overview	131
Component Details	132
Installation Overview	133





## MARKET SECTORS

-  Self build
-  New build
-  Factory built
-  Recreation

## PERFORMANCE RATINGS

49  
dB60  
dB30  
mins120  
mins

## FERMACELL PERFORMANCE

-  Impact – Severe duty, able to withstand impact from people as well as objects (door handles etc).
-  Acoustics – Greater acoustic performance often with less layers than plasterboard constructions providing slimmer partitions.
-  Loadbearing – Fermacell gives a category 1 racking strength. Powerpanel HD and Fermacell also provide structural solutions to Euro Code 5.
-  Speed of construction – Fermacell allows the partitions to be installed before the building envelope is complete. Due to the unique finishing system (FST) the overall installation of Fermacell is faster than plasterboard.

From shower areas to swimming pools and wet areas water-proofing has always provided a challenge for the developer.

Fermacell has four options for exposure to water and moisture.

## FERMACELL GYPSUM FIBREBOARDS

In general domestic applications and where the relative humidity does not exceed 80% or where protection from water is provided by tiles, regular Fermacell Gypsum Fibreboards can be used in partitions and linings.

FERMACELL POWERPANEL H<sub>2</sub>O BOARDS AND FLOORING ELEMENTS

For shower and wet areas in commercial and domestic applications, Fermacell Powerpanel H<sub>2</sub>O board provides an impervious to water solution. H<sub>2</sub>O boards can also be used for semi exposed external applications such as soffits.

## FERMACELL POWERPANEL HD BOARDS

Fermacell Powerpanel HD Boards are for external cladding on timber-framed construction providing weatherproofing, structural rigidity, fire protection and sound proofing.

## FERMACELL GYPSUM FIBREBOARDS WITH FERMACELL WATERPROOFING SYSTEM

The Fermacell Waterproofing system is for surface sealing Fermacell Boards against moisture providing an impervious coating. This allows the installer/ developer to utilise the benefits of Fermacell and sealing the boards against water in wet areas (splashback areas) at the same time.



### Fermacell's H<sub>2</sub>O board at the heart of new Evesham Leisure Centre.

More than 20,000 square metres of Fermacell Board has been used in three different types of application within a superb new £11m Leisure Centre complex built for Wychavon District Council in Worcestershire.



Evesham Leisure Centre's facilities include a 25 metre swimming pool and a 12 metre studio pool. Both pools partition walls are lined with Fermacell Powerpanel H<sub>2</sub>O boards, which provide an ideal base for tiling and other wall finishes. In addition, 12.5 mm Fermacell Board has also been utilised as an external backing board for the building's cladding, as well as on many of the interior walls.

The aesthetically pleasing building - designed by project architects Roberts Limbrick - features a dramatic green, copper clad curved entrance and climbing wall enclosure providing a unique, recognisable focus to the 4,500 m<sup>2</sup> Centre, which has been developed to replace an outdated facility developed more than 30 years ago.



FACILITIES

The main entrance to the Centre leads directly to the main foyer space which contains a dramatic climbing wall, reception and café with views directly into the pool area and up to the fitness suite above. The reception area leads to a multi purpose room providing facilities for dance, exercise classes, soft play and functions. There is also a pool, wet health, sports hall and changing facilities on this floor.

A large changing village with facilities for group and accessible changing leads to a 25 m x 5-lane level deck Community Pool, a separate 13 m x 7 m level deck Studio Pool, with movable floor for flexibility of use and the Wet Health Suite which includes two Spa Pools, a Steam Room and Sauna. Spectator access to the main pool is provided direct from the café area.

Brian Dukes, Site Agent for main contractors Galliford Try, commented: “We specified the use of Fermacell’s H<sub>2</sub>O board on this project. One of its strengths is that it is ideally suited to the environment.

Internally Fermacell Boards (with glued joints) were used by the sub contractor for Galliford Try, providing lightweight walls achieving all the requirements for fire, acoustics and severe duty rating using a single board rather than using many different combination of boards with other systems. This enabled partition walls to be constructed both rapidly and to the required standard providing a very high quality, robust finish throughout the first floor. A high standard of finish is provided poolside with the H<sub>2</sub>O readymixed light mortar.

Introduction	Partitions
Components & Accessories	Linings
Detailed Overview	Floorings & Ceilings
Component Details	Fire Protection
	Timber Frames
Installation Overview	Rainscreens
	Fix & Finish
	Wet Areas



### GENERAL DOMESTIC USE

#### STANDARD FERMACELL BOARDS

Standard Fermacell Boards have a high vapour resistivity capability and can perform up to relative humidity up to 80%.

Making them versatile for domestic usage in kitchens and bathrooms, the boards themselves are ready to accept a tiled finish with no need for

special primers. This makes standard Fermacell Boards a cost effective and simple solution for around bath areas that are tiled full height.

Wet areas and painted areas – Standard Fermacell Boards can be waterproofed using the Fermacell Waterproofing system with the following products:

#### PRIMER SEALER



For sealing the standard Fermacell Boards

The Fermacell Waterproofing application:

- impermeable to water
- Free of solvents and softening agents
- Quick drying time of 2 to 3 hours
- Superior adhesive strength and excellent crack resistance
- Compatible tile adhesives, solvent free coatings and sealants

#### FLEXIBLE SEALING TAPES



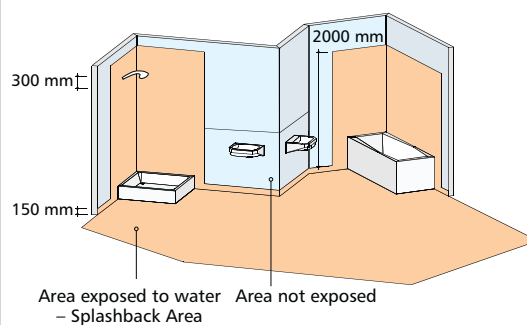
For watertight corner and joint protection

#### WATERPROOFING APPLICATION



For sealing standard Fermacell Boards prior to decoration

#### TILING



## COMMERCIAL, WET AREAS AND EXTERNAL APPLICATIONS

FERMACELL POWERPANEL  
H<sub>2</sub>O BOARDS

Fermacell Powerpanel H<sub>2</sub>O is a cement-bonded light concrete construction board with a laminated structure, reinforced on both sides with an alkali-resistance glass fibre mesh (5 mm x 5 mm), it is non combustible and conforms to construction material class A1.

Powerpanel H<sub>2</sub>O is a water resistant board for wet areas and domestic bathrooms as well as showers, wet areas and kitchens in commercial, education and healthcare projects.

The properties of Powerpanel H<sub>2</sub>O means it can also be used in swimming pools, in this instance special treatment of steel profiles is required.

The Fermacell Waterproofing system can be used to further enhance the performance of the Powerpanel H<sub>2</sub>O system.

POWERPANEL H<sub>2</sub>O FLOORING

Fermacell Powerpanel H<sub>2</sub>O flooring is an addition to our flooring range enabling the complete waterproof construction of wet areas including preformed drainage and shower tray outlets.

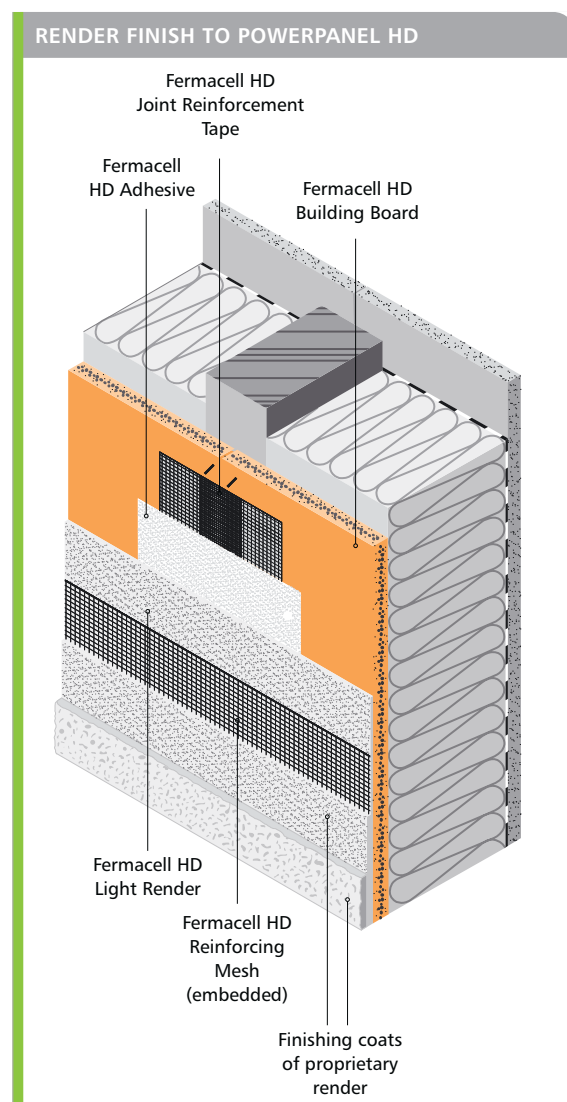
FERMACELL POWERPANEL  
HD BOARDS

Fermacell HD Boards are cement-bonded, glass fibre-reinforced sandwich boards with an aggregate of aerated clay and recycled foamed glass granules.

With Fermacell Powerpanel HD Board all the essential characteristics required in external cladding are combined in a single component. External render is applied directly to the board. No composite thermal insulation substrate is required. During construction the boards seal the building envelope even without rendering, and can be stored outside.

Fermacell Powerpanel HD Board can be used in loadbearing timber frame constructions for racking resistance. They are used as a supporting, structural and stiffening sheathing in external wall cassettes to provide racking against wind loads, buckling and vertical loading.

The mineral composition of Fermacell Powerpanel HD Board means it is classified as A1 – Non combustible – in accordance with DIN 4102.



### STRONG & DURABLE WEATHER PROTECTION FOR ALL CONSTRUCTION TYPES

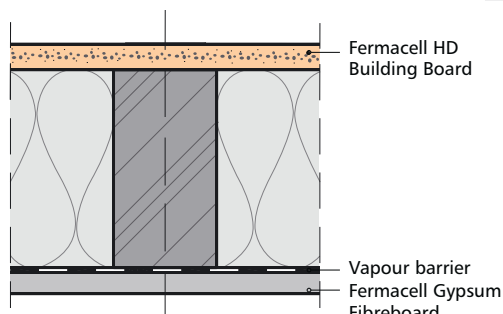
#### EXTERNAL WALL WITH DIRECTLY BOARDED, NON-VENTILATED CONSTRUCTION

##### Jointing technique

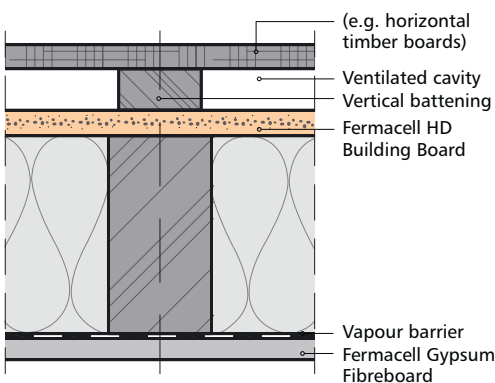
- (1) Fermacell HD Joint Reinforcement Tape for reinforcing board joints
- (2) Fermacell HD Adhesive for covering the joint reinforcement tape and the fixings

##### Render system

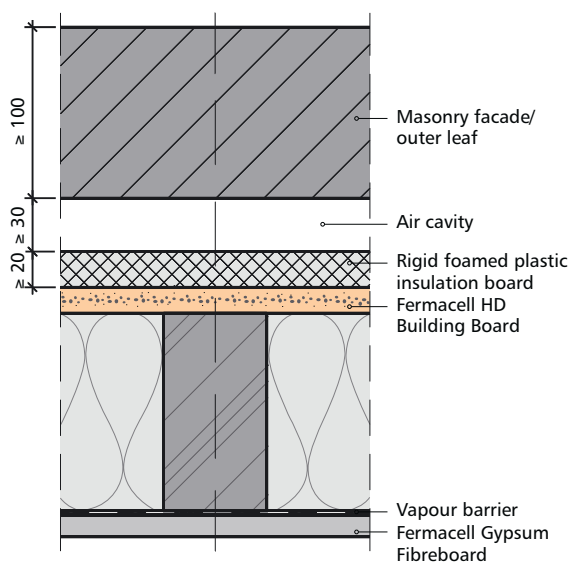
- (1) Fermacell HD Light Render for applying a full surface covering to the boards (5–6 mm thick layer)
- (2) Fermacell HD Reinforcing Mesh for full surface embedding in the Fermacell HD Light Render (Mesh size: 4 mm x 4 mm; alkali resistant)



#### EXTERNAL WALL WITH CLADDING, VENTILATED CONSTRUCTION



#### EXTERNAL WALL WITH OUTER LEAF OF MASONRY CONSTRUCTION



### POWERPANEL H<sub>2</sub>O INSTALLATION

#### CUTTING



Powerpanel H<sub>2</sub>O boards can be cut in a similar way to regular Fermacell Boards either using a standard rail guided hand held circular saw with a tungsten tipped blade or cut by lightly scoring with a Stanley knife.

#### BOARDING



Install insulation (if required) making sure that there is a cavity between the insulation and one face of the Powerpanel H<sub>2</sub>O boards. Cut the boards 10 mm less than the room height and install tight to the ceiling line.

#### FIXING



Screw fix the boards using Fermacell H<sub>2</sub>O screws at ≤ 250 mm centres or staple at ≤ 200 mm centres.

#### JOINTING



Apply Fermacell Jointstik to the edge of the board and position the next board once the Jointstik has dried (approx 8 hours) remove the excess with a scraping knife.

#### FINISHING



Where the Powerpanel H<sub>2</sub>O boards are not being tiled the whole surface can be finished with Fermacell Powerpanel H<sub>2</sub>O FST, available in a ready mixed or powered version.  
Prior to tiling Powerpanel H<sub>2</sub>O boards must be sealed with Fermacell Primer and taped at internal corners with Flexible Sealing Tape.

Introduction

Components & Accessories

Floorings & Ceilings

Detailed Overview

Fire Protection

Timber Frames

Component Details

Rainscreens

Installation Overview

Fix & Finish

Wet Areas

Partitions

Linings

## Absorption

The use of a porous material to convert sound energy into heat.

## Absorption Material

Sound energy absorbing material.

## Airborne Sound

Noise sources such as speech and television transmitted through the air.

## Airborne Sound Insulation

Sound insulation that reduces the transmission of airborne sound.

## Angle Bead

Metal or plastic angle used to reinforce external corners.

## Board Knife

Fermacell knife for scoring and snapping Fermacell boards.

## Bonding Agent

Liquid preparation applied to walls or ceilings prior to finishing.

## Bonding Compound

A gypsum based compound which provides an adhesive for Fermacell boards.

## Bonded Levelling Compound

Cement levelling compound for levelling uneven floors.

## Caulk

Flexible sealing material.

## Composite Resilient Batten

A timber batten with a pre-bonded resilient material isolating the flooring surface layers and floor base.

## Control joint

A joint that caters for lateral expansion or contraction allowing relatively small movements without damage to the internal surface.

## CTR

Spectrum adaptation term (no. 2) from BS EN ISO 717-1: 1997 taking account of a specific sound spectre, predominately low frequency based, representing 'A' weighted urban noise.

## Cut End

End of a Femacell board.

## Decibel (dB)

A unit of magnitude for sound pressure, sound intensity, sound power and sound insulation through the measurement of sound reduction brought about by the insulation.

## Deflection Head

A feature that ensures integrity at the head of a partition allowing floor slab or beam deflection.

## Density (kg/m³)

Mass per unit volume expressed in kilograms per cubic metre.

## DIN standard metal

Metal stud ceiling channel or Lining framework at least .6mm gauge thick metal with a 50mm fixing face.

## Direct Transmission

Sound transmitted only through the main separating element involving no other flanking element.

## Dry Lining

The use of plasterboard or Gypsum Fibreboard rather than solid plaster to create a wall or ceiling lining.

## Dry Levelling Compound

For levelling uneven floors.

## Dwang

See nogging.

## Edge Profile

Square or tapered edge of Fermacell board.

## Expansion Joints

A permanent joint between different parts of a structure allowing small movement without damage to the surface.

## Field of Board

The surface of the Fermacell board.

## Fine Surface Treatment (FST)

A Dolomite marble latex emulsion for finishing Fermacell boards, applied to the whole surface.

## Flanking Sound

The structure-borne transmission of sound between adjacent rooms or spaces that pass the obvious barriers.

## Flexible Sealing Tape

Corner and joint protection for the Fermacell waterproofing system.

## Flooring Element

Fermacell dry flooring element for screeding, levelling and insulation floors.

## Floor Glue

Adhesive for bonding Fermacell flooring elements.

## Floating Floor

Fermacell flooring system with a resilient layer to provide coustic isolation.

## Furring

Metal channels to even the surface and provide a true surface for the fixing of Fermacell boards.

## Glass Mineral Wool

Glassed based product for improved thermal or acoustic insulation.

## Gypsum

Calcium sulphate dihydrate (CaSO4.2H2O).

## Honeycomb Sheets

Retaining sheet for Fermacell Honeycomb infill.

## Honeycomb Infill

Mass providing infill for Honeycomb sheets.

## H2O & HD Boards

Cement bonded board for moisture affected areas.

## HD Mortar

For finishing HD and H2O boards.

## Impact Sound

The impact directly onto a structure of short duration sound such as foot steps or slamming doors.

## Independent Wall Lining

A lining erected independently of the external walling.

## Internal Wall

Wall or partition dividing dwelling space into different functions but not separation between dwellings.

## Joint Tape

Tape within the bedding compound to reinforce a joint.

## Jointstik

Adhesive for bonding the edges of square edged Fermacell boards.

## Jointing

The use of joint filler to tapered edge plasterboard, or Jointstik to achieve a flush seamless surface on walls and ceilings.

## Masonry Partition

A brick or block partition.

## Mass Per Unit Area

Mass per unit area, or surface density, is expressed in kilograms per square metre (kg/m²).

## Metal Stud Partition (DIN standard)

A stud and sheet partition comprising a metal stud with channel framework lined both sides with sheet materials such as Fermacell. Metal studs to be at least .6 mm gauge thick metal with a 50mm fixing face.

## Metal Stud Party Wall

A metal stud partition that separates multi occupancy dwellings.

## Mineral Wool

Rock based mineral material manufactured in a quilt or batt form.

## Nogging

Cross member between main members of a framed construction.

## Noise

Unwanted sound leading to distraction and disturbance, interference with speech and stress or damage to hearing.

## Nominal Density

The density in the robust detail with a tolerance of up to -0.3kg/m² per layer.

## Partition

A non-loadbearing vertical construction dividing space.

## Perimeter Strip

Fibre mineral strip to reduce flanking transmission between Fermacell flooring elements and walls.

## Primer Sealer

For priming and sealing Fermacell boards prior to Fermacell waterproofing system.

## Reverberation

Presence of sound in an enclosure through its continual reflection or scattering from surfaces or objects after the sound source has ceased.

## RW

A (weighted) single-number quantity characterising airborne sound insulation of a building element derived from laboratory measurements (excluding flanking elements). BS EN ISO 717-1:1997 applies.

## RW + CTR

Weighted airborne sound insulation of a building using spectrum adaptation term (No 2) from BS EN ISO 717-1: 1997 representing "A" weighted urban noise.

## Robust Detail

Following a minimum of 30 field tests resulting in a recorded mean performance 5dB better than the sound insulation requirements as described in Approved Document E for new build separating walls and floors, a robust detail for Part E of the Building Regulations is given the status RD.

## Shrinkage

Caused by the evaporation of water from Joint Filler.

## Self-drilling, Self-tapping

Shank and point design of metal screws that give penetration and grip into light gauge metal section.

## Self Levelling Compound

For levelling uneven floors.

## Separating Floor

A floor that separates adjoining dwellings.

## Separating Wall

A wall that separates adjoining dwellings.

## Shaftwall

Partitions or linings that form fire protective enclosures to lift shafts and service cores.

## Sheathing Board

Sheath material fixed to external wall frameworks to assist with weather protection and to a degree of racking resistance.

## Skin

A single thickness of panelling or cladding or one leaf of a cavity wall.

## Soffit

Any semi exposed under surface.

## Sound Absorption

The loss of sound when striking or transmitting into a boundary surface material or obstacle, or when a volume of air resonates.

## Sound Leakage

Airborne sound transmission via gaps or cracks that allows sound to escape from one area to another so lowering potential sound reduction properties.

## Spatular

Blade to apply Fine Surface Treatment.

## Square Edge Boards

Fermacell boards with a square edge profile.

## Standard Level Different

The different in sound level for a stated frequency between source and receiving rooms corrected for the reverberation time in the receiving room. Expressed in Dnt. BS EN ISO 140-4: 1998 applies.

## Stud

Vertical member in a framed wall or partition.

## Suspended Ceilings

Ceilings formed of boards or tiles attached to a grid below the structural soffits joists or trusses.

## Tapered Edge

Fermacell board with edges for jointing using Joint Filler and tape available two sided and four sided.

## Timber Stud Partition

Partitions comprising timber frames lined with plasterboard.

## Trickle Protection Sheet

For use under Fermacell flooring systems.

## Vapour Control Layer

A membrane that substantially reduces the transfer of water vapour through a building element in which it is incorporated.

## Waterproofing Application

For sealing Fermacell boards in wet areas.

## Weighted Standardised Level Difference (1)

A single number weighted quantity characterising the airborne sound insulation between two rooms. Expressed in Dntw. BS EN ISO 717-1: 1997 applies.

## Weighted Standardised Level Difference (2)

The airborne sound insulation characteristics between two rooms using spectrum adaptation term (2) from BS EN ISO 717-1: 1997 representing 'A' urban noise.

## Working Time

The amount of time during which Joint filler is workable.





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