

Cofrastra® 40

Composite floors decking with dovetail section

Featuring a re-entrant section, Cofrastra® 40 is suitable for slim and lightweight floor construction. With a classical pitch of 150 mm, it's the lowest composite floor decking around, yet offers optimum adhesion between profile and concrete which enables it to support heavy loads.

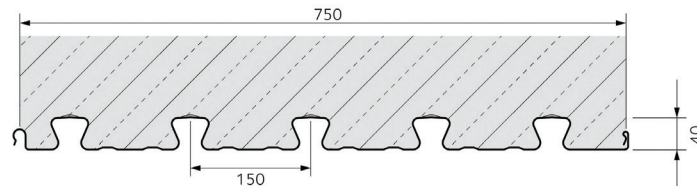
The Cofrafix clip system allows to suspend building equipment, ducts or false ceilings... without any dowels, pins or drilling.



Fire resistant



Thin slab



CE marking according to EN 1090-1
German technical approval: AbZ Z-26.1-22

Characteristics of the base material		Norms
Steel grade	S 350 GD	EN 10346
Corrosion protection	Galvanised steel ZM 175	P 34-310 ETPM ZMevolution® or AbZ Z-30.11-61

Characteristics	Nominal thickness of the profile sheet [mm]		
	0,75	0,88	1,00
Weight [kg / m ²]	9,80	11,50	13,10
Cross section A _g [mm ² / m]	1 183	1 400	1 600
Effective inertia I _{eff} [cm ⁴ / m]	17,58	22,23	25,41
Height of neutral axis [mm]	10,60	10,60	10,60
Modulus of inertia [cm ³ / m]	16,57	20,95	23,95

Nominal concrete consumption

	Thickness of the slab [cm]									
	9	10	11	12	13	14	15	16	17	18
Concrete volume [l / m ²]	80	90	100	110	120	130	140	150	160	170
Theoretical weight* of the composite slab [kg / m ²]	200	225	250	275	300	325	350	375	400	425

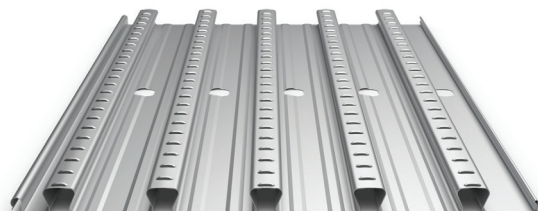
Concrete density 2500 kg / m³

Maximum recommended slab thickness d = 20 cm

*Additional weight due to pounding effect is not included

Cofrastra® 40P:

Pre-punched version, compatible with shear connectors, welded in advance or in shop to the composite beams.



Fire resistance

	REI [min]			
	30	60	90	120
Thickness of the slab [cm]	9	9	11	13

REI: fire protection rating of the raw composite slab

The minimum thickness is required to comply with the temperature criterion (I) on the non- fire exposed side.

According to EN 1994-1-2 §4.3.2, Cofrastra® 40 composite floors are by default REI 30.

For higher fire resistance classes, reinforcement bars are required. These are positioned in the ribs of the profile.

Their section is determined by using Cofra® 5.

Sound insulation

The acoustic behaviour of a raw composite slab is determined by its mass.

Given values are calculated by modelling – study report CœSTB No. AC15-26054708

	Thickness of the slab [cm]									
	9	10	11	12	13	14	15	16	17	18
R _w [dB]	46	47	48	49	50	50	51	52	52	53
(C; Ctr) [dB]	(-1; -6)	(-2; -6)	(-2; -6)	(-2; -6)	(-1; -6)	(-1; -6)	(-1; -6)	(-2; -7)	(-1; -6)	(-2; -7)

Acoustic performance of the Cofrastra® 40 Décibel floor system

Complex	R _w (C; Ctr)	L _{n,w}	CSTB Report
Cofrastra® Décibel: Cofrastra® 40 + slab thickness 140 mm + plenum space 70 mm + plasterboard BA13	56 (-6; -11) dB	66 dB	23268
Cofrastra® Décibel: Cofrastra® 40 + slab thickness 140 mm + plenum space 70 mm + IBR 60 mm + plasterboard BA13	65 (-4; -10) dB	61 dB	23268

Structural performance

Load / Span table

The value provided in each cell of the table loads is the maximum live load capacity Q (kN / m²). The self weight of the slab is already included. The color of each cell give information about the required steel thickness.

A calculation using Cofra 5 optimises these values according to the project requirements.

Single span 

Thickness of the slab [cm]	Span [m]																				
	2,00	2,10	2,20	2,30	2,40	2,50	2,60	2,70	2,80	2,90	3,00	3,10	3,20	3,30	3,40	3,50	3,60	3,70	3,80	3,90	4,00
18	23,23	21,93	20,74	19,66	18,67	17,76	16,92	16,14	15,42	14,75	14,12	13,53	12,98	12,46	11,98	11,52	11,08	10,67	10,29	9,92	9,57
17	21,93	20,71	19,59	18,57	17,63	16,77	15,98	15,24	14,56	13,93	13,33	12,78	12,26	11,77	11,31	10,88	10,47	10,08	9,71	9,36	9,03
16	20,64	19,49	18,43	17,47	16,59	15,78	15,04	14,35	13,70	13,10	12,55	12,02	11,53	11,07	10,64	10,23	9,85	9,48	9,14	8,81	8,50
15	19,35	18,26	17,28	16,38	15,55	14,8	14,09	13,45	12,84	12,28	11,76	11,27	10,81	10,38	9,97	9,59	9,23	8,89	8,56	8,26	7,96
14	18,06	17,04	16,12	15,28	14,51	13,81	13,15	12,55	11,98	11,46	10,97	10,52	10,09	9,68	9,31	8,95	8,61	8,29	7,99	7,70	7,43
13	16,76	15,82	14,97	14,19	13,47	12,82	12,21	11,65	11,12	10,64	10,19	9,76	9,36	8,99	8,64	8,31	7,99	7,70	7,42	7,15	6,90
12	15,47	14,60	13,81	13,09	12,43	11,83	11,27	10,75	10,27	9,82	9,40	9,01	8,64	8,29	7,97	7,66	7,37	7,10	6,84	6,60	-
11	14,18	13,38	12,66	12,00	11,39	10,84	10,32	9,85	9,41	9,00	8,61	8,25	7,92	7,60	7,30	7,02	6,76	-	-	-	-
10	12,88	12,16	11,50	10,9	10,35	9,85	9,38	8,95	8,55	8,17	7,82	7,50	7,19	6,90	-	-	-	-	-	-	-
9	11,59	10,94	10,35	9,81	9,31	8,86	8,44	8,05	7,69	7,35	7,04	-	-	-	-	-	-	-	-	-	-
	Without propping	With propping																			

Multiple spans  with L1 = L2 and internal width support 100mm

Thickness of the slab [cm]	Span [m]																				
	2,00	2,10	2,20	2,30	2,40	2,50	2,60	2,70	2,80	2,90	3,00	3,10	3,20	3,30	3,40	3,50	3,60	3,70	3,80	3,90	4,00
18	26,22	24,78	23,46	22,27	21,17	20,16	19,22	18,36	17,56	16,81	16,12	15,46	14,85	13,72	12,69	11,75	10,88	10,08	9,34	8,66	8,03
17	25	23,62	22,37	21,23	20,18	19,22	18,33	17,51	16,75	16,04	15,37	14,75	13,74	12,69	11,73	10,85	10,04	9,3	8,62	7,99	7,4
16	23,73	22,43	21,24	20,16	19,17	18,26	17,41	16,63	15,91	15,24	14,61	13,69	12,62	11,65	10,77	9,95	9,21	8,52	7,89	7,31	6,77
15	22,43	21,2	20,08	19,06	18,12	17,26	16,46	15,73	15,04	14,41	13,57	12,49	11,51	10,62	9,8	9,06	8,38	7,75	7,17	6,63	6,13
14	21,08	19,92	18,87	17,91	17,03	16,22	15,47	14,78	14,14	13,35	12,27	11,28	10,39	9,58	8,84	8,16	7,54	6,97	6,44	5,95	5,5
13	19,67	18,59	17,61	16,72	15,9	15,14	14,45	13,8	13,03	11,94	10,97	10,08	9,28	8,55	7,88	7,27	6,71	6,19	5,72	5,28	4,87
12	18,2	17,21	16,3	15,47	14,71	14,01	13,37	12,58	11,5	10,54	9,67	8,88	8,16	7,51	6,92	6,37	5,87	5,41	4,99	4,6	4,24
11	16,67	15,75	14,92	14,17	13,47	12,83	11,97	10,92	9,98	9,13	8,37	7,68	7,05	6,48	5,96	5,48	5,04	4,64	4,27	3,92	-
10	13,99	13,00	11,64	10,45	9,41	8,49	7,68	6,96	6,31	5,72	5,2	4,72	4,29	3,9	3,54	3,21	2,91	-	-	-	-
9	12,16	10,84	9,69	8,69	7,81	7,04	6,35	5,74	5,19	4,7	4,26	3,85	3,49	-	-	-	-	-	-	-	-
	Without propping										With propping										

Key	Thickness [mm]
Installation without propping	0,75
	0,88
	1,00
With propping	0,75

Assumptions

- Concrete C25 / 30 (density: 25 kN / m³)
- Fire resistance REI30
- Deflection while pouring L / 180
- Deflection in service L / 350 if L < 3.5 m or (0.5 cm + L / 700) if L > 3.5 m
- Materials safety factors : yM=1.0, yC=1.5, yS=1.15
- Construction loads according to EN 1991-1-6 (Q_{ca} = 0,75 kN / m², Q_{cf} = 0,75 kN / m²)