



**FERMACELL
DRY FLOORING ELEMENTS:
IMPROVED LIVING CONDITIONS
THROUGH BETTER ACOUSTIC
AND THERMAL INSULATION**

fermacell
Dry Lining

FERMACELL DRY FLOORING ELEMENTS: FOR NEW BUILD AND REFURBISHMENT, FOR SOLID AND TIMBER FLOORS

No more creaking boards and floors that are cold underfoot, thanks to FERMACELL's effective dry flooring systems. FERMACELL is suitable not just for partitions, ceilings and attic conversions. Where floors are concerned, it makes sense to use FERMACELL with every step you take – whether in existing buildings or in new constructions.

FERMACELL dry flooring systems give the following benefits:

- effective thermal insulation
- a high degree of impact and airborne sound insulation
- an increase in fire protection (for fire attack from above only)

What's more, FERMACELL dry flooring elements and construction systems can be used in all kinds of situations and problem areas, for example:

- new build and refurbishment
- office and administration buildings
- housing
- damp areas in domestic applications
- for raising the height of floors or levelling out uneven floors.

A wide range of applications

FERMACELL dry flooring elements are available in various formats with or without an additional layer of insulation, depending on the type of application. FERMACELL dry flooring elements are suitable for use with a variety of floor finishes and can be used in conjunction with underfloor heating systems.

Depending on specific project requirements, FERMACELL dry flooring elements can also be used to create various subfloor constructions. (See summary of technical data on last page.)

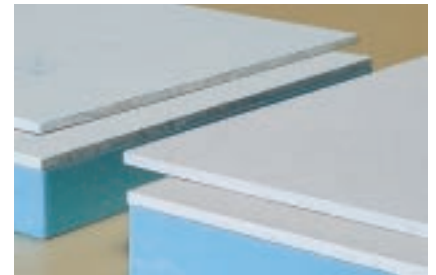
Construction

FERMACELL is a homogenous mixture of gypsum and recycled paper fibres produced in a continuous process. FERMACELL dry flooring elements consist of two 10 mm or 12.5 mm laminated FERMACELL gypsum fibreboards. The boards are staggered by 50 mm to form a broad rebate at the edges, which ensures a stable joint between adjacent elements.

An insulation layer may be bonded to the underside of the bottom FERMACELL board depending on the project requirements.

The many possible forms and combinations of FERMACELL construction systems means that even the toughest requirements can be met in relation to sound insulation and energy-saving construction.

Effective thermal insulation

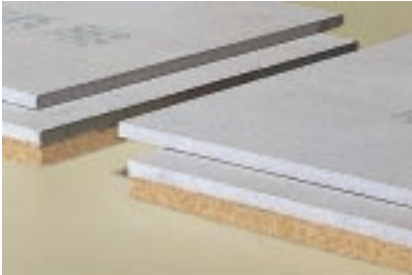


Warm floors mean greater comfort. In addition, the many alternatives that are possible with the FERMACELL system means that thermal insulation requirements can be achieved without difficulty (U value for floors:

$0.35 \text{ W/m}^2\text{K}$). For increased thermal insulation, FERMACELL dry flooring elements are available with varying thicknesses of rigid foam, depending on specific requirements:

- 2 E 13: FERMACELL dry flooring element (2 x 10 mm) + 20 mm polystyrene rigid foam;
- 2 E 14: FERMACELL dry flooring element (2 x 10 mm) + 30 mm polystyrene rigid foam;
- 2 E 15: FERMACELL dry flooring element (2 x 10 mm) + 60 mm extruded rigid foam.

Airborne and impact sound insulation



FERMACELL systems also offer particularly economical solutions for improving sound insulation in solid or lightweight floors (eg. concrete beam and block or timber joist floors). FERMACELL dry flooring elements are available with two alternatives of lower insulation layer to cater for different insulation requirements:

- 2 E 32: FERMACELL dry flooring element (2 x 10 mm)
+ 10 mm highly compressed mineral wool
- 2 E 31: FERMACELL dry flooring element (2 x 10 mm)
+ 10 mm wood-fibre board

FERMACELL systems have been subjected to extensive testing, in conjunction with different types of lightweight floor/ceiling constructions. The results show that even the demanding sound insulation requirements for floors between dwellings can be met.

- Impact sound: $L_n T_{1,w} = 62$ dB (BS 5821)
- Airborne sound: $D_n T_{1,w} = 52$ dB (BS 5821)

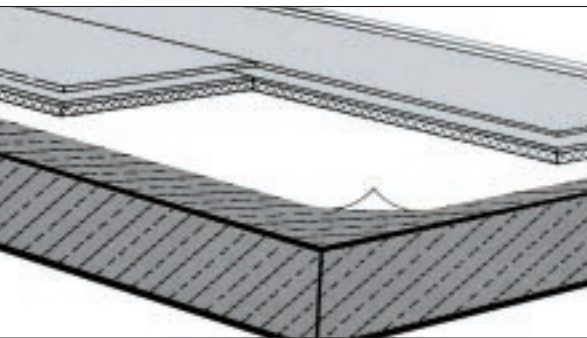
Simple to lay

FERMACELL conveniently sized dry flooring elements are laid floating with staggered joints. The subfloor should be dry, capable of bearing loads and level, in order to ensure contact over the full area. Apply FERMACELL floor glue in two strips to the jointing rebates and lay the next element. The two elements should be fixed together with FERMACELL countersunk cross-slot screws or special expanding staples to create a firm joint. As well as aiding the actual laying process, the rebated joints of FERMACELL dry flooring elements have another big advantage. Even in the areas around joints, the elements can bear high point loads without difficulty. For permissible point loads, see the technical data on the last page of this brochure or consult the "FERMACELL Dry Flooring Elements – Instruction Manual".

FERMACELL dry flooring elements – the dry screed system with many advantages:

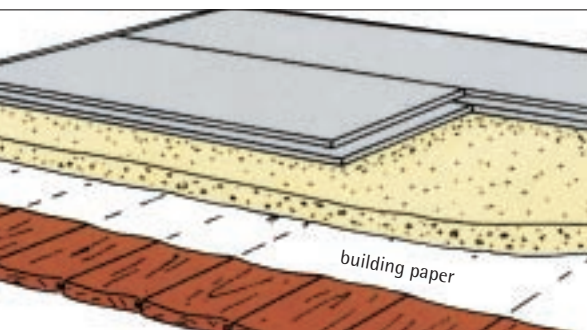
- Increased comfort
- The elements can be laid quickly and easily. The laying time is short, and there is virtually no waste through offcuts.
- The low weight of the elements eliminates structural problems. This is a great advantage where the elements are used in conjunction with lightweight floors, prefabricated or timber frame construction and in work in existing buildings.
For example:
 - The 2 E 11 element (1.5 x 0.5 m coverage) has an approximate weight of only 18 kg.
- The various construction systems enable floors to be raised in height or uneven floors to be levelled.
- No drying out period is required. All subsequent work can begin as soon as the adhesive has set.

In addition to these practical qualities, FERMACELL meets all requirements in the areas of sound and thermal insulation.



Ideal for solid and timber floor construction

FERMACELL dry flooring are ideally suited for use in both solid and timber joist floor constructions. Where the structural floor is uneven or where it is necessary to raise the height, FERMACELL levelling compound should be used under the elements. The levelling compound should be at least 10 mm thick and can be used to a depth of 60 mm. Where used in conjunction with timber joist floors, the following points should be observed. Loose or damaged floor boards should be repaired and a layer of sodium or bituminous paper should be laid to prevent seepage of the levelling compound. Where used in connection with floor in which services are to be laid, differences should be made up with FERMACELL TS slabs and FERMACELL levelling compound.

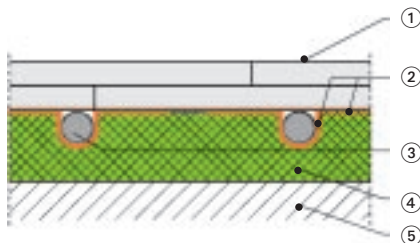


Dry flooring elements system with better acoustic insulation

The FERMACELL dry flooring system is ideally suited to both New Build and Refurbishment timber joist floor. Unlike other systems, FERMACELL dry flooring does not normally require existing floorboards to be lifted for packing insulation into the joists. Either independently, or in conjunction with a suspended ceiling system, FERMACELL dry flooring system conforms to Building Regulations Part "E" (Technical Standard "H" in Scotland and Technical Booklet "G" in Northern Ireland) and carry BBA certification. FERMACELL honeycomb systems can upgrade exposed soffit timber joists floors to Building Regulations for refurbishment.

Underfloor heating

The 25 mm FERMACELL dry flooring element 2 E 22 has been specially developed for laying over underfloor warm water heating runs, provided that the heating system is compatible with this form of dry flooring. For more detailed information, see the "FERMACELL Dry Flooring Elements - Instruction Manual".



Example of compatible underfloor heating system:

- ① 2 E 22 FERMACELL dry flooring element (25 mm)
- ② heat-conducting metal sheeting
- ③ heating runs
- ④ pre formed slab
- ⑤ base layer (dry and even)

For all kinds of floor finishes

Almost any kind of floor finishing can be laid on FERMACELL dry flooring elements:

- carpets and vinyls
- linoleum and cork
- ceramic tiles
- natural stone and terracotta
- parquet flooring

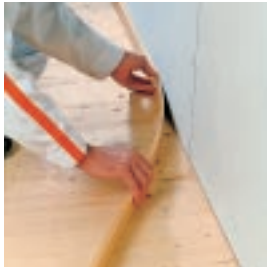
FERMACELL system accessories

A co-ordinated range of accessories makes working with FERMACELL simple and safe:

- FERMACELL floor glue
- FERMACELL levelling compound
- FERMACELL TS slabs
- FERMACELL joint filler
- FERMACELL countersunk cross-slot screws (3.9 x 19 mm / 3.9 x 22 mm)
- FERMACELL flooring perimeter insulation strips

For further details on working with FERMACELL dry flooring elements and accessories and on laying floor finishes, see the "FERMACELL Dry Flooring Elements - Instruction Manual".

READY TO INSTALL, EASY TO HANDLE, SIMPLE TO LAY, CAPABLE OF BEARING FOOT TRAFFIC IMMEDIATELY



Lay a strip of FERMACELL flooring perimeter insulation along the outer edges against the walls to prevent the transmission of flanking sound.



The joints should be glued with FERMACELL floor glue (25 – 30 m² per bottle). See label for precise instructions.



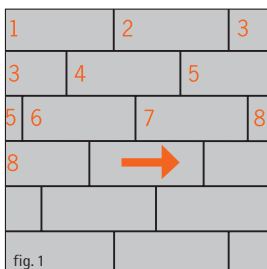
The projecting jointing rebate should be cut off the edges where the elements meet the walls to ensure a snug fit.



To achieve the required adhesion in the joints, the elements should be screwed together with FERMACELL countersunk cross-slot screws or fixed with special galvanised resin expanding staples.



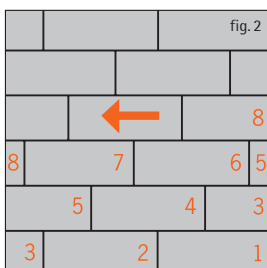
Begin laying FERMACELL dry flooring elements as shown in fig. 1. Where levelling compound is used on uneven surfaces, we recommend laying the elements as shown in fig. 2.



If possible, whole elements should be used in door openings.



Once the floor glue has set and any excess material has been chipped off, the joints and screw or staple heads should be stopped and smoothed with FERMACELL joint filler.

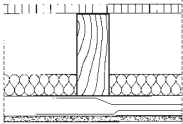
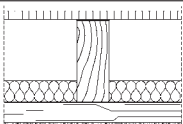
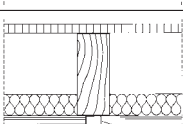
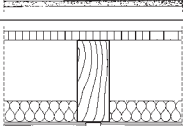
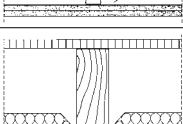
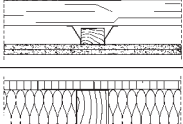


Cross-joints should be avoided.



As soon as the floor glue has set hard, FERMACELL dry flooring elements can bear foot traffic, and preparations can begin for the laying of the floor finishes.

SOUND INSULATION WITH FERMACELL DRY FLOORING ELEMENTS ON TIMBER JOIST FLOORS

Floor/ceiling constructions		FERMACELL dry flooring systems		2 E 32	2 E 32-c	2 E 32-d	2 E 22-mi	2 E 22-al
		FERMACELL dry flooring element + 10 mm mineral wool		2 E 32 FERMACELL dry flooring element + 10 mm mineral wool	-c FERMACELL levelling compound	-d FERMACELL TS slab	-mi mineral wool 22/20 mm (2)	-al wood fibre insulation slab 17/16 mm 150 kg/m ³ (2)
1		40	R' _{w,R} [dB]	47	50	49	49	46
		75	L' _{n,w,R} [dB]	66	69	64	65	71
2		42	R' _{w,R} [dB]	49	52	51	51	49
		73	L' _{n,w,R} [dB]	64	65	62	63	67
3		50	R' _{w,R} [dB]	52	54	52	53	52
		67	L' _{n,w,R} [dB]	60	58	58	57	60
4		53	R' _{w,R} [dB]	56	57	55	56	55
		62	L' _{n,w,R} [dB]	55	53	53	52	55
5		53	R' _{w,R} [dB]	55 ^①	57 ^①	57 ^①	57 interpolated	55 interpolated
		63	L' _{n,w,R} [dB]	55 ^①	51 ^①	53 ^①	51 interpolated	55 interpolated
6		55	R' _{w,R} [dB]	57 ^①	57 ^①	56 ^①	56 ^①	56
		58	L' _{n,w,R} [dB]	52 ^①	47 ^①	52 ^①	51 ^①	51

① Floor and ceiling constructions F90-B

② Product mineral wool: Akustic EP3 by G+H or Floorrock GP by Rockwool. Product wood fibre insulation slab: Pavatex Pavapor. Area of application 1/admissible point loading 1.0 kN.

■ Party floor between dwellings (in accordance with BS 5821)

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

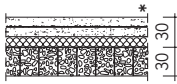
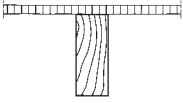
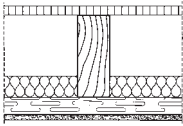
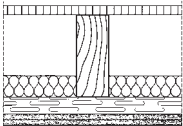
3 22 mm chipboard
80/200 mm timber joists
50 mm mineral wool
50 x 30 mm battens
on acoustic hangers
10 mm FERMACELL

4 22 mm chipboard
80/200 mm timber joists
50 mm mineral wool
50/30 mm battens
on acoustic hangers
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
resilient bar
15 mm FERMACELL
15 mm FERMACELL

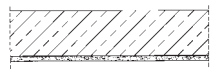
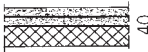
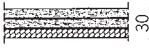

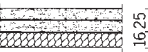
IMPROVED SOUND INSULATION WITH FERMACELL DRY FLOORING INSULATION

No.	Floor/ceiling constructions		Basic construction	
1	 28 mm boarding 80/200 mm timber joist	$R'_{w,R}$ [dB]	25	51
		$L'_{n,w,R}$ [dB]	96	62
2	 28 mm boarding 80/200 mm timber joist 50 mm mineral wool 27 mm spring blade 10 mm FERMACELL	$R'_{w,R}$ [dB]	50	60
		$L'_{n,w,R}$ [dB]	67	47
3	 28 mm boarding 80/200 mm timber joist 50 mm mineral wool 27 mm spring blade 2 x 10 mm FERMACELL	$R'_{w,R}$ [dB]	53**	60**
		$L'_{n,w,R}$ [dB]	63**	44**

* Floor construction: 30 mm FERMACELL dry flooring element with mineral wool (2 E 32)
+ 30 mm FERMACELL dry flooring honeycomb system with FERMACELL honeycomb acoustic infill

** Interpolated values based on measurements by TGM Vienna.




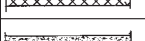

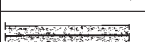

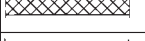

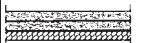

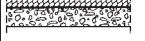

IMPROVED SOUND INSULATION ON CONCRETE FLOORS

7		$L'_{n,w,R}$ 83 dB	ΔL_w [dB]	Drawing of the system				
				Concrete floors (315 kg/m ²)	2 E 13  40 FERMACELL dry flooring element + 20 mm rigid foamed polystyrene	2 E 32  30 FERMACELL dry flooring element + 10 mm mineral wool	2 E 32-c  20 30 2 E 32 FERMACELL dry flooring element + 10 mm mineral wool -c FERMACELL levelling compound	2 E 22-al  16,25 2 E 22 FERMACELL dry flooring element -al wood fibre insulation slab 17/16 mm 150 kg/m ³ ②
				17	21	22	22	27

② Product mineral wool: SPT/G (Akustic EP3) by G+H or Floorrock by Rockwool.
Product wood fibre insulating slab: Pavatex Papor. Area of application 1/ admissible point loading 1.0 kN.

THE FERMACELL DRY FLOORING ELEMENTS AT A GLANCE



Ref. no.	Floor construction	Thick- ness mm	Weight kN/m ²	Areas of application	Admissible ①② point loading kN	Thermal resistance ③ [λ] (m ² K/W)	Class④ Fire load from above
2 E 11	 20 FERMACELL dry flooring element (2 x 10 mm)	20	0.24	1 + 2	1.5	0.06	F 30
2 E 22	 25 FERMACELL dry flooring element (2 x 12.5 mm)	25	0.30	1 + 2 + 3	2.5	0.07 ^⑤	F 60
2 E 13	 40 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	 50 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 15	 80 FERMACELL dry flooring element (2 x 10 mm) + 60 mm extruded rigid foam plastic	80	0.26	1 + 2	1.5	2.06	F 30
2 E 31	 30 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	 30 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	 50 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	 25 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 32-a	 30 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	 40 FERMACELL dry flooring element (2 x 10 mm) + 20 mm FERMACELL levelling compound	40	0.31	1 + 2	1.5	0.28	F 90
2 E 11-d	 50 FERMACELL dry flooring element (2 x 10 mm) + 30 mm FERMACELL TS slabs	50	0.58	1 + 2	1.5	0.14	F 90
2 E 32-d	 60 FERMACELL dry flooring element (2 x 10 mm) + 10 mm mineral wool + 30 mm FERMACELL TS slabs	60	0.60	1	1.0	0.39	F 90

Areas of application	
1	Housing spaces, corridors and lofts
2	Offices, corridors and lofts in office building, sales rooms up to 50 m ² area in residential buildings
3	Hospital rooms and common rooms in hospitals, lecture halls, class rooms, inns, domestic cellars
4	Surgeries, corridors of hospitals, corridors to lecture halls, meeting rooms of public buildings, churches, theatres and cinemas, dance halls and gymnasiums, exhibition and sales rooms, office buildings and department stores, libraries and archives

- ① Data relating to the admissible point loading are based on a square loading surface area $\geq 10 \text{ cm}^2$ and the distance must be $\geq 500 \text{ mm}$. The distance to the floor corner must be $\geq 250 \text{ mm}$ or the loading surface must be at $\geq 100 \text{ cm}^2$. The total floor load must not exceed the maximal admissible floor load capacity.
- ② The admissible 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 $0.09 \text{ m}^2 \text{ K/W}$ (thermal resistance) must be observed.

FERMACELL

Trinity Place · Midland Drive · Sutton Coldfield B72 1TX

Telephone 0121-3 21 11 55 · Fax 0121-3 21 10 18 · uksales@fels.de

For additional information please call the FERMACELL Technical Helpline 0121-3 21 11 55.

fermacell
Dry Lining