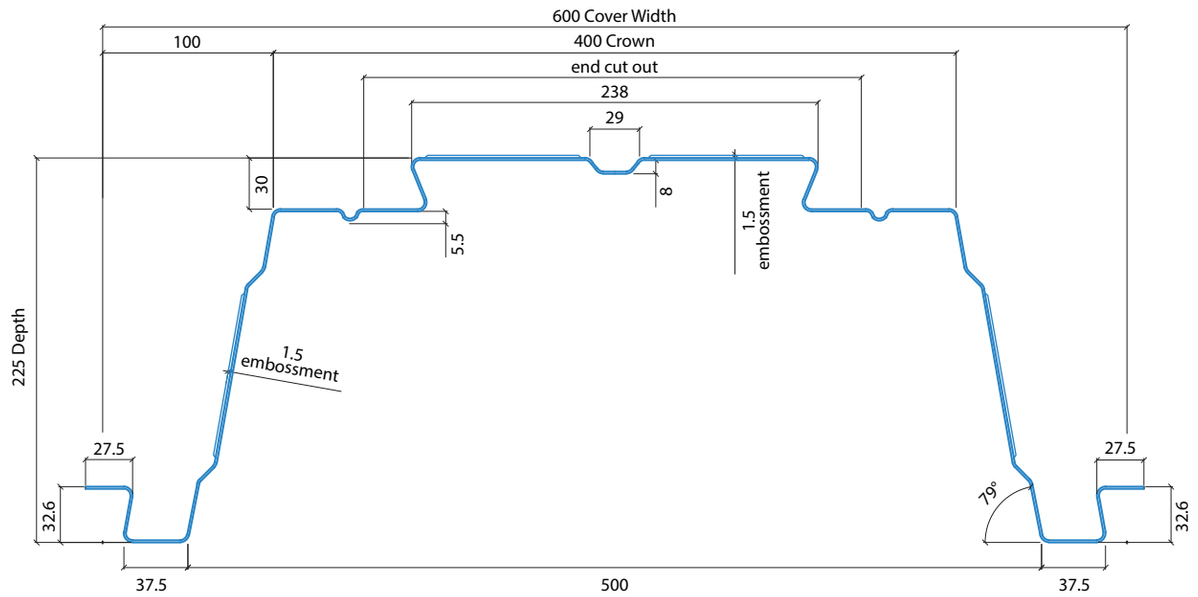
TATA STEEL

Load/span tables

ComFlor® 225 Profile - 1.25mm steel 350N/mm^2

ComFlor® 225 is a high performance combined deep deck specifically designed for Slimdek® and all other integrated steel beam systems. These systems provide a reduced overall floor height with fewer steel beams, a counter intuitive result for such a deep profile. The inclusion of a re-entrant allows for easy service attachment and services can be concealed within the large profile void. The optimised profile design gives superb span capability combined with composite performance with a very small concrete usage.



Note: all dimensions in mm

The quick reference load/span tables for ComFlor® 225 are intended as a guide for initial design. Detailed design can be carried out using the new ComFlor® 9 design software, which allows Eurocode or British Standard design.

The tables are designed to optimise the span in the construction stage, with the minimum amount of reinforcement needed to achieve the relevant imposed loading and fire resistance. However, in certain conditions where slender slabs are subjected to the higher imposed loads (and depending on whether Mesh and Deck Fire Method or Bar Fire Method is selected for fire resistance), then the limiting design mechanism becomes associated with the normal stage slab bending and/or vertical shear capacity, and not construction stage.

The total applied loads stated in the Eurocode tables covers an allowable unfactored total load of either 5.00, 7.50 or 10.00kN/m^2, which represents three typical cases, as specified in the following table. The total load combination is made up of an imposed live load, ceilings and services, finishes and partition loads. However the dead load of the slab itself has already been taken into account and need not be considered as part of the applied load. The three typical load cases of 5.00, 7.50 or 10.00kN/m^2 have been given the imposed load categories of C, C and E, with their corresponding psi factors given in Table A1.1 of BS EN 1990:2002+A1.

Loading Combination (kN/m^2)

Category	C	C	E
Imposed	3.00	4.00	7.50
C & S	0.50	1.00	1.00
Finishes	0.50	1.50	1.50
Partitions	1.00	1.00	0.00
TOTAL	**5.00**	**7.50**	**10.00**

ComFlor® 225 normal weight concrete – using mesh / unpropped / Eurocode

Single span deck, single or continuous slab (m) - Bar Fire Method

Props	Slab depth (mm)	Beam width (mm)	Fire period	Mesh 0.2% min. reqd.	Bar axis (mm)	Total applied load (kN/m²)		
						5.00	7.50	10.00
						1.25mm		
None	295	400	60 minutes	A142	70	6.00 (16)	5.99 (20)	5.99 (20)
	300	400		A193	70	5.93 (16)	5.92 (20)	5.92 (20)
	310	400		A193	70	5.82 (16)	5.82 (16)	5.81 (20)
	320	400		A193	70	5.73 (16)	5.73 (16)	5.73 (20)
	330	400		A252	70	5.65 (16)	5.65 (16)	5.65 (20)
	340	400		A252	70	5.58 (16)	5.58 (16)	5.58 (20)
	350	400		A252	70	5.51 (16)	5.51 (16)	5.51 (20)
	375	400		A393	70	5.28 (16)	5.28 (16)	5.28 (16)
	400	400		A393	70	5.07 (12)	5.06 (16)	5.06 (16)
None	305	400	90 minutes	A193	90	5.86 (20)	5.86 (20)	5.85 (25)
	310	400		A193	90	5.82 (16)	5.81 (20)	5.80 (25)
	320	400		A193	90	5.73 (16)	5.73 (20)	5.72 (25)
	330	400		A252	90	5.65 (16)	5.65 (20)	5.65 (20)
	340	400		A252	90	5.58 (16)	5.58 (20)	5.58 (20)
	350	400		A252	90	5.51 (16)	5.51 (20)	5.51 (20)
	375	400		A393	90	5.28 (16)	5.28 (16)	5.27 (20)
	400	400		A393	90	5.06 (16)	5.06 (16)	5.06 (20)
None	315	400	120 minutes	A193	120	5.77 (20)	5.77 (20)	5.76 (25)
	320	400		A193	120	5.73 (20)	5.73 (20)	5.72 (25)
	330	400		A252	120	5.65 (20)	5.65 (20)	5.64 (25)
	340	400		A252	120	5.58 (16)	5.58 (20)	5.57 (25)
	350	400		A252	120	5.51 (16)	5.51 (20)	5.51 (20)
	375	400		A393	120	5.28 (16)	5.27 (20)	5.27 (20)
	400	400		A393	120	5.06 (16)	5.06 (16)	5.06 (20)

ComFlor® 225 normal weight concrete – using mesh / propped / Eurocode

Single span deck, single or continuous slab (m) - Bar Fire Method

Props	Slab depth (mm)	Beam width (mm)	Fire period	Mesh 0.4% min. reqd.	Bar axis (mm)	Total applied load (kN/m²)		
						5.00	7.50	10.00
						1.25mm		
1 line	295	400	60 minutes	A142	70	7.06 (20)	7.03 (25)	6.98 (32)
	300	400		A193	70	6.91 (20)	6.91 (20)	6.88 (25)
	310	400		A193	70	6.66 (16)	6.65 (20)	6.63 (25)
	320	400		A193	70	6.42 (16)	6.41 (20)	6.41 (20)
	330	400		A252	70	6.20 (16)	6.18 (20)	6.18 (20)
	340	400		A252	70	5.99 (16)	5.99 (16)	5.98 (20)
	350	400		A252	70	5.81 (16)	5.81 (16)	5.80 (20)
	375	400		A393	70	5.38 (16)	5.38 (16)	5.38 (16)
	400	400		A393	70	5.04 (12)	5.03 (16)	5.03 (16)
1 line	305	400	90 minutes	A193	90	6.78 (20)	6.75 (25)	6.75 (25)
	310	400		A193	90	6.65 (20)	6.63 (25)	6.63 (25)
	320	400		A193	90	6.41 (20)	6.41 (20)	6.39 (25)
	330	400		A252	90	6.18 (20)	6.18 (20)	6.16 (25)
	340	400		A252	90	5.99 (16)	5.98 (20)	5.97 (25)
	350	400		A252	90	5.81 (16)	5.80 (20)	5.80 (20)
	375	400		A393	90	5.38 (16)	5.38 (16)	5.37 (20)
	400	400		A393	90	5.03 (16)	5.03 (16)	5.03 (16)
1 line	315	400	120 minutes	A193	120	6.53 (20)	6.51 (25)	6.51 (25)
	320	400		A193	120	6.41 (20)	6.39 (25)	6.39 (25)
	330	400		A252	120	6.18 (20)	6.18 (20)	6.16 (25)
	340	400		A252	120	5.99 (20)	5.98 (20)	5.97 (25)
	350	400		A252	120	5.80 (20)	5.80 (20)	5.78 (25)
	375	400		A393	120	5.38 (16)	5.37 (20)	5.37 (20)
	400	400		A393	120	5.03 (16)	5.03 (16)	5.02 (20)

ComFlor® 225 normal weight concrete – using mesh / propped / Eurocode

Single span deck, single or continuous slab (m) - Bar Fire Method

Props	Slab depth (mm)	Beam width (mm)	Fire period	Mesh 0.4% min. reqd.	Bar axis (mm)	Total applied load (kN/m²)		
						5.00	7.50	10.00
						1.25mm		
2 lines	295	400	60 minutes	A142	70	8.01 (32)	7.49 (32)	7.02 (32)
	300	400		A193	70	8.05 (32)	7.53 (32)	7.04 (32)
	310	400		A193	70	8.13 (32)	7.63 (32)	7.11 (25)
	320	400		A193	70	8.21 (32)	7.73 (32)	7.16 (25)
	330	400		A252	70	8.29 (32)	7.82 (32)	7.20 (25)
	340	400		A252	70	8.37 (32)	7.91 (32)	7.22 (25)
	350	400		A252	70	8.45 (32)	8.00 (32)	7.23 (25)
	375	400		A393	70	8.32 (32)	8.21 (32)	7.23 (25)
	400	400		A393	70	7.83 (20)	7.82 (25)	7.23 (25)
2 lines	305	400	90 minutes	A193	90	7.90 (32)	7.41 (32)	7.07 (32)
	310	400		A193	90	7.94 (32)	7.46 (32)	7.09 (32)
	320	400		A193	90	8.03 (32)	7.56 (32)	7.14 (32)
	330	400		A252	90	8.11 (32)	7.65 (32)	7.18 (32)
	340	400		A252	90	8.20 (32)	7.75 (32)	7.22 (25)
	350	400		A252	90	8.28 (32)	7.84 (32)	7.23 (25)
	375	400		A393	90	8.32 (32)	8.06 (32)	7.23 (25)
	400	400		A393	90	7.82 (25)	7.82 (25)	7.23 (25)
2 lines	315	400	120 minutes	A193	120	7.73 (32)	7.26 (32)	7.05 (32)
	320	400		A193	120	7.77 (32)	7.31 (32)	7.13 (32)
	330	400		A252	120	7.86 (32)	7.41 (32)	7.18 (32)
	340	400		A252	120	7.95 (32)	7.51 (32)	7.20 (32)
	350	400		A252	120	8.04 (32)	7.61 (32)	7.21 (32)
	375	400		A393	120	8.25 (32)	7.84 (32)	7.21 (32)
	400	400		A393	120	7.82 (25)	7.80 (25)	7.23 (25)

Spans are based on beam centres, with a 400mm bottom flange width and a minimum end bearing of 50mm.
The figures in brackets are bottom trough reinforcement single bar diameters (mm), one bar per trough only.
Bar axis is 70, 90 and 120mm for fire resistance periods of 60, 90 and 120 minutes respectively.
In accordance with BS EN 1994-1-1 Clause 9.8.1(2) - Where the continuous slabs are design as simply-supported in accordance with 9.4.2 (5), the minimum cross-sectional area of anti-crack mesh reinforcement above the ribs should not be less than 0.2% of the cross sectional area of concrete above the ribs for unpropped construction , and 0.4% for propped construction.

Further help and advice

Tata Steel offers a comprehensive advisory service on the design of composite flooring, available free of charge to specifiers and designers.

Please contact the Technical Department reference the loading method for the current British Standard tables or any other technical queries not covered by this datasheet or by the ComFlor® 9 software on
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Comprehensive ComFlor® 9 Software is also freely available to all professionals by registering at www.tatasteelconstruction.com/comflor

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