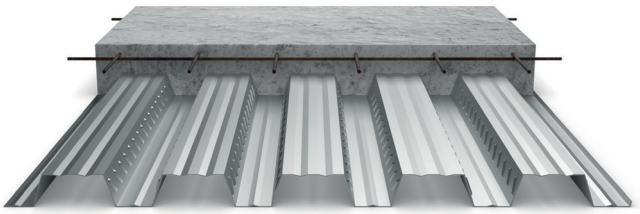
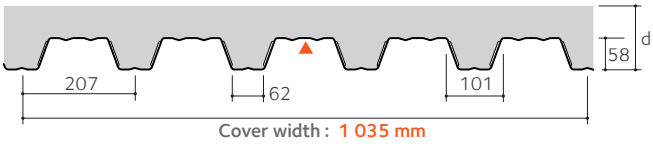
Composite floor decking
Cofraplus® 60

ArcelorMittal

Cofraplus® 60 is a trapezoidal profile sheet with lateral embossments at its web intended to realise composite slabs.

The embossments ensure the longitudinal shear bond between the concrete and the steel profile which acts than as additional reinforcement to the slab construction. The profile serves as formwork in the pouring phase of the concrete and allows savings to be made on the low reinforcement layer and to its self-weight due to the trapezoidal geometry. A multi-use profile, Cofraplus® 60 is suitable for all types of construction. Upon request, the standard 5 ribs profile with a cover width of 1035mm can be delivered only with 4 ribs and a smaller cover width of 828mm to reduce scrap by offcuts and site operations.





Fire safety · Light · Economical · Video

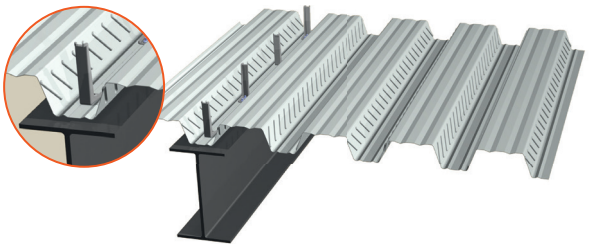
▲ Coated face

CE - Marking
French technical approval : DTA No. 3/15-800

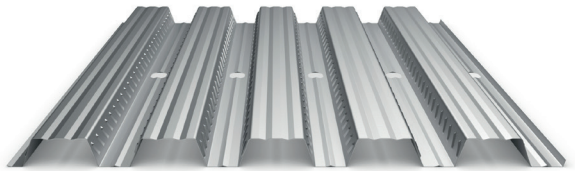
Characteristics of the base material		Norms
Steel grade	S 350 GD	EN 10346
Type of corrosion protection	Galvanised steel ZM 175	P 34-310 ETPM ZMevolution or AbZ Z-30.11-61
	Galvanised coated steel ZM 175	P 34-301 EN 10169+A1
Organic coating		**Norms**
Hairplus 25 µm	Category IIIa	P 34-310
	Category CPi3	EN 10169+A1
Other coatings	On demand	

Characteristics	Nominal thickness of the profile sheet [mm]			
	0,75	0,88	1,00	1,25
Weight [kg/m²]	8,53	10,00	11,37	14,22
Cross section A_p: [mm²/m]	1 029	1 217	1 391	1 797
Effective inertia I_{eff} [mm⁴/m]	443 700	526 400	600 800	751 000
Height of neutral axis [mm]	33,70	33,70	33,70	33,70
Modulus of inertia [mm³/m]	13 160	15 620	17 830	22 280

Cofraplus® 60 C:
If shear connectors are welded or nailed to the across the profile sheet to the beam, the Cofraplus® 60 C version brings advantages. The spacing between the 2 stiffners in the lower flange permits to well position the connector.



Cofraplus® 60 P:
Pre-punched version, compatible with shear connectors welded in advance or in shop to composite beams.



Nominal concrete consumption

	Thickness of the slab [cm]									
	11	12	13	14	15	16	17	18	19	20
Concrete volume [l/m²]	75	85	95	105	115	125	135	145	155	165
Theoretical weight of the composite slab kg/m²	188	213	238	263	288	313	338	363	388	413

Concrete density 2500 kg/m³

Maximum recommended slab thickness d = 28 cm

The Cofra® 5 web based software application

will give detailed information about the required reinforcement according to the project specifications

www.arcelormittal.com/cofra5

Fire resistance

	REI [min]			
	30	60	90	120
Thickness of the slab [cm]	11	12	14	16

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 EN1994-1-2 4.3.2, Cofraplus® 60 composite floors are rated REI 30 even without specific reinforcement in the rib.
For higher fire resistance classes, reinforcement bars are required. These are positioned in the ribs of the profile. Their size is determined by calculation (see Cofra5).

Sound insulation

The acoustic behaviour of a raw composite slab is determined by its mass.
Values calculated by modelling – study report CSTB No. AC15-26054708

	Thickness of the slab [cm]								
	11	12	13	14	15	16	17	18	20
R_w [dB]	46	47	48	48	49	50	51	52	53
(C;Ctr) [dB]	(-2;-6)	(-2;-6)	(-2;-6)	(-1;-6)	(-1;-6)	(-2;-6)	(-2;-7)	(-2;-7)	(-2;-7)

Structural performance

Acceptable unweighted q values with g' = 0 in kg/m²
A calculation using Cofra 5 might optimise the given 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
20	1622	1615	1611	1257	1155	1063	980	906	838	777	721	670	623	580	540	503	469	437	407	380	354
19	1577	1572	1572	1220	1120	1031	950	878	812	752	698	648	603	561	522	486	453	422	394	367	342
18	1531	1400	1403	1409	1086	998	920	849	786	728	675	627	582	542	504	469	437	407	380	354	329
17	1486	1358	1364	1254	1265	966	890	821	759	703	652	605	562	522	486	453	421	393	366	341	317
16	1440	1316	1206	1217	1230	934	860	793	733	678	628	583	541	503	468	436	406	378	352	328	305
15	1395	1273	1167	1073	1088	1105	830	765	706	653	605	561	521	484	450	419	390	363	338	315	293
14	1349	1231	1128	1036	1053	973	993	737	680	628	582	539	500	465	432	402	374	348	324	302	281
13	1304	1189	1088	999	914	941	963	708	653	604	559	517	480	446	414	385	358	333	310	289	269
12	1258	1147	1049	963	880	806	840	864	627	579	535	496	459	426	396	368	342	318	296	276	-
11	1213	1104	1009	926	845	773	709	751	777	554	512	474	439	407	378	351	326	-	-	-	-
	Without propping									With propping											

Multiple spans 

with L1 = L2 and prop width 100 mm

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
20	2117	1950	1947	1803	1676	1683	1571	1469	1162	1087	1019	956	899	846	798	753	711	672	636	602	570
19	2053	1890	1890	1750	1625	1636	1526	1427	1121	1048	982	922	866	815	768	724	683	646	611	578	547
18	1990	1830	1690	1697	1575	1466	1481	1384	1296	1010	945	887	833	783	737	695	656	619	585	554	524
17	1926	1770	1634	1512	1525	1419	1323	1341	1256	1178	909	852	799	751	707	666	628	593	560	530	501
16	1830	1711	1577	1459	1475	1371	1278	1283	1215	1139	872	817	766	720	677	637	601	567	535	506	478
15	1686	1593	1510	1406	1296	1297	1233	1152	1130	1082	1034	782	733	688	647	608	573	540	510	482	455
14	1541	1457	1380	1310	1246	1150	1131	1081	1033	989	948	910	700	656	616	579	545	514	485	457	432
13	1396	1320	1250	1187	1129	1075	1025	979	936	896	859	824	792	625	586	551	518	488	459	433	409
12	1251	1183	1121	1064	1012	964	919	877	839	804	769	738	709	682	556	522	490	461	434	409	386
11	1107	1046	991	941	895	852	813	777	742	710	681	653	627	603	580	493	463	435	409	385	-
	Without propping															With propping					

Assumptions

- Concrete C25/30 (Density 2500 kg/m³)
- Fire resistance REI30
- Deflection while pouring L / 180
- Deflection in service L [cm] / 350 if L < 3.5 m or (0.5 cm + L / 700) if L > 3.5 m

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