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fermacell

FERMACELL

High Performance Dry Lining

Xella

FERMACELL: setting standards

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 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.


INSTITUT FÜR BAUBIOLOGIE ROSENHEIM GMBH

Verleihungs - Urkunde

Xella

Xella Trockenbau-Systeme GmbH

FERMACELL Gipsfaserplatte

BBA BRITISH BOARD OF AGREMENT
CERTIFICATE No. 90/2439

ETA

FERMACELL, the multi-purpose board

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, with often 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 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.

FERMACELL partitions using single layer 12.5 mm boards achieve a Severe rating to BS5234:Part 2.

Load-carrying capacity of FERMACELL walls

FERMACELL gypsum-fibreboards (thickness) [4]	Load-bearing strength in kg [1]				
	Picture hooks fixed by nails			[2] Screw with continuous thread 5 mm dia.	[3] Toggle Bolt
					
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) Safety factor: 2 (Static load with relative humidity of up to 85 %).
(2) Depth of cupboard or shelves: max. 350 mm.
(3) Standard toggle bolt with > 4 mm dia. screw.
(The toggle bolt manufacturer's instruction should be observed.)
(4) 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 load bearing strength shown above.

FERMACELL for walls and ceilings

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 1500 x 1000 mm and 1200 x 1200 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.

Modular Building

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

Accessories

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

FERMACELL at a glance:

Manufactured from recycled materials.

Environmentally Certified

Sound Insulating

Simple Party Wall constructions.

Impact Resistant

Ready to Decorate

Eliminates double layering or use of Sheathing Ply.

Ready to accept paint, wallpaper, tiles.

Load-carrying

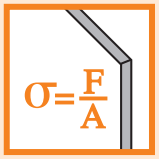
Unique Jointing System

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

Glued, square edge boards produce a continuous membrane.

Fire Resistant

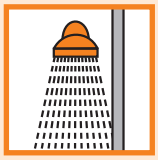
Rigid structure



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

Certified Racking board.

Moisture Resistant



Rapid finishing

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

Fine Surface Treatment (FST) eliminates plastering trades.

Sizes	10 mm	12.5 mm	15 mm	18 mm	
Weight per m²	11.5 kg	15 kg	18 kg	21 kg	
1500 x 1000 mm	●	●	●	●	
1200 x 1200 mm	●	●	●	●	Square-
2400 x 1200 mm	●	●	●	●	edge
2700 x 1200 mm	●	●	●	●	boards
3000 x 1200 mm	●	●	●	●	
1200 x 1200 mm (4 s.)		●			Tapered-
2000 x 1200 mm (4 s.)		●			edge
2400 x 1200 mm (2 s.)		●	●		boards
Specially cut sizes	On request				

The handy, One-Man board 1500 x 1000 mm

The largest gypsum-fibreboard in the world! 2540 x 6000 mm

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 (value after drying at 40 °C), at right angles to the board surface	≥ 5.8 N/mm²
Transverse strength	≥ 0.3 N/mm²

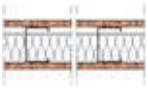
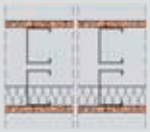
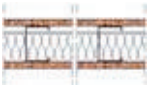
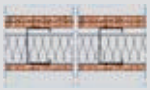
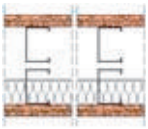
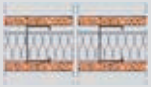
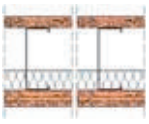
Certified tensile values according to DIN 1052 (Permit No: Z-9.1-434)	
Bending perpendicular to the board surface	1.2 N/mm²
Bending in board surface	1.1 N/mm²
Tension in board surface	0.5 N/mm²
Pressure in board surface	2.0 N/mm²
Pressure perpendicular to the board surface	2.5 N/mm²
Shearing in board 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 μ	13
Thermal Conductivity λ	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)	A 2
pH value	7–8

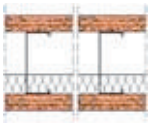
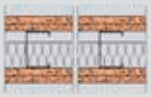
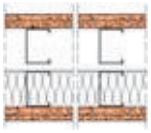
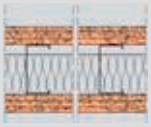
Characteristic strength and stiffness values of FERMACELL Gypsum-Fibreboard in N/mm² for design calculation according to DIN 1052 (Test report No: Z-9.1-434/ETA-03/0050)	Thickness of board in mm			
	10	12.5	15	18
Perpendicular to the plane of board				
Bending $f_{m,k}$	4.6	4.3	4.0	3.6
Shear $f_{v,k}$	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

FERMACELL partition walls on steel subframes with insulating material

Desig-nation	System drawing	Overall wall thickness	FERMACELL board each side	Mineral wool [1]	Fire protection in minutes	Sound insulation	Maximum wall height	Test certificate [5]
		[mm]	[mm]	[mm]/[kg/m³]		R_w [3]	[m]	
1 S 11		75	12.5	40/40	F 30	47 dB	3.00	P 81.615a
		100	12.5	40/20	F 30	52 dB	4.50	P 3837/3588
		125						P 3119/1159
		100	12.5	60/35	F 60	54 dB	5.00	G 94 8880
		125						2017/6134-1-
		150	12.5	100/40	F 30	54 dB		5.50 DK/br
1 S 11/W	 Protektor Maxi Acoustic Stud	100	12.5	40/45	F 60	52 dB	3.00	G 94 8880
		125						
1 S 12	 Relocatable	100	12.5 (fillet 12.5)	40/20	F 30	53 dB	3.50	P 81.846
1 S 13		180	12.5	40/40	F 30	60 dB [7]	5.00 [9] 3.50 [10] 6.00 [11]	G 94 8880
1 S 21		100	12.5	40/45	F 60	52 dB	4.50	P 1928/8541
		125		60/35		54 dB		2017/6134-1-
							10.00 [6]	DK/br
		150		100/40		54 dB	5.00	
1 S 29		85	12.5 + 10	40/40	F 60	54 dB	3.00	G 94 8880
		110	12.5	70/30		56 dB	5.00	
		135		or 60/35		57 dB		
1 S 31		95 (100)	12.5 + 10 (12.5 + 12,5)	50/50 or 60/35	F 90	54 dB	3.00	P 84.613 G 94 8880
		120 (125) 145 (150)	12.5 + 10 (12.5 + 12,5)			60 dB	5.00	
1 S 31/W	 Protektor Maxi Acoustic Stud	120 (125)	12.5 + 10	50/50 or 60/35	F 90	64 dB	4.00	G 94 8880
		145 (150)	(12.5 + 12.5)			68 dB	4.50	
1 S 32 Robust Detail compliant		from 200	12.5 + 10 (12.5 + 12.5)	50/50 or 60/35	F 90	64 dB [4] [7]	5.00 [9] 3.50 [10]	G 94 8880
1 S 32/1			10 + 10	70/33	F 60	62 dB [4] [7]	6.70 [11]	
1 S 33		111 136	18	60/50	F 90	57 dB (studs at 1000 mm c/c)	4.50	P 3423/3899
1 S 34/1		180	12.5 + 10	40/40	F 90 Height ≤ 7 m	63 dB	7.00	P 86.431
			12.5 + 10 + 10					

[1] In constructions where only sound insulation is required, mineral wool of a bulk density ≥ 20 kg/m³ can be used.
[3] R_w sound insulation value based on a laboratory test result without flanking sound considerations according to DIN 52210 part 2 and EN ISO 140 part 3.
[4] Calculated value for sound insulation based on DIN 4109 part 5.5.2.
[5] Test certificates from the U.K., Germany and other European countries are available.
[6] Construction 1 S 21 is fire rated to 10 m – please refer to the specific construction sheet for details of stud size, spacing and gauge.
[7] Where separated studs are mechanically braced to each other, the sound insulation figure will change. Contact FERMACELL Technical staff for further information.
[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 < ⅓ height with a fillet of board or an off-cut of steel stud.

FERMACELL partition walls on steel subframes with insulating material

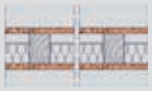
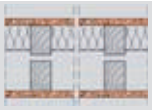
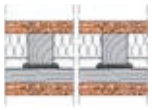
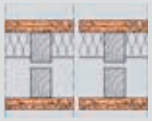
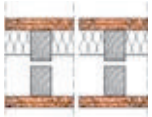
Desig-nation	System drawing	Overall wall thickness	FERMACELL board each side	Mineral wool [1]	Fire protection in minutes	Sound insulation	Maximum wall height	Test certificate [5]
		[mm]	[mm]	[mm]/[kg/m³]		R_w [3]	[m]	
1 S 34/2		190	12.5 + 10 + 10	40/40	F 90 height m 9 m F120 height ≥ 7 m	62 dB	9.00	P 86.431
1 S 41		135	15 + 15	50/50	F 120	60 dB	5.00	G 94 8880
1 S 42 Robust Detail compliant		≥ 215	15 + 12.5	80/50	F 120	64 dB [7]	5.50 6.00 [11]	G 94 8880
1 S 51		170 195	12.5 + 12.5 +10	80/50	F 180	64 dB	5.00 5.50	G 94 8880
1 S 52 Robust Detail compliant		≥ 230	12.5 + 12.5 +10	80/50	F 180	64 dB [7]	5.50 6.00 [11]	G 94 8880

FERMACELL partition walls on steel subframes without insulating material

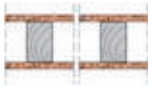
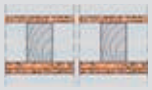
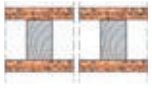
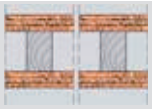
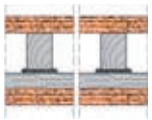
Desig-nation	System drawing	Overall wall thickness	FERMACELL board each side	Mineral wool [1]	Fire protection in minutes	Sound insulation	Maximum wall height	Test certificate [5]
		[mm]	[mm]	[mm]/[kg/m³]		R_w [3]	[m]	
1 S 15 Part E compliant		75 100 125 150	12.5		F 30	41 dB 43 dB	4.00 4.50 5.00 5.50	P 3119/1159 P 303348
1 S 25		105	15		F 60	43 dB	4.50	WRFC 135948 P 303348
1 S 16		110	12.5 12.5 + 10		F 30	46 dB	4.50	G 018/Ap.
1 S 22		125 150 175	12.5 + 12.5		F 60	52 dB 54 dB	4.50 5.00 5.50	G 018/Ap.
1 S 23		130	12.5 + 10 12.5 + 10 + 10		F 60	54 dB	4.50	G 018/Ap.
1 S 35		140 165 190	12.5 + 10 + 10		F 90	58 dB 60 dB	4.50 5.00 5.50	P 3466/3951

[1] In constructions where only sound insulation is required, mineral wool of a bulk density ≥ 20 kg/m³ can be used.
[3] R_w sound insulation value based on a laboratory test result without flanking sound considerations according to DIN 52210 part 2 and EN ISO 140 part 3.
[5] Test certificates from the U.K., Germany and other European countries are available.
[6] Where separated studs are mechanically braced to each other, the sound insulation figure will change. Contact FERMACELL Technical staff for further information.
[7] Calculated value for sound insulation based on DIN 4109 part 5.5.2.
[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 < ⅓ height with a fillet of board or an off-cut of steel stud.

FERMACELL partition walls on timber subframes with insulating material

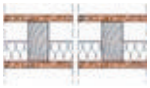
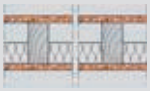
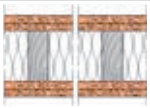
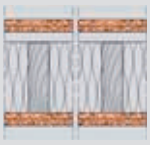
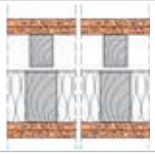
Desig-nation	System drawing	Overall wall thickness	FERMACELL board each side	Mineral wool [1]	Fire protection in minutes	Sound insulation	Maximum wall height	Test certificate [5]
		[mm]	[mm]	[mm]/[kg/m³]		R_w [3]	[m]	
1 H 11		85 or 100	12.5	40/30 70/30	F 30	44 dB 47 dB	3.10 4.10	G 94 8880 P 303348
1 H 12		80 or 95	10	40/30	F 30	44 dB	3.10 4.10	G 94 8880
1 H 22/GB		100	12.5	40/45	F 60	44 dB	3.00	–
1 H 23/GB		185	12.5	40/45	F 60	60 dB	3.10	–
1 H 29		110	12.5 + 10 12.5	70/30	F 60	51 dB	3.00	P 30 3348
1 H 31		105 or 120	12.5 + 10	50/50 70/30	F 90	50 dB 54 dB	3.10 4.10	G 94 8880 P 303348
1 H 32		145	12.5 + 10 (one-sided transverse 30/50 timber with/without mineral wool strip	50/50	F 90	57 dB with mineral wool strip 56 dB without mineral wool strip	3.60	G 94 8880
1 H 35 Robust Detail compliant		170 210	12.5 + 10	50/50	F 90	66 dB	3.10 4.10	G 94 8880
1 H 36 Robust Detail compliant		280	10 + 10	60/60	F 60	62 dB	3.10	–

FERMACELL partition walls on timber subframes without insulating material

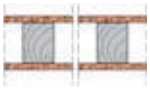
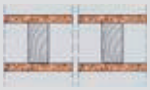
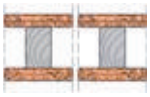
Desig-nation	System drawing	Wall thickness	FERMACELL board each side	Mineral wool [1]	Fire protection in minutes	Sound insulation	Maximum wall height	Test certificate [5]
		[mm]	[mm]	[mm]/[kg/m³]		R_w [3]	[m]	
1 H 13 Part E compliant		105	12.5		F 30	41 dB	4.10	P 303348
1 H 14		115	12.5 12.5 + 10		F 30	43 dB	4.10	G 111/Ap.
1 H 21		125	12.5 + 10		F 60	51 dB	4.10	P 303348
1 H 33		145	12.5 + 10 + 10		F 90	54 dB	4.10	G 111/Ap.
1 H 34		175	12.5 + 10 + 10 (one-sided transverse 30/50 with mineral wool strip		F 90	56 dB with mineral wool strip	4.10	G 111/Ap.

[1] In constructions where only sound insulation is required, mineral wool of a bulk density ≥ 20 kg/m³ can be used.
[3] R_w sound insulation value based on a laboratory test result without flanking sound considerations according to DIN 52210 part 2 and EN ISO 140 part 3.
[5] Test certificates from the U.K., Germany and other European countries are available.

FERMACELL partition walls on timber subframes. Loadbearing party walls

Desig-nation	System drawing	Overall wall thickness	FERMACELL board each side	Mineral wool [1]	Fire protection in minutes	Sound insulation	Maximum wall height	Test certificate [5]
		[mm]	[mm]	[mm]/[kg/m³]		R_w [3]	[m]	
1 HT 11		105	12.5	40/30 70/30	F 30	44 dB 47 dB	3.50	G 94 8880 P 303348
1 HT 12		100	10	40/30	F 30	44 dB	3.00	G 94 8880
1 HT 31-6		160	15 + 15	100/30	F 90	≥ 51 dB	3.50	P-3165/1558
1 HT 32-2		≈ 215	12.5 + 12.5 (with Protektor TPS-profile)	140/30	F 90	≥ 60 dB	3.50	P-3165/1558
1 HT 35-1		230	15 + 15	100/30	F 90	66 dB	3.00	P-3165/1558

FERMACELL partition walls on timber subframes. Loadbearing internal walls

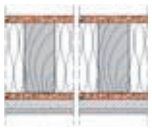
Desig-nation	System drawing	Overall wall thickness	FERMACELL board each side	Mineral wool [1]	Fire protection in minutes	Sound insulation	Test certificate [5]
		[mm]	[mm]	[mm]/[kg/m³]		R_w [3]	
1 HT 14 Part E compliant		105	12.5		F 30	41 dB	G 94 8880 G 017/98 -Nau- P 303348
1 HT 15		110	15		F 30	41 dB	G 94 8880 G 017/98 -Nau- P 303348
1 HT 21		130	12.5 + 12.5		F 60	51 dB	G 94 8880 G 017/98 -Nau- P 303348

FERMACELL non exposed separating walls

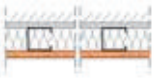
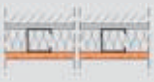
Desig-nation	System drawing	Wall thickness	FERMACELL board each side	Mineral wool [1]	Fire protection in minutes	Sound insulation	Test certificate [5]
		[mm]	[mm]	[mm]/[kg/m³]		R_w	
1 HG 32-8		167.5	12.5 15 mm Powerpanel HD	140/20	F 30 F 90	≥ 64 dB [7]	P -3165/1558

[1] In constructions where only sound insulation is required, mineral wool of a bulk density ≥ 20 kg/m³ can be used.
[3] R_w sound insulation value based on a laboratory test result without flanking sound considerations according to DIN 52210 part 2 and EN ISO 140 part 3.
[5] Test certificates from the U.K., Germany and other European countries are available.
[7] The values shown are valid for two identical walls that are separated by 30 mm.

FERMACELL external loadbearing party walls

Designation	System drawing	Wall thickness	FERMACELL board each side	Mineral wool [1]	Fire protection in minutes	Sound insulation	Test certificate [5]
		[mm]	[mm]	[mm]/[kg/m³]		R_w [4]	
1 HA 11		~230	12.5 vapour barrier 60 mm, PS 15 3 mm reinforcement 3 mm render coat	140/20	F 30	50 dB	G 94 8880

FERMACELL independent lining/shaft wall on steel substructures

Designation	System drawing	Wall thickness	FERMACELL board each side	Mineral wool [1]	Fire protection in minutes	Improved Sound insulation [16]	Test certificate [5]
		[mm]	[mm]	[mm]/[kg/m³]		ΔR_w	
3 S 01		62.5 87.5 112.5	12.5	50/40 or 60/30	–	20 dB	–
3 S 11		65 90 115	15	50/40	F 30 Fire classification from both sides	20 dB	G 267/94-Ap.
3 S 12		75 100 125	12.5 + 12.5	50/40	F 30 Fire classification from both sides	22 dB	G 267/94-Ap.
3 S 21		105	15 + 15 or 10 + 10 + 10	50/45 or 60/35 Mineral wool insulation	F 60 Fire classification from both sides	22 dB	P 3356/2469

FERMACELL firewalls on steel substructures

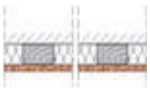
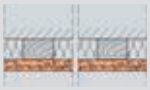
Designation	System drawing	Overall wall thickness	FERMACELL board each side	Mineral wool [1]	Fire protection in minutes	Sound insulation	Test certificate [5]
		[mm]	[mm]	[mm]/[kg/m³]		R_w [3]	
4 S 31	 Loadbearing	225	3 x 12.5 1 x 0.38 steel sheet	100/30	F 90	60 dB	P 3414/3002a
4 S 32	 Non loadbearing	175 200	3 x 12.5 1 x 0.38 steel sheet		F 90	59 dB without insulation 60 dB with insulation	G 3933/8697

[1] In constructions where only sound insulation is required, mineral wool of a bulk density ≥ 20 kg/m³ can be used.
[3] R_w sound insulation value based on a laboratory test result without flanking sound considerations according to DIN 52210 part 2 and EN ISO 140 part 3.
[4] Calculated value for sound insulation based on DIN 4109 part 5.5.2
[5] Test certificates from the U.K., Germany and other European countries are available.
[16] The quoted improvements in sound insulation are valid for independent wall linings and are individual values for sound reduction in solid walls with an area mass between 135 and 250 kg/m² (R_w 40 dB – 47 dB according to DIN standard 4109 table 1) and are valid for flanking constructions with an area mass of approximately 350 kg/m² or for solid walls with a discontinuous dry lining. For other types of walls and flanking conditions different values will apply.

FERMACELL Dry Lining on steel subframes

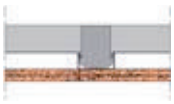
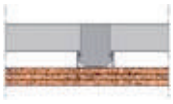
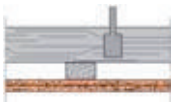
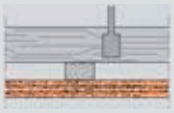
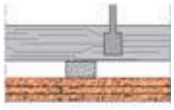
Desig-nation	System drawing	Wall thickness	FERMACELL board each side	Mineral wool [1]	Fire protection in minutes	Flanking sound insulation	Test certificate [5]
		[mm]	[mm]	[mm]/[kg/m³]		$R'_{L,w,R}$	
3 WS 11		42.5	12.5	30/20	–	57 dB	G 267/94-Ap.
		62.5		50/40	F 30		
		87.5					
3 WS 12		60	12.5 + 12.5	20/20	–	62 dB	
		75		50/40	F 30		
		100					

FERMACELL Dry Lining on timber subframes

Desig-nation	System drawing	Wall thickness	FERMACELL board each side	Mineral wool [1]	Fire protection in minutes	Flanking sound insulation
		[mm]	[mm]	[mm]/[kg/m³]		$R'_{L,w,R}$
3 WH 01		42.5	12.5	30/20	–	57 dB
		52.5		40/20		
		72.5		60/20		
3 WH 02		52.5	12.5 + 10	30/20	–	61 dB
		62.5		40/20		
		82.5		60/20		
		55	12.5 + 12.5	30/20		
		65		40/20		
		85		60/20		

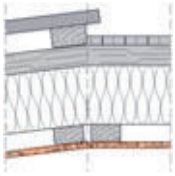
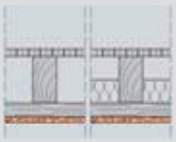
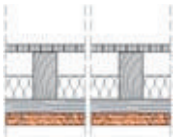
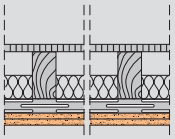
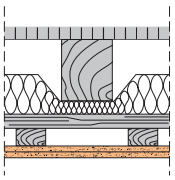
For further details of adjustable wall lining systems please contact our Technical Department.

FERMACELL ceilings on steel or timber substructures, irrespective of main ceiling construction

Designation	System drawing	Ceiling type	FERMACELL board each side	Mineral wool [41]	Fire protection in minutes	Test certificate [42]
		[mm]	[mm]	[mm]/[kg/m³]		
2 S 11 ↑ u		Protektor S 400 suspended ceiling with fire protection from below	2 x 10 or 2 x 12.5	optional	F 30	P 23.0539.1.79
2 S 11 ↑u↓o		Protektor S 400 suspended ceiling with fire protection from above and below	2 x 10 or 2 x 12.5	40/30	F 30	P 23.0319.0.83-1
2 S 21 ↑ u		Protektor S 400 suspended ceiling with fire protection from below	3 x 10 or 2 x 15	optional	F 60	G 94 8880
2 S 34 ↑u↓o		Protektor S 400 suspended ceiling with fire protection from above and below	15 + 2 x 12.5 or 4 x 10	40/40	F 90	P 3255/2458
2 H 13 ↑ u		suspended ceiling with fire protection from below	2 x 10 or 2 x 12.5	optional	F 30	P 23.0534.3.80-1
2 H 23 ↑ u		suspended ceiling with fire protection from below	3 x 10 or 2 x 15	optional	F 60	G 94 8880
2 H 34 ↑ u		suspended ceiling with fire protection from below	15 + 2 x 12.5 or 4 x 10	optional	F 90	P 3255/2458

(1) In constructions where only sound insulation is required, mineral wool of a bulk density ≥ 20 kg/m³ can be used.
(5) Test certificates from the U.K., Germany and other European countries are available.
(41) For roof and ceiling constructions with mineral wool, other types of insulation may compromise the stated fire rating. Where mineral wool is used for fire rating, additional insulation may be added for acoustic purposes without compromising the fire rating.
(42) Test certificates from the U.K., Germany and other European countries are available.

FERMACELL timber joist ceilings

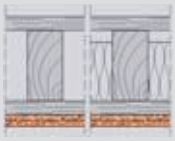
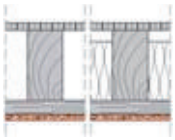
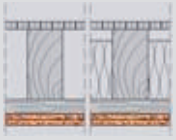
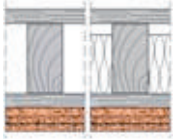
Designation	System drawing	Ceiling type	FERMACELL board	Mineral wool [41]	Fire protection in minutes	Test certificate [42]
		[mm]	[mm]	[mm]/[kg/m³]		
2 H 11		ceilings with/without a layer of structural overlay board for pitched roofs	1 x 10 or 1 x 12.5	100/15	F 30	P-MPA-E-00-27 P-MPA-E-00-28
2 H 14		ceilings with a layer of structural overlay board	1 x 10 or 1 x 12.5	optional	F 30	P 3354/2449
2 H 23		ceilings with a layer of structural overlay board	2 x 10	50/60 or 100/30	F 60	TE 81278
2 HS 24		Cross-batten may be: 1. Protektor TPS 25 System 2. Protektor MF ceiling system 3. Protektor Resilient Bar	2 x 10	100/30	F 60	WF 160810
2 H 31		wood joist ceiling with a layer of structural overlay board	2 x 10 or 2 x 12.5	wire netting 50/80	F 90	P-MPA-E-99-203

FERMACELL ceilings with timber subframes

Designation	System drawing	Ceiling type	FERMACELL board	Mineral wool [41]	Fire protection in minutes	Test certificate [42]
		[mm]	[mm]	[mm]/[kg/m³]		
2 H 32		ceilings with a layer of structural overlay board	2 x 15	2 x 100/30	F 90	G 075/96-Ap.
2 H 33		glulam floors	2 x 10 or 2 x 12.5	optional	F 90	G 184/97-Nau-
2 H 41		ceilings with a layer of structural overlay board	2 x 10 or 2 x 12.5	wire netting 50/100	F 120	P-MPA-E-99-203

[41] For roof and ceiling constructions with mineral wool, other types of insulation may compromise the stated fire rating. Where mineral wool is used for fire rating, additional insulation may be added for acoustic purposes without compromising the fire rating.
[42] Test certificates from the U.K., Germany and other European countries are available.

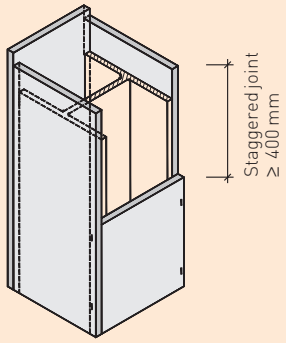
FERMACELL Roof constructions

Designation	System drawing	Ceiling type	FERMACELL board	Mineral wool [41]	Fire protection in minutes	Test certificate [42]
		[mm]	[mm]	[mm]/[kg/m³]		
2 HD 11		ceilings **without** a layer of structural overlay board	1 x 10 or 1 x 12.5	100/15	F 30	P 23.0560.1.87-1
2 HD 12		ceilings **without** a layer of structural overlay board	2 x 10 or 2 x 12.5	optional	F 30	G 94 8880
2 HD 13		ceilings with a layer of structural overlay board	1 x 10 or 1 x 12.5	optional	F 30	G 94 8880
2 HD 21		ceilings with a layer of structural overlay board	2 x 10 or 2 x 12.5	optional	F 60	G 94 8880
2 HD 34		roof structure with independent ceiling and non-essential decking/overlay	15 + 2 x 12.5 or 4 x 10	optional	F 90	G 94 8880

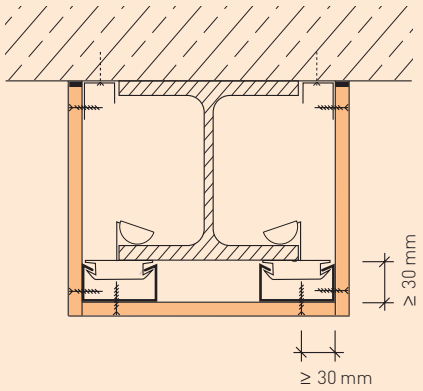
[41] For roof and ceiling constructions with mineral wool, other types of insulation may compromise the stated fire rating.
Where mineral wool is used for fire rating, additional insulation may be added for acoustic purposes without compromising the fire rating.
[42] Test certificates from the U.K., Germany and other European countries are available.

Beam and Column Encasement with FERMACELL

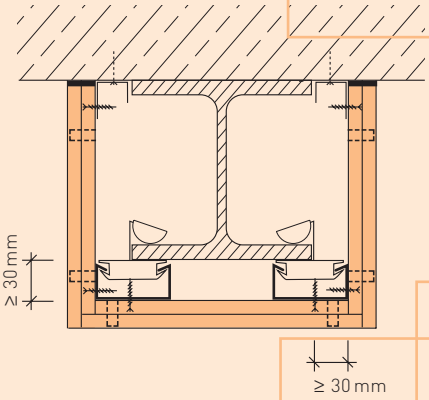
All fixing and jointing must be made in accordance with the FERMACELL Handy Guide.



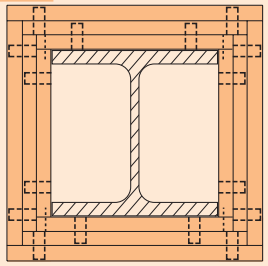
Encasement of a steel support for 4-sided exposure to fire



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



2 layer steel beam encasement for 3 sided exposure to fire



3 layer steel beam encasement for 4-sided exposure to fire

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

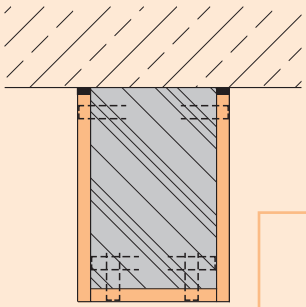
Minimum lining thickness for steel girders with Hp/A ≤ 300 m^{-1}

Column Encasement

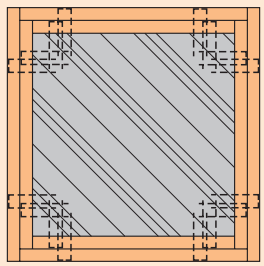
Fire resistance category				
F 30-A	F 60-A	F 90-A	F 120-A	F 180-A
FERMACELL in mm				
10	2x 10	2x 15 + 1x 12.5	4x 15	5x 15

Minimum lining thickness of steel supports with Hp/A ≤ 300 m^{-1}

For details of staples required see the FERMACELL Handy Guide or FERMACELL Orange Book.
For details of Protektor proprietary metal fixing systems contact Cornercare (01562-515200).
Timber grounds may be placed in the web as supports at maximum 400 mm centres.
F 30 constructions with one layer of FERMACELL should be sealed at the edges with an intumescent mastic.
For multiple layer constructions the outer layer should be jointed with FERMACELL Jointfiller or Jointstick.



1 layer timber beam lining F 30-B for 3-sided exposure to fire

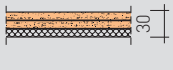
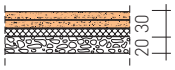
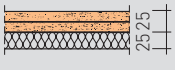
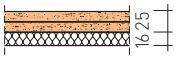
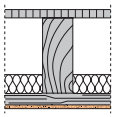
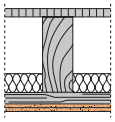
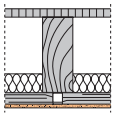
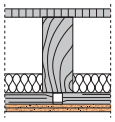
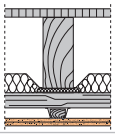
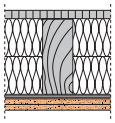


2 layer timber support lining F 60-B for 4-sided exposure to fire

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

Minimum lining thickness of timber beams and columns

FERMACELL dry flooring elements – improved sound insulation on timber joist floors

Floor/ceiling constructions				FERMACELL dry flooring systems			
				2 E 32	2 E 32-c	2 E 22-mi	2 E 22-al
							
				FERMACELL dry flooring element + 10 mm MW (mineral wool)	2 E 32 FERMACELL dry flooring element + 10 mm MW -c FERMACELL levelling compound	2 E 22 FERMACELL dry flooring element -mi Rockwool Rockfloor, min. 25 mm	2 E 22 FERMACELL dry flooring element -al wood fibre insulation slab 17/16 mm ≥ 150 kg/m³ [2]
1		40	R_w [dB]	49	52	51	48
		75	$L'_{n,w,R}$ [dB]	64	67	63	69
2		42	R_w [dB]	51	54	53	51
		73	$L'_{n,w,R}$ [dB]	62	63	61	65
3		50	R_w [dB]	54	56	55	54
		67	$L'_{n,w,R}$ [dB]	58	56	55	58
4		53	R_w [dB]	**58**	**59**	**58**	**57** Part E Solution
		62	$L'_{n,w,R}$ [dB]	**53**	**51**	**50**	**53**
5		53	R_w [dB]	**57** [1]	**59** [1]	**59** interpolated	**57** interpolated Part E Solution
		63	$L'_{n,w,R}$ [dB]	**53** [1]	**49** [1]	**49** interpolated	**53** interpolated
6		55	R_w [dB]	**59** [1]	**59** [1]	**58** [1]	**58** Part E Solution
		58	$L'_{n,w,R}$ [dB]	**50** [1]	**45** [1]	**49** [1]	**49**

[1] Floor and ceiling constructions F 90

[2] Mineral wool underlay: Min. 25 mm Rockfloor by Rockwool.
Product wood fibre insulation slab: Pavatex. Area of application 1: (Permissible point loading 1.0 kN)

Floor and ceiling construction (from top to bottom).

1 22 mm chipboard
80/200 mm timber joists
50 mm mineral wool
50/30 mm battens
10 mm FERMACELL

2 22 mm chipboard
80/200 mm timber joists
50 mm mineral wool
50/30 mm battens
10 mm FERMACELL
10 mm FERMACELL

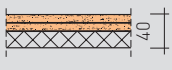
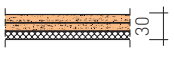
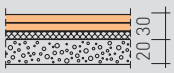
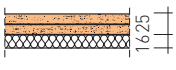
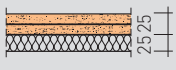
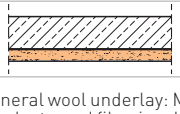
3 22 mm chipboard
80/200 mm timber joists
100 mm mineral wool
Protektor TPS25
Acoustic Ceiling System
10 mm FERMACELL

4 22 mm chipboard
80/200 mm timber joists
100 mm mineral wool
Protektor TPS25
Acoustic Ceiling System
10 mm FERMACELL
10 mm FERMACELL

5 22 mm chipboard
80/200 mm timber joists
50 mm Rockwool RPM
60/40 mm counterbattens
60/40 mm battens on acoustic hangers
10 mm FERMACELL
10 mm FERMACELL

6 22 mm chipboard
80/200 mm timber joists
100 mm mineral wool
100 mm mineral wool
Protektor TPS25
Acoustic Ceiling System
15 mm FERMACELL
15 mm FERMACELL

FERMACELL dry flooring elements – improved sound insulation on concrete floors

Concrete floors (315 kg/m²)				Drawing of the systems				
				2 E 13	2 E 32	2 E 32-c	2 E 22-al	2 E 22-mi
								
				FERMACELL dry flooring element + 20 mm rigid foamed polystyrene	FERMACELL dry flooring element + 10 mm MW	2 E 32 FERMACELL dry flooring element + 10 mm MW -c FERMACELL levelling compound	2 E 22 FERMACELL dry flooring element -al wood fibre insulation slab 17/16 mm ≥ 150 kg/m³ [2]	2 E 22 FERMACELL dry flooring element -mi Rockfloor min. 25 mm
7		$L'_{n,w,R}$ 83 dB	ΔL_w [dB]	17	21	22	22	27

[2] Mineral wool underlay: Min. 25 mm Rockfloor by Rockwool.
Product wood fibre insulation slab: Pavatex. Area of application 1: (Permissible point loading 1.0 kN)

FERMACELL Dry flooring elements for finished floors – fast

FERMACELL Flooring Systems

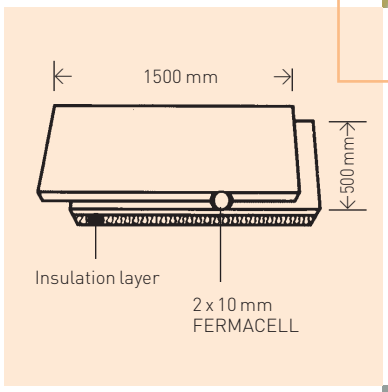
FERMACELL Flooring Systems are a dry alternative to conventional wet screed systems and are designed for upgrading both impact and airborne sound insulation in floors, or for increasing thermal performance. They are also particularly suitable for use with warm water Underfloor Heating (UFH) systems and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

The individual elements are glued and screwed together using a unique staggered jointing system which when set provides a continuous floating floor membrane. The floor can be used within 24 hours of laying.

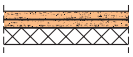
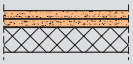
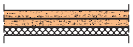
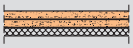
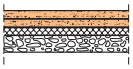
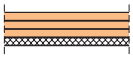
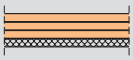
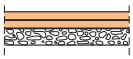
The finished floor is highly resistant to impact, point and rolling loads. It is also able to accept a wide variety of floor coverings including tiles, carpets and natural floorcoverings, parquet, wood laminates and certain types of solid wood floor. Please refer to our technical manuals for further information.

- No drying out time – available for immediate use.
- Continuous floating membrane – stable substrate for a wide variety of floor coverings.
- Exceeds Building Regulations for impact and airborne sound insulation, when used in conjunction with the correct acoustic ceiling treatment.
- Increases fire protection from above – up to F 90.
- Suitable for use with Underfloor Heating (UFH) systems.
- Easy to handle, simple to lay. Contractor friendly.
- Recycled or renewable materials used. Ecologically friendly.
- In conjunction with FERMACELL granular levelling compound may be used to level uneven floors.

FERMACELL Flooring is designed as a system. A range of accessories and ancillary products are available to further increase the performance of the finished floor. Please call for further details.



FERMACELL dry flooring elements

Ref. no.	Floor construction	Thick-ness	Weight	Areas of application	Admissible point loading [1] [2]	Thermal resistance [3]	Class [4] Fire load from above
		mm	kN/m²		kN	[1/Λ] (m²K/W)	
2 E 11	 FERMACELL dry flooring element (2 x 10 mm)	20	0.24	1 + 2	1.5	0.06	F 30
2 E 22	 FERMACELL dry flooring element (2 x 12.5 mm)	25	0.30	1 + 2 + 3	2.5	0.075	F 60
2 E 13	 FERMACELL dry flooring element (2 x 10 mm) + 20 mm rigid foamed polystyrene	40	0.24	1 + 2	1.5	0.56	F 30
2 E 14	 FERMACELL dry flooring element (2 x 10 mm) + 30 mm rigid foamed polystyrene	50	0.25	1 + 2	1.5	0.81	F 30
2 E 31	 FERMACELL dry flooring element (2 x 10 mm) + 10 mm wood fibre insulating slab	30	0.26	1 + 2 + 3	2.5	0.26	F 90
2 E 32	 FERMACELL dry flooring element (2 x 10 mm) + 10 mm mineral wool	30	0.26	1	1.0	0.31	F 90
2 E 32-c	 FERMACELL dry flooring element (2 x 10 mm) + 10 mm mineral wool 20 mm FERMACELL levelling compound	50	0.33	1	1.0	0.53	F 90
2 E 22-a	 10 mm FERMACELL glued FERMACELL dry flooring element (2 x 12.5 mm)	35	0.42	1 + 2 + 3 + 4	3.5	0.10	F 90
2 E 31-a	 10 mm FERMACELL glued FERMACELL dry flooring element (2 x 10 mm) + 10 mm wood fibre insulating slab	40	0.38	1 + 2 + 3 + 4	3.5	0.28	F 90
2 E 32-a	 10 mm FERMACELL glued FERMACELL dry flooring element (2 x 10 mm) + 10 mm mineral wool	40	0.38	1 + 2	1.5	0.33	F 90
2 E 11-c	 FERMACELL dry flooring element (2 x 10 mm) 20 mm FERMACELL levelling compound	40	0.31	1 + 2	1.5	0.28	F 90

	Suggested areas of application
1	Housing and flats, corridors and lofts
2	Offices, corridors and lofts in office buildings, shop floors up to 50 m² area in residential buildings
3	Wards and common rooms in hospitals, lecture halls, class rooms, pubs and restaurants, domestic cellars
4	Surgeries, corridors of hospitals, corridors to lecture halls, meeting rooms of public buildings, churches, theatres and cinemas, dance halls and gymnasia, exhibition and shop floors, office buildings and department stores, libraries and archives

[1] Data relating to the admissible point loading are based on a square loading surface area ≥ 10 cm² and separated by a minimum of ≥ 500 mm. Where point loads are applied within 250 mm of the perimeter of a room the point load should be applied over an area not less than 100 cm². The total floor load must not exceed the designed floor load capacity.

[2] The allowable point loading can be increased by the installation of a third layer of FERMACELL – see "FERMACELL Dry Flooring Elements – Instruction Manual".

[3] Where a greater degree of thermal insulation is required, an increase in the thickness of the insulating layer can be achieved by using the appropriate materials in accordance with the "FERMACELL Dry Flooring Elements – Instruction Manual".

[4] The listed floor constructions with FERMACELL dry flooring have been classified according to DIN 4102 into the respective fire protection class.

[5] When installing underfloor heating systems, a value of 0.09 m² K/W (thermal resistance) must be observed.

FERMACELL:
the very best credentials

Technical and installation support is available as follows:
Tel: +44(0) 870-6 09 03 06
Fax: +44(0) 870-2 40 29 48
Email: fermacell-uk@xella.com
Web: www.xella.co.uk

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 at short notice according to your requirements. Please call our Hotline for further assistance.

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.

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 the bodies show above 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. This is combined with a rigorous testing regime – often in conjunction with the University of Brunswick.

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 Xella staff in supporting its users. Call us to experience the benefits of FERMACELL for yourself.

fermacell

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fermacell-uk@xella.com

Version: 06/2007. We reserve the right to change specifications.
Please call the helpline to ensure that you are in possession of the latest information.

For additional information please see the FERMACELL website.

www.xella.co.uk

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