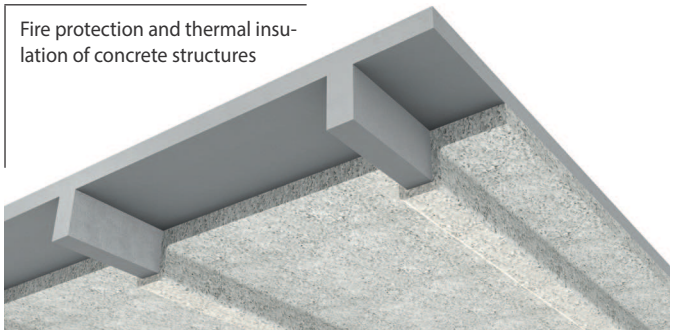
Fibrexpan® technical datasheet and applications

Projiso

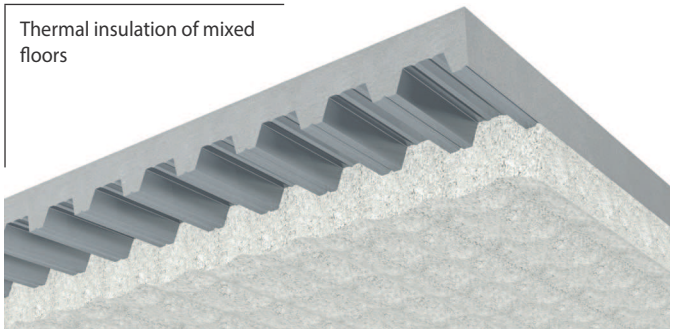
Fibrexpan® technical datasheet

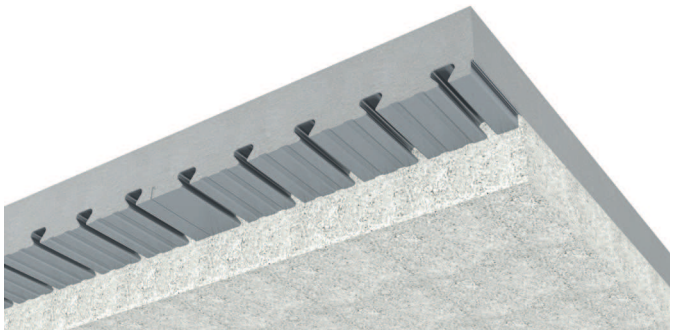
ETA
DTA
ACERMI

Fire protection and thermal insulation of concrete structures

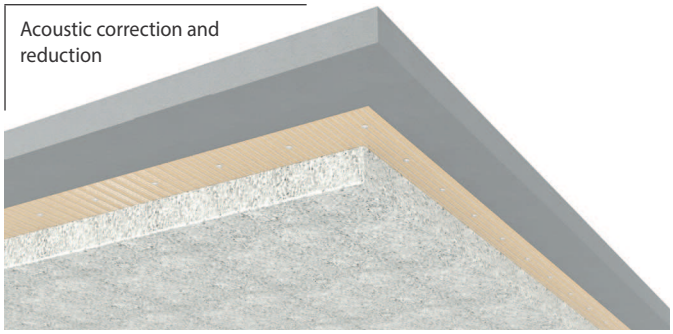


Thermal insulation of mixed floors





Acoustic correction and reduction



Characteristics	
Colour	**Off-white**
Appearance	**Rolled or compressed**
Density	**150 kg/m³ ± 15 %**
Reaction to fire	**A1 – CSTB report RH 08-0388 A**
pH	**9**
Initial setting time	**24 hours at 20°C and 50% RH**
Setting method	**Hydraulic setting**
Use temperature	**5 - 45°C**
Low biopersistence	**According to Directive 97/69EC**
Thermal conductivity	**0.038 W/m.K(ACERMI certificate 16/224/1187)**
VOC classification	**A+**
Other	**FDES – SDS – CE Marking**

The information given in this technical document is based on real tests and is presumed to be specific to the product. Results are not implicitly guaranteed, as use conditions are outside our control.

Areas of application

Thermal insulation
Acoustic reduction
Acoustic correction
Fire protection

Description

Fibrexpan® is a spray-on coating to be used as thermal insulation on surfaces not exposed to weathering. Fibrexpan® is a dry material composed of slag wool, hydraulic and semi-synthetic binders and various additives; it comes in the form of flakes.

Application

• Concrete floors and structures (thermal insulation, fire protection, acoustic correction and reduction)
• Joist floors and concrete floor slabs (thermal insulation, fire protection, acoustic correction and reduction)
• Concrete slabs with structural steel floor trays (thermal insulation and acoustic reduction)

Properties and performance

• Rot-proof
• Non-combustible
• Easy to install

Installation

Refer to the reference report and installation rules given in the Technical Notice (Technical Notice reference 20/12-345*V1).

Primers

PROJISO FIXO-B® (concrete) – PROJISO FIXO-M® (metal)

Finishing

PROJISO® FIXO-DUR

Environment and safety

Refer to the Environmental and Health Declaration (FDES) and Safety Data Sheet (SDS), available upon request.
Do not discharge into drains, rivers or soil. Use the garbage bags provided for this purpose.

Packaging and storage

• Shelf life: maximum 12 months from the manufacturing date in unopened packaging.
• Storage conditions: protect from frost, humidity, excessive heat and excessive direct sunlight.
• Packaging: 20kg plastic bag.
• Palletising: 30 bags per pallet, or 600kg.

ACERMI

The Fibrexpan® product is ACERMI certified.
For the certified conductivity and thermal resistance values, see the following page.
ACERMI is the product of a dual commitment:

- The manufacturer's commitment to implementing a quality system and the resources required to monitor the quality of its products and maintain this quality over time.
- The commitment of the certifier, a competent, recognized independent organization, whose role is to guarantee the truthfulness of the claimed characteristics and reassess them regularly.

For more information, visit the website www.acermi.com.

Application document (DTA) and Technical Notice

ACERMI certification, which guarantees the product's thermal characteristics upon delivery, is supplemented by a Technical Application Document (a Technical Notice specific to products with CE marking).
Fibrexpan is the subject of a DTA.
This specific document, which supplements DTU 27.1, validates:

- The installation of Fibrexpan up to 240 mm thick on a masonry or concrete base without an inner frame (except for altitudes greater than 900 m)
- The installation conditions for Fibrexpan on a wide range of bases, including insulation panels, plaster or gypsum panels, wood floors, etc...
- The precautions to be taken to ensure high-quality spraying.

The DTA also specifies a self-check method, which is essential to demonstrate that the performance guaranteed by ACERMI certification upon delivery is correctly reproduced on the construction site. The results of the self-checks are reported in the construction site datasheet.

Construction site datasheet

The purposes of the construction site datasheet are to:

- Indicate the quantity of spray-on insulation,
- Ensure the traceability of the bulk finished product from delivery until application on the construction site (part 2 of the datasheet),
- Guarantee thermal performance on the basis of a density and thickness installed by machine and by thickness.

The datasheet is prepared in three copies:

- One copy is kept by the spray technician,
- One copy is kept by the ordering entity,
- One copy is kept by the project owner.

These documents are to be kept for at least 10 years and in accordance with current regulations.
One datasheet should be filled out for each machine and each spray thickness (i.e. each setting).

Thermal, fire solution using Fibrexpan® with a Sidairless® finishing coating.

Thermal, fire solution using Fibrexpan®, raw finishing.

Thermal conductivity and resistance

Certified thermal conductivity: □ = 0.038 W/m.K															
Fibrexpan® thickness applied (mm)	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240
R (m².K/W)	2,60	2,85	3,15	3,40	3,65	3,90	4,20	4,45	4,70	5,00	5,25	5,50	5,75	6,05	6,30

Fibrexpan thicknesses to apply depending on the thickness of the reinforced concrete slab and the desired heat transfer coefficient U, taking surface resistances into account, for a downward flow and a wall facing a closed, unheated room.
(Rs = 0.21 m2.K/W):
Reinforced concrete: λ = 2 W/m.K
Fibrexpan: λ = 0.038 W/m.K

Slab thickness in mm		100	110	120	130	140	150	160	170	180	190	200	210	220	230	240
Thermal resistance of concrete slab in m2.K/W		0,050	0,055	0,060	0,065	0,070	0,075	0,080	0,085	0,090	0,095	0,100	0,105	0,110	0,115	0,120
Heat transfer coefficient U in W/m2.K	0,17	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215
	0,19	195	190	190	190	190	190	190	190	190	190	190	190	190	190	190
	0,21	175	175	175	170	170	170	170	170	170	170	170	170	170	170	170
	0,23	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
	0,25	145	145	145	145	145	140	140	140	140	140	140	140	140	140	140
	0,27	130	130	130	130	130	130	135	130	130	130	130	130	130	130	130
	0,29	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
	0,31	115	115	115	115	110	110	110	110	110	110	110	110	110	110	110
	0,33	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105
	0,35	100	100	100	100	100	100	100	95	95	95	95	95	95	95	95
	0,37	95	95	90	90	90	90	90	90	90	90	90	90	90	90	90
	0,39	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
	0,41	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
	0,43	80	80	80	75	75	75	75	75	75	75	75	75	75	75	75
	0,45	75	75	75	75	75	75	75	75	70	70	70	70	70	70	70
	0,47	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
	0,49	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
	0,51	65	65	65	65	65	65	65	60	60	60	60	60	60	60	60
	0,53	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
	0,55	60	60	60	60	55	55	55	55	55	55	55	55	55	55	55
	0,57	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
	0,59	55	55	55	55	55	50	50	50	50	50	50	50	50	50	50
	0,61	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
	0,63	50	50	50	50	50	50	50	50	50	45	45	45	45	45	45
	0,65	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	0,67	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	0,69	45	45	45	45	45	45	45	40	40	40	40	40	40	40	40
	0,71	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
	0,73	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40

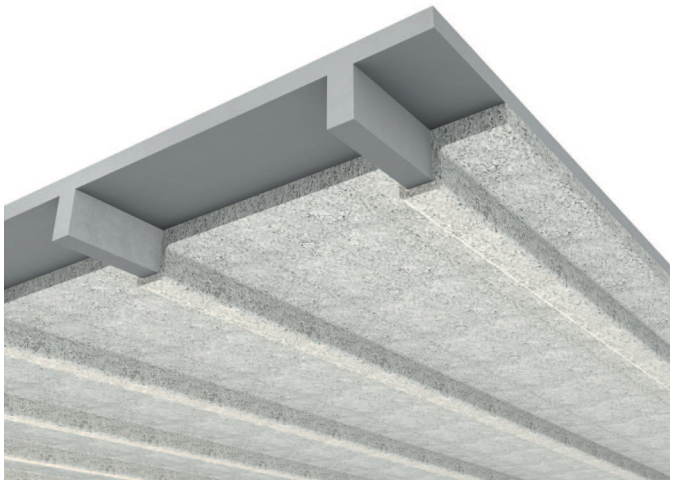
For example, to obtain a heat transfer coefficient U = 0.30 W/m2.K with a slab 180 mm thick, 120 mm of Fibrexpan must be sprayed on.

Projiso

Fire protection of concrete structures using Fibrexpan®

P.-V. Efectis EFR 16-002133

R/REI 60 - 240



Area of validity

- Application on solid reinforced concrete elements
- Protection thickness for flat slabs between 44 and 215 mm
- Protection thickness for load-bearing walls between 44 and 80 mm
- Protection thickness for rectangular beams between 40 and 80 mm
- Application on exposed and poured concrete structures with mineral oil or emulsion separating agents
- Application on flat slabs, rectangular beams, walls exposed on one side only
- Flat slab thickness of at least 120 mm
- Épaisseur des murs porteurs supérieure ou égale à 130 mm
- Rectangular beam width of at least 150 mm
- Base treated with PROJISO FIXO-B® before application

Required thickness for the protection of reinforced concrete slabs sized in accordance with EUROCODE EN 1992-1-2					
Slab Thickness ≥ 120 mm Any initial steel coating	Performance				
	REI 60	REI 90	REI 120	REI 180	REI 240
Minimum Fibrexpan® thickness (in mm)	44	44	44	44	90

Required thickness for the protection of reinforced concrete beams sized in accordance with EUROCODE EN 1992-1-2																				
Beam on single supports Width ≥ 150 mm	Performance																			
	R 60				R 90				R 120				R 180				R 240			
Initial steel coating (in mm)	0	10	20	30	0	10	20	30	0	10	20	30	0	10	20	30	0	10	20	30
Fibrexpan® thickness (in mm)	40	40	40	40	40	40	40	40	40	40	40	40	50	45	40	40	65	55	50	45

Required thickness for the protection of reinforced concrete beams sized in accordance with EUROCODE EN 1992-1-2																				
Continuous beam Width ≥ 150 mm	Performance																			
	R 60				R 90				R 120				R 180				R 240			
Initial steel coating (in mm)	0	10	20	30	0	10	20	30	0	10	20	30	0	10	20	30	0	10	20	30
Fibrexpan® thickness (in mm)	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	55	50	50	50

Required thickness for the protection of load-bearing reinforced concrete walls sized in accordance with EUROCODE EN 1992-1-2				
Wall exposed on one side only Thickness ≥ 130 mm Any initial steel coating	Performance			
	REI 60	REI 90	REI 120	
Minimum Fibrexpan thickness (in mm)	44	44	44	

For all other applications, please contact us.

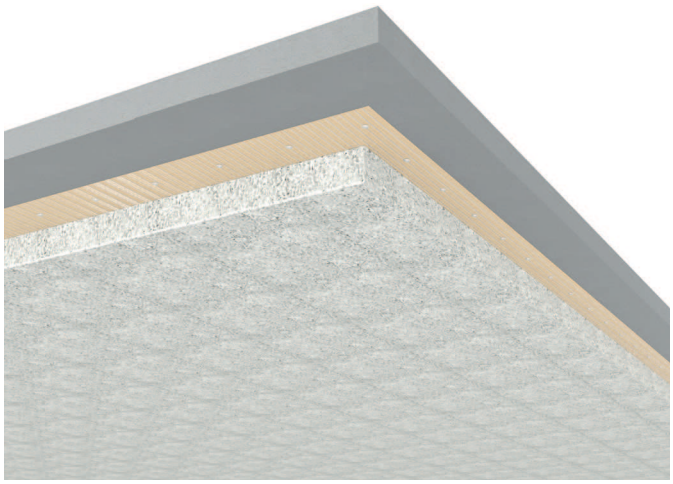
Projiso — Acoustic correction with Fibrexpan®

Fibrexpan® - Study report : CSTB																					
Fibrexpan® thickness	Base	Fréquency in hertz																			αw
		100	125	160	200	250	315	400	500	630	800	1 000	1 250	1 600	2 000	2 500	3 150	4 000	5 000		
		Absorption coefficient αs																			
100 mm calculated	Solid	0,48	0,53	0,58	0,62	0,64	0,65	0,79	0,79	0,79	0,82	0,84	0,88	0,90	0,91	0,92	0,93	0,94	0,95		0,85
110 mm calculated	Solid	0,50	0,55	0,60	0,63	0,64	0,71	0,80	0,78	0,80	0,83	0,85	0,88	0,90	0,92	0,93	0,94	0,94	0,95		0,85
120 mm calculated	Solid	0,53	0,57	0,61	0,63	0,64	0,82	0,78	0,79	0,82	0,84	0,88	0,89	0,91	0,92	0,93	0,94	0,95	0,95		0,85
130 mm calculated	Solid	0,55	0,59	0,63	0,64	0,75	0,80	0,79	0,81	0,83	0,86	0,89	0,90	0,92	0,93	0,94	0,94	0,95	0,95		0,90
140 mm calculated	Solid	0,57	0,61	0,64	0,65	0,85	0,80	0,81	0,83	0,84	0,88	0,90	0,91	0,92	0,93	0,94	0,95	0,95	0,95		0,90
150 mm calculated	Solid	0,59	0,63	0,63	0,80	0,82	0,81	0,83	0,84	0,87	0,90	0,91	0,92	0,93	0,94	0,95	0,95	0,95	0,96		0,90
160 mm measured	Solid	0,31	0,56	0,73	0,86	0,80	0,87	0,86	0,90	0,97	1,01	0,97	1,01	1,01	1,00	0,98	1,01	1,03	1,04		1,00

Primers: PROJISO FIXO-B® and PROJISO FIXO-M®

Projiso — Acoustic reduction with Fibrexpan®

Study report : CSTB



Projiso offers an innovative solution based on the spraying of Fibrexpan®, which improves acoustic insulation between superimposed spaces.

Installation principle

Attachment of an expanded metal sheet with a paper covering to the concrete slab or without expanded metal sheet to the concrete slab.

Spraying of one or multiple layers of Fibrexpan® to the desired thickness.

The following table gives acoustic reduction values Rw+C for a raw concrete slab and a slab covered with varying thicknesses of Fibrexpan® coating installed as described above.

Rw+C (dB)		Reinforced concrete slab thickness											
		140 mm	150 mm	160 mm	170 mm	180 mm	190 mm	200 mm	210 mm	220 mm	230 mm	240 mm	250 mm
Fibrexpan® thickness without grilling plus sidairless	80 to 120 mm	50	52	53	54	55	56	57	58	58	59	60	61
	130 to160 mm	49	51	52	53	54	55	56	57	58	58	59	60
	80 to 160 mm	49	51	52	53	54	55	56	57	58	58	59	60
Fibrexpan® thickness + grilling + sidairless	100 to 110 mm	56	58	59	60	61	62	63	64	64	65	66	67
	120 to 130 mm	57	59	60	61	62	63	64	65	65	66	67	68
	140 to150 mm	58	60	61	62	63	64	65	66	66	67	68	69
	160 mm	59	61	62	63	64	65	66	67	67	68	69	70
	80 to160 mm	*Adding +2*	*Adding +2*	*Adding +2*	*Adding +2*	*Adding +2*	*Adding +2*	*Adding +2*	*Adding +2*	*Adding +2*	*Adding +2*	*Adding +2*	*Adding +2*

Example: A system composed of an 180 mm thick slab sprayed with 150 mm of Fibrexpan® installed as described above will have an acoustic reduction of Rw+C = 63 dB instead of 59 dB for the raw slab.

These values were obtained by calculations based on laboratory tests. Depending on the construction site and the installation conditions, on-site results may differ slightly.