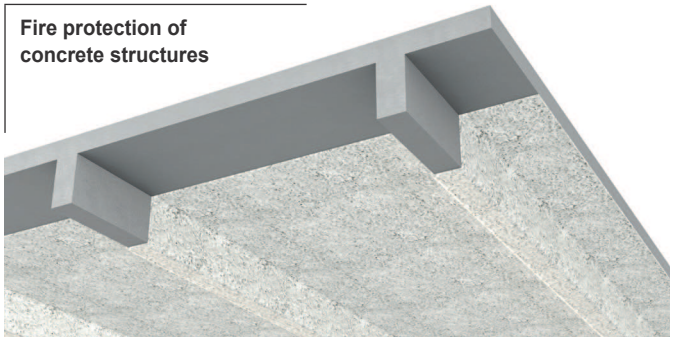
Fibrofeu® technical datasheet and applications

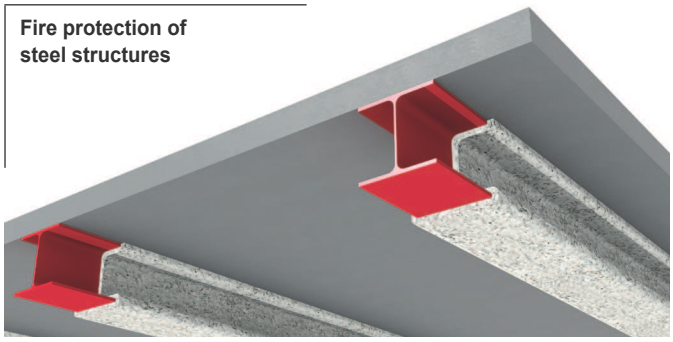
Projiso

Fibrofeu® technical datasheet

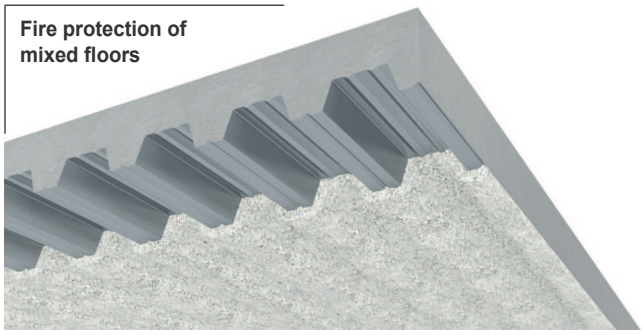
Fire protection of concrete structures

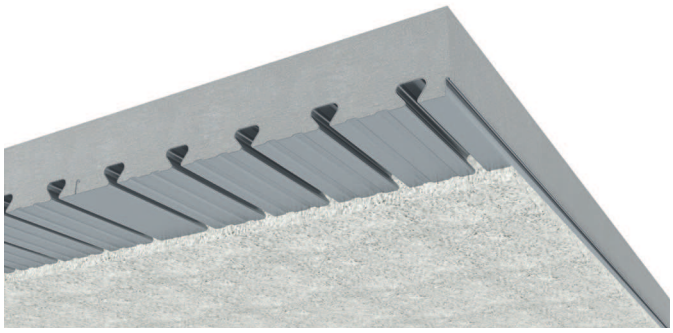


Fire protection of steel structures

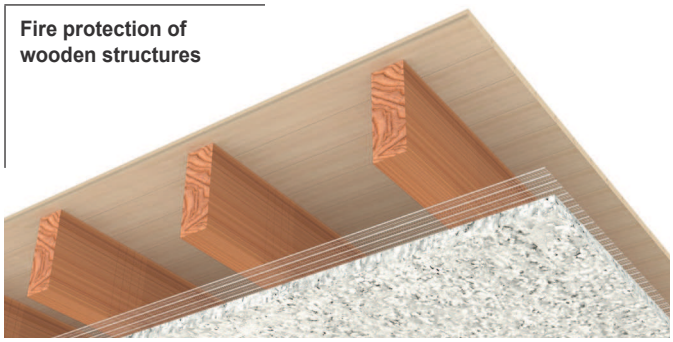


Fire protection of mixed floors





Fire protection of wooden structures



Area of application

Fire protection

Product description

Fibrofeu® is a spray-on fibrous mixture used for fire protection. The material is composed of slag wool and hydraulic and inorganic binders. It comes in the form of small flakes.

Applications

- Concrete floors and structures
- Joist floors and floor slabs
- Concrete slabs with structural steel floor trays
- Wood floors (sprayed onto an expanded metal sheet)
- Steel structures

Properties and performance

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

Installation

Refer to the reference report and the installation rules specified in DTU 27.1.

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.

Conditionning and packaging

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

Characteristics	
Colour	Off-white
Appearance	Rolled or compressed
Density	250 kg/m^3 ± 15 %
Réaction au feu	A1 – SINTEF report 102010.02/09.024A
pH	10
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 97/69/EC
Thermal conductivity	0,05 W/m.k (cf RT 2012)
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.

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Fire protection of concrete structures using Fibrofeu®

Efectis report EFR 16-002130

R/REI 60 - 240

Area of validity

- Application on solid reinforced concrete elements
- Protection thickness for flat slabs or walls between 14 and 36 mm
- Protection thickness for rectangular beams between 17 and 48 mm
- Application on exposed or 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
- Load-bearing wall thickness of at least 130 mm
- Rectangular beam width of at least 150 mm
- Base treated with PROJISO FIXO-B® primer 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 Fibrofeu® thickness (in mm)	14	14	14	17	36

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
Fibrofeu® thickness (in mm)	17	17	17	17	17	17	17	17	20	17	17	17	32	26	20	17	48	48	48	48

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
Fibrofeu® thickness (in mm)	17	17	17	17	17	17	17	17	17	17	17	17	20	17	17	17	48	48	48	48

Required thickness for the protection of reinforced concrete load-bearing walls sized in accordance with EUROCODE EN 1992-1-2

Wall exposed on one side Thickness ≥ 130 mm Any initial steel coating	Performance			
	REI 60	REI 90	REI 120	REI 180
Minimum Fibrofeu® thickness (in mm)	14	14	14	33

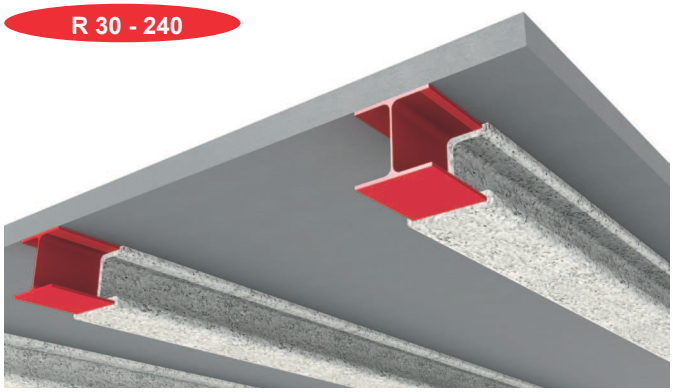
For all other applications, please contact us.

Projiso

Protection of steel beams using Fibrofeu®

Efectis report
EFR
16-002129

R 30 - 240



Area of validity

- Application on an untreated or rustproofed steel base; while our products do not increase steel corrosion, a treated base (galvanization or an alkyd, epoxy, zinc or zinc silicate epoxy primer) is recommended for long-term resistance to corrosion.
- Application on a clean, dry base free of dust, rolling residue, rust, oil, or any other contaminant that may affect adhesion.
- Application on a base first treated with PROJISO FIXO-M® primer.
- Critical temperature: 570°C.

Required thickness for R 30 performance

	HEA	HEB	IPE	IPN	UAP
80	-	-	15	15	15
100	15	15	15	15	15
120	15	15	15	15	-
130	-	-	-	-	15
140	15	15	15	15	-
150	-	-	-	-	15
160	15	15	15	15	-
175	-	-	-	-	15
180	15	15	15	15	-
200	15	15	15	15	15
220	15	15	15	15	15
240	15	15	15	15	-
250	-	-	-	-	15
260	15	15	-	15	-
270	-	-	15	-	15
280	15	15	-	15	-
300	15	15	15	15	15
320	15	15	-	15	-
330	-	-	15	-	-
340	15	15	-	15	-
360	15	15	15	15	-
380	-	-	-	15	-
400	15	15	15	15	-
425	-	-	-	15	-
450	15	15	15	15	-
475	-	-	-	15	-
500	15	15	15	15	-
550	15	15	15	15	-
600	15	15	15	15	-

Required thickness for R 60 performance

	HEA	HEB	IPE	IPN	UAP
80	-	-	35	33	28
100	24	20	32	30	27
120	25	19	31	28	-
130	-	-	-	-	25
140	23	18	30	25	-
150	-	-	-	-	23
160	21	16	28	24	-
175	-	-	-	-	23
180	21	16	27	22	-
200	20	15	25	21	22
220	19	15	25	20	21
240	17	15	23	19	-
250	-	-	-	-	19
260	17	15	-	17	-
270	-	-	22	-	19
280	16	15	-	16	-
300	15	15	21	16	18
320	15	15	-	15	-
330	-	-	20	-	-
340	15	15	-	15	-
360	15	15	19	15	-
380	-	-	-	15	-
400	15	15	18	15	-
425	-	-	-	15	-
450	15	15	17	15	-
475	-	-	-	15	-
500	15	15	16	15	-
550	15	15	15	15	-
600	15	15	15	15	-

Required thickness for R 90 performance

	HEA	HEB	IPE	IPN	UAP
80	-	-	54	52	45
100	40	35	51	49	44
120	41	33	50	45	-
130	-	-	-	-	42
140	39	32	48	42	-
150	-	-	-	-	39
160	36	28	45	40	-
175	-	-	-	-	39
180	35	28	44	37	-
200	35	27	42	36	37
220	33	25	41	35	36
240	30	23	39	33	-
250	-	-	-	-	33
260	30	23	-	30	-
270	-	-	37	-	33
280	28	23	-	28	-
300	27	21	36	28	32
320	25	21	-	27	-
330	-	-	35	-	-
340	25	19	-	25	-
360	23	19	33	23	-
380	-	-	-	23	-
400	23	19	32	21	-
425	-	-	-	21	-
450	21	17	30	19	-
475	-	-	-	19	-
500	21	17	28	19	-
550	21	17	27	17	-
600	19	17	25	15	-

Required thickness for R 120 performance

	HEA	HEB	IPE	IPN	UAP
80	-	-	71	69	62
100	56	49	69	66	61
120	57	47	67	62	-
130	-	-	-	-	58
140	54	45	65	58	-
150	-	-	-	-	54
160	51	41	62	56	-
175	-	-	-	-	54
180	51	41	61	53	-
200	49	39	58	51	53
220	47	36	57	49	51
240	43	34	54	47	-
250	-	-	-	-	47
260	43	34	-	43	-
270	-	-	53	-	47
280	41	34	-	41	-
300	39	31	51	41	45
320	36	31	-	39	-
330	-	-	49	-	-
340	36	28	-	36	-
360	36	28	47	34	-
380	-	-	-	34	-
400	34	28	45	31	-
425	-	-	-	31	-
450	31	26	43	28	-
475	-	-	-	28	-
500	31	26	41	28	-
550	31	26	39	26	-
600	28	26	36	23	-

Required thickness for R 180 performance

	HEA	HEB	IPE	IPN	UAP
80	-	-	-	-	-
100	-	77	-	-	-
120	-	74	-	-	-
130	-	-	-	-	-
140	-	72	-	-	-
150	-	-	-	-	-
160	79	66	-	-	-
175	-	-	-	-	-
180	79	66	-	-	-
200	77	63	-	79	-
220	74	60	-	77	79
240	69	56	-	74	-
250	-	-	-	-	74
260	69	56	-	69	-
270	-	-	-	-	74
280	66	56	-	66	-
300	63	52	79	66	72
320	60	52	-	63	-
330	-	-	77	-	-
340	60	48	-	60	-
360	56	48	74	56	-
380	-	-	-	56	-
400	56	48	72	52	-
425	-	-	-	52	-
450	52	44	69	48	-
475	-	-	-	48	-
500	52	44	66	48	-
550	52	44	63	44	-
600	48	44	60	39	-

Required thickness for R 240 performance

	HEA	HEB	IPE	IPN	UAP
220	-	-	-	-	-
240	-	78	-	-	-
250	-	-	-	-	-
260	-	78	-	-	-
270	-	-	-	-	-
280	-	78	-	-	-
300	-	73	-	-	-
320	-	73	-	-	-
330	-	-	-	-	-
340	-	68	-	-	-
360	78	68	-	78	-
380	-	-	-	78	-
400	78	68	-	73	-
425	-	-	-	73	-
450	73	62	-	68	-
475	-	-	-	68	-
500	73	62	-	68	-
550	73	62	-	62	-
600	68	62	-	56	-

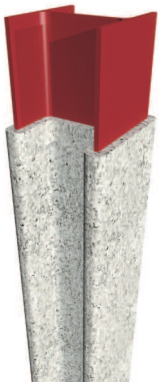
Note:
These thicknesses are in mm and were calculated for a critical temperature of 570°C, for beams exposed on 3 sides.

Projiso

Fire protection of steel posts using Fibrofeu®

Efectis report EFR 16-002129

R 30 - 240



Area of validity

- Application on an untreated or rustproofed steel base; while our products do not increase steel corrosion, a treated base (galvanization or an alkyd, epoxy, zinc or zinc silicate epoxy primer) is recommended for long-term resistance to corrosion.
- Application on a clean, dry base free of dust, rolling residue, rust, oil, or any other contaminant that may affect adhesion.
- Application on a base first treated with PROJISO FIXO-M® primer.
- Critical temperature: 500°C.

Required thickness for R 30 performance

	HEA	HEB	IPE	IPN	UAP
80	-	-	-	17	15
100	15	15	16	15	15
120	15	15	15	15	-
130	-	-	-	-	15
140	15	15	15	15	-
150	-	-	-	-	15
160	15	15	15	15	-
175	-	-	-	-	15
180	15	15	15	15	-
200	15	15	15	15	15
220	15	15	15	15	15
240	15	15	15	15	-
250	-	-	-	-	15
260	15	15	-	15	-
270	-	-	15	-	15
280	15	15	-	15	-
300	15	15	15	15	15
320	15	15	-	15	-
330	-	-	15	-	-
340	15	15	-	15	-
360	15	15	15	15	-
380	-	-	-	15	-
400	15	15	15	15	-
425	-	-	-	15	-
450	15	15	15	15	-
475	-	-	-	15	-
500	15	15	15	15	-
550	15	15	15	15	-
600	15	15	15	15	-

Required thickness for R 60 performance

	HEA	HEB	IPE	IPN	UAP
80	-	-	-	39	34
100	31	27	38	36	33
120	31	26	37	34	-
130	-	-	-	-	31
140	30	24	36	32	-
150	-	-	-	-	28
160	28	22	34	30	-
175	-	-	-	-	27
180	27	20	33	27	-
200	27	19	31	27	27
220	25	18	30	25	26
240	23	18	28	24	-
250	-	-	-	-	24
260	23	17	-	22	-
270	-	-	27	-	23
280	22	17	-	20	-
300	20	16	27	19	22
320	19	15	-	19	-
330	-	-	25	-	-
340	18	15	-	18	-
360	17	15	24	17	-
380	-	-	-	16	-
400	17	15	23	16	-
425	-	-	-	15	-
450	16	15	22	15	-
475	-	-	-	15	-
500	15	15	19	15	-
550	15	15	19	15	-
600	15	15	17	15	-

Required thickness for R 90 performance

	HEA	HEB	IPE	IPN	UAP
80	-	-	-	60	53
100	50	44	59	57	53
120	50	43	57	53	-
130	-	-	-	-	50
140	49	40	56	51	-
150	-	-	-	-	46
160	46	37	53	49	-
175	-	-	-	-	45
180	45	36	53	45	-
200	44	34	50	44	44
220	41	32	49	41	43
240	39	32	46	40	-
250	-	-	-	-	40
260	39	30	-	37	-
270	-	-	45	-	39
280	37	30	-	36	-
300	36	28	44	34	37
320	34	26	-	34	-
330	-	-	41	-	-
340	32	26	-	32	-
360	30	26	40	30	-
380	-	-	-	28	-
400	30	24	39	28	-
425	-	-	-	26	-
450	28	24	37	26	-
475	-	-	-	24	-
500	26	22	34	24	-
550	26	22	34	22	-
600	26	22	30	19	-

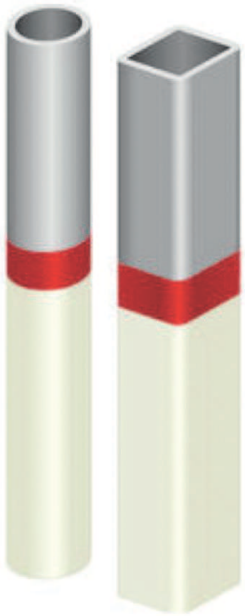
Required thickness for R 120 performance

	HEA	HEB	IPE	IPN	UAP
80	-	-	-	78	71
100	68	61	77	75	71
120	68	60	75	71	-
130	-	-	-	-	68
140	66	56	74	69	-
150	-	-	-	-	64
160	64	53	71	66	-
175	-	-	-	-	63
180	63	50	71	63	-
200	61	48	68	61	61
220	58	46	66	58	60
240	54	46	64	56	-
250	-	-	-	-	56
260	54	44	-	53	-
270	-	-	63	-	54
280	53	44	-	50	-
300	50	41	61	48	53
320	48	38	-	48	-
330	-	-	58	-	-
340	46	38	-	46	-
360	44	38	56	44	-
380	-	-	-	41	-
400	44	35	54	41	-
425	-	-	-	38	-
450	41	35	53	38	-
475	-	-	-	35	-
500	38	32	48	35	-
550	38	32	48	32	-
600	38	32	44	29	-

Required thickness for R 180 performance

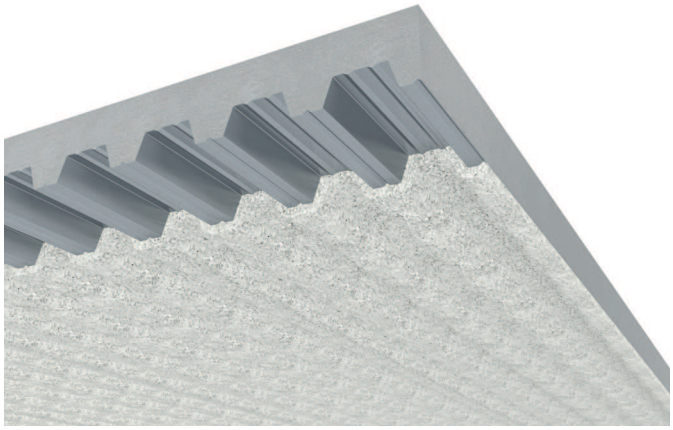
	HEA	HEB	IPE	IPN	UAP
180	-	79	-	-	-
200	-	76	-	-	-
220	-	73	-	-	-
240	-	73	-	-	-
250	-	-	-	-	-
260	-	70	-	-	-
270	-	-	-	-	-
280	-	70	-	79	-
300	79	67	-	76	-
320	76	63	-	76	-
330	-	-	-	-	-
340	73	63	-	73	-
360	70	63	-	70	-
380	-	-	-	67	-
400	70	58	-	67	-
425	-	-	-	63	-
450	67	58	-	63	-
475	-	-	-	58	-
500	63	54	76	58	-
550	63	54	76	54	-
600	63	54	70	49	-

Note:
These thicknesses are in mm and were calculated for a critical temperature of 500°C, for beams exposed on 4 sides.
For all other applications, please contact us.



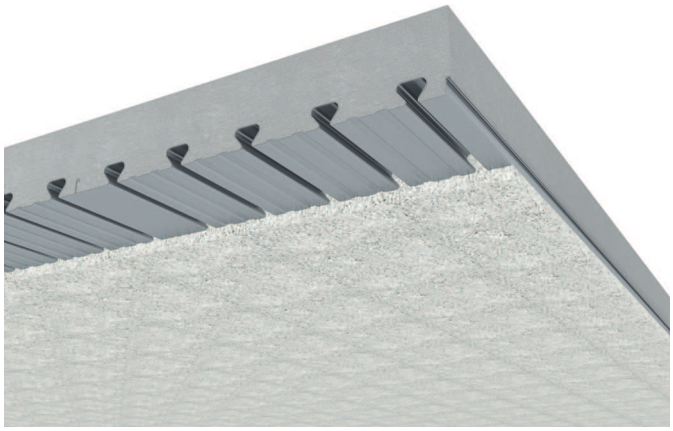
For rectangular or circular hollow pipes, please contact us.

REI 30 - 180



Area of validity

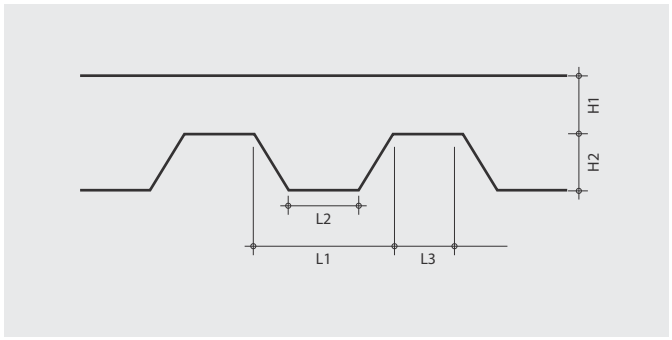
- Protection thickness between 13 and 31 mm for trapezoidal structural steel floor trays
- 23 to 39 mm for dovetailed structural steel floor trays
- Structural steel floor tray sheet thickness greater than or equal to 0.75 mm
- Undulation trough width (L2) of the structural steel floor trays less than or equal to 187 mm
- Undulation crest (H2) of the structural steel floor trays less than or equal to 87 mm
- Applies to all mixed slabs with trapezoidal structural steel floor trays with an effective thickness* greater than or equal to 73 mm
- Applies to all mixed slabs with dovetailed structural steel floor trays with an effective thickness* greater than or equal to 80 mm



Cleaning of steel trays

- Application of primer
- Spraying of one or multiple layers of Fibrofeu® to obtain the thickness required by the report

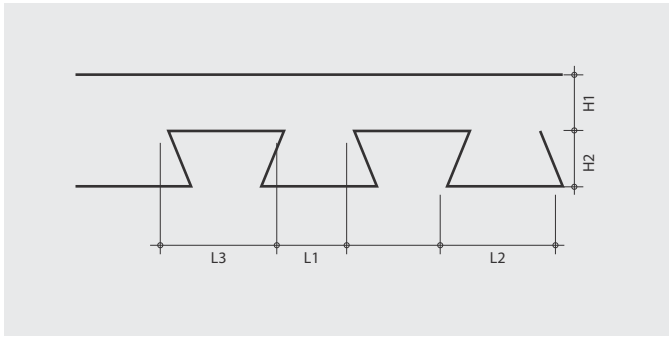
Figure 1



Required thickness for structural steel floor trays with trapezoidal undulations (figure 1)

REI	Fibrofeu® thickness
30	13 mm
60	15 mm
90	23 mm
120	31 mm

Figure 2



Required thickness for structural steel floor trays with dovetail undulations (figure 2)

REI	Fibrofeu® thickness
30	23 mm
60	23 mm
90	23 mm
120	27 mm
180	39 mm

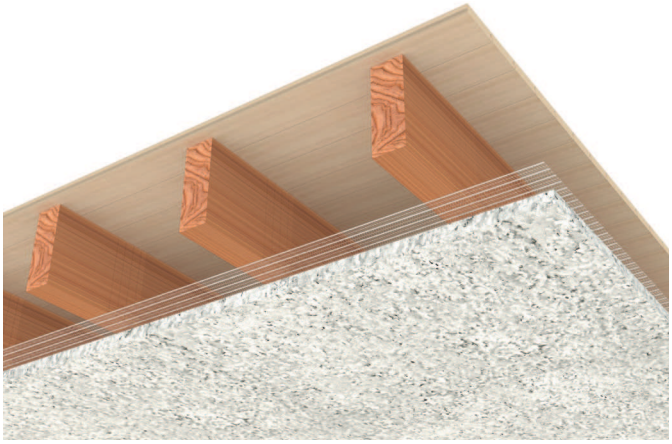
**Effective thickness* = $H1 + \frac{H2 \times (L1 + L2) / 2}{L1 + L3}$

Projiso

Fire protection of wood floors using Fibrofeu®

Efectis report EFR 16-002132

REI 30-120



Required thickness for REI performance

REI	Fibrofeu® thickness
30	24 mm
60	33 mm
90	54 mm
120	80 mm

General Info

The fire stability of wooden bases and structures is ensured by preventing the wood from increasing in temperature.
Fire protection cannot be directly applied to the wood, but must instead be accompanied by the installation of a sheet of expanded metal.
Protection is composed of Nergalto NG1 or equivalent sheets installed perpendicular to the joists (sheets are placed side by side with a 100 mm overlap) and an application of Fibrofeu®.

Area of validity

- Centre-to-centre joist spacing less than or equal to 600 mm
- Joist height greater than or equal to 220 mm

For all other applications, please contact us.

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Acoustic correction using Fibrofeu®

Fibrofeu® – TNO test report

Fibrofeu® thickness	Base	Fréquency in hertz																		α_w
		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 α_s																		
75 mm	Plaster panel on 80mm gap	0,78	0,53	0,67	0,60	0,73	0,78	0,82	0,88	0,90	0,91	1,00	0,98	1,00	1,03	0,99	1,02	1,07	0,97	0,90
35 mm	Solid	0,10	0,14	0,21	0,34	0,48	0,65	0,74	0,88	0,94	1,05	1,01	1,07	1,03	0,98	0,99	1,04	1,01	0,89	0,80 (H)
25 mm	Solid	0,06	0,08	0,15	0,18	0,33	0,41	0,57	0,70	0,87	0,88	0,96	1,06	1,09	1,01	1,03	1,04	1,00	0,89	0,60 (MH)
15 mm	Solid	0,02	0,04	0,06	0,09	0,15	0,22	0,30	0,43	0,55	0,67	0,78	0,88	0,94	0,95	1,03	1,00	1,01	0,86	0,45 (MH)

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