

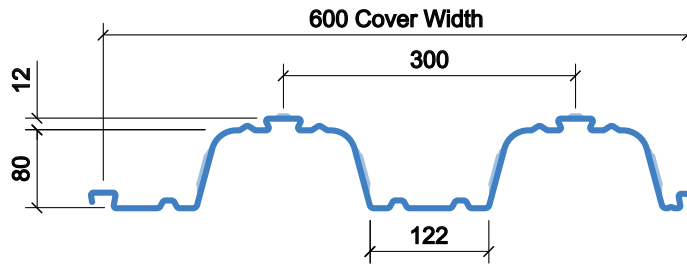
# TR80<sup>+</sup>™

## Floor deck profile



### Deck profile

Initially added to our product range in 2002, the original TR80 has undergone further research and development, evolving to the now revised profile, renamed TR80+. This 80mm deep trapezoidal profile is available in 0.9mm, 1.0mm and 1.2mm gauges in both S350 and S450 grade steel.



### Options

- Reduced concrete volume compared to other decks available
- 140mm slab depth required to achieve a typical 1 hour fire rating
- Excellent un-propped span capability
- Trough stiffeners positioned to ensure central stud position, minimizing site checking required
- Soffit 'Wedge Nut' fixings available with load capacity of up to 1kN
- Acoustic Robust Solution – Refer Robust Details Handbook ([www.robustdetails.com](http://www.robustdetails.com))
- Product options include **HIGH DURABILITY HD** steel coating & TAB-Deck™ fibre concrete solution

### Concrete volume and weight

Slab Depth mm	Volume of Concrete m <sup>3</sup> /m <sup>2</sup>	Weight of Concrete (Normal Weight)		Weight of Concrete (Lightweight)	
		Wet (kN/m <sup>2</sup> )	Dry (kN/m <sup>2</sup> )	Wet (kN/m <sup>2</sup> )	Dry (kN/m <sup>2</sup> )
140	0.096	2.26	2.21	1.79	1.70
150	0.106	2.50	2.44	1.98	1.87
160	0.116	2.73	2.67	2.16	2.05
170	0.126	2.97	2.90	2.35	2.22
180	0.136	3.20	3.14	2.53	2.40
200	0.156	3.67	3.60	2.91	2.75
225	0.181	4.26	4.17	3.37	3.20
250	0.206	4.85	4.75	3.84	3.64

Deflection – This table is based on concrete poured to a constant thickness and does not take account for deflection of the decking or supporting beams (as a guide, to account for the deflection of the decking, a concrete volume of span/250 should be added to the figures indicated). Concrete Weight – These tables indicate concrete weight only and do not include the weight of decking or reinforcement. Concrete weights are based on the concrete densities specified in BS5950 Part 4 clause 3.3.3 as follows: Normal Weight Concrete – 2400kg/m<sup>3</sup> (wet) and 2350 kg/m<sup>3</sup> (dry). Lightweight Concrete – 1900kg/m<sup>3</sup> (wet) and 1800 kg/m<sup>3</sup> (dry).

### Profile properties

Nominal Thickness mm	Design Thickness (bare steel) mm	Available Grades N/mm <sup>2</sup>	Depth of Profile mm	Weight of Profile kg/m <sup>2</sup>	Weight of Profile kN/m <sup>2</sup>	Height of Neutral axis mm	Area of Steel mm <sup>2</sup> /m	Moment of Inertia cm <sup>4</sup> /m
0.9	0.86	S350 or S450	80 / 92*	11.33	0.111	42.3	1385	172.9
1.0	0.96	S350 or S450	80 / 92*	12.54	0.123	42.4	1539	192.3
1.2	1.16	S350 or S450	80 / 92*	15.06	0.148	42.5	1860	231.1

# TR80<sup>+</sup>™ Load tables (BS5950)

## Steel Grade S350 – Normal Weight Concrete

Total Unfactored Applied Load (kN/m<sup>2</sup>) Maximum Permissible Span (m)

Span Condition	Fire Rating (hours)	Slab Depth (mm)	Mesh	0.9mm Gauge				1.0mm Gauge				1.2mm Gauge				
				3.5	5.0	7.5	10.0	3.5	5.0	7.5	10.0	3.5	5.0	7.5	10.0	
Single*	1.0	140	A193	3.92	3.92	3.47	3.04	4.21	4.21	3.54	3.10	4.39	4.39	3.67	3.22	
		160	A193	3.73	3.73	3.73	3.28	4.02	4.02	3.92	3.35	4.23	4.23	4.06	3.48	
		200	A252	3.42	3.42	3.42	3.42	3.69	3.69	3.69	3.69	3.98	3.98	3.98	3.98	
	1.5	150	A193	3.82	3.78	3.10	2.74	4.12	3.81	3.15	2.78	4.31	3.88	3.23	2.87	
		175	A193	3.61	3.61	3.42	3.01	3.89	3.89	3.46	3.05	4.13	4.13	3.55	3.14	
		200	A252	3.42	3.42	3.42	3.42	3.69	3.69	3.69	3.68	3.98	3.98	3.98	3.73	
	2.0	160	A193	3.73	3.36	2.85	2.53	3.98	3.37	2.87	2.56	3.96	3.41	2.92	2.60	
		175	A193	3.61	3.61	3.02	2.68	3.89	3.63	3.04	2.71	4.13	3.61	3.09	2.75	
		200	A252	3.42	3.42	3.42	3.21	3.69	3.69	3.69	3.22	3.98	3.98	3.74	3.24	
	Double	1.0	140	A193	4.42	3.90	3.33	2.96	4.59	3.98	3.40	3.02	4.70	4.13	3.53	3.14
			160	A193	4.18	4.16	3.55	3.17	4.49	4.24	3.63	3.24	5.02	4.41	3.78	3.37
			200	A252	3.78	3.78	3.78	3.78	4.12	4.12	4.12	3.85	4.62	4.62	4.48	3.99
1.5		150	A193	3.95	3.50	3.01	2.69	4.00	3.55	3.06	2.73	4.11	3.65	3.15	2.82	
		175	A193	4.01	3.78	3.26	2.92	4.31	3.83	3.32	2.97	4.42	3.94	3.42	3.07	
		200	A252	3.77	3.77	3.77	3.37	4.12	4.12	3.82	3.41	4.62	4.54	3.91	3.51	
2.0		160	A193	3.60	3.21	2.78	2.49	3.63	3.24	2.81	2.52	3.68	3.30	2.86	2.57	
		175	A193	3.77	3.37	2.92	2.63	3.79	3.40	2.95	2.65	3.85	3.45	3.01	2.71	
		200	A252	3.77	3.77	3.41	3.06	4.12	3.97	3.44	3.08	4.48	4.01	3.48	3.13	
Double Span (Propped)		1.0	140	A393	5.02	4.49	3.67	3.15	5.09	4.57	3.80	3.27	5.23	4.70	4.05	3.50
			160	A393	5.24	4.74	4.04	3.48	5.32	4.81	4.18	3.61	5.47	4.95	4.33	3.86
			200	2 x A252	5.42	5.40	4.67	4.05	5.98	5.48	4.82	4.19	6.14	5.63	4.99	4.47
	1.5	150	A393	4.64	4.18	3.65	3.28	4.69	4.22	3.69	3.31	4.78	4.31	3.76	3.38	
		175	A393	4.92	4.47	3.93	3.55	4.97	4.52	3.97	3.59	5.08	4.61	4.06	3.67	
		200	2 x A252	5.25	4.81	4.26	3.87	5.32	4.87	4.32	3.92	5.54	5.07	4.50	4.09	
	2.0	160	A393	4.39	3.97	3.47	3.13	4.42	3.99	3.50	3.15	4.47	4.04	3.54	3.19	
		175	2 x A252	4.58	4.16	3.66	3.31	4.61	4.19	3.69	3.33	4.72	4.29	3.78	3.42	
		200	2 x A252	4.85	4.43	3.93	3.57	4.88	4.47	3.96	3.60	4.95	4.53	4.02	3.65	

Figures shown in Red, indicates where spans are limited by the maximum composite stage condition.

Figures shown in Blue, indicates where spans are limited by the maximum composite stage and are achieved using two rows of temporary propping at third points.

The above tables are limited to the span/depth ratio for end span condition (Refer BS5950 Part 4: Clause 6.6.3 Table 2) and a maximum span of 6m.

\* These tables are based on the composite slab and mesh reinforcement (not necessarily the metal deck) continuous over one or more internal supports (end bay condition). For full design notes relating to these tables refer to page 4 of The White Book.

# TR80<sup>+</sup>™ Load tables (BS5950)

## Steel Grade S350 – Lightweight Concrete

Total Unfactored Applied Load (kN/m<sup>2</sup>) Maximum Permissible Span (m)

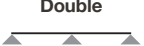
Span Condition	Fire Rating (hours)	Slab Depth (mm)	Mesh	0.9mm Gauge				1.0mm Gauge				1.2mm Gauge				
				3.5	5.0	7.5	10.0	3.5	5.0	7.5	10.0	3.5	5.0	7.5	10.0	
Single*	1.0	140	A193	4.19	4.19	3.58	3.12	4.44	4.44	3.65	3.18	4.64	4.64	3.79	3.31	
		160	A193	4.00	4.00	3.95	3.36	4.28	4.28	4.01	3.43	4.47	4.47	4.16	3.56	
		200	A252	3.69	3.69	3.69	3.69	3.99	3.99	3.99	3.99	4.21	4.21	4.21	4.21	
	1.5	150	A193	4.09	4.09	3.32	2.91	4.36	4.16	3.36	2.95	4.55	4.22	3.45	3.03	
		175	A193	3.88	3.88	3.58	3.13	4.18	4.18	3.62	3.18	4.36	4.36	3.71	3.27	
		200	A252	3.69	3.69	3.69	3.69	3.99	3.99	3.99	3.82	4.21	4.21	4.21	3.84	
	2.0	160	A193	4.00	3.78	3.11	2.74	4.28	3.73	3.13	2.76	4.47	3.76	3.17	2.80	
		180	A252	3.84	3.84	3.81	3.24	4.14	4.14	3.78	3.25	4.33	4.33	3.74	3.28	
		200	A252	3.69	3.69	3.69	3.39	3.99	3.99	3.99	3.40	4.21	4.21	3.98	3.43	
	Double	1.0	140	A193	4.67	4.08	3.45	3.05	4.86	4.16	3.52	3.11	5.02	4.31	3.65	3.23
			160	A193	4.50	4.34	3.67	3.25	4.75	4.42	3.75	3.32	5.39	4.60	3.90	3.46
			200	A252	4.09	4.09	4.09	3.90	4.47	4.47	4.47	3.97	4.97	4.97	4.66	4.12
1.5		150	A193	4.32	3.78	3.22	2.86	4.38	3.83	3.26	2.90	4.48	3.93	3.36	2.98	
		175	A193	4.34	4.01	3.42	3.05	4.62	4.06	3.48	3.10	4.74	4.17	3.58	3.19	
		200	A252	4.09	4.09	3.98	3.52	4.47	4.47	4.02	3.57	4.97	4.89	4.12	3.66	
2.0		160	A193	4.01	3.53	3.02	2.69	4.03	3.56	3.05	2.72	4.09	3.61	3.10	2.76	
		180	A252	4.28	4.13	3.51	3.12	4.67	4.14	3.53	3.14	4.76	4.18	3.57	3.18	
		200	A252	4.09	4.09	3.64	3.24	4.47	4.29	3.66	3.26	4.97	4.32	3.71	3.31	
Double Span (Propped)		1.0	140	A393	4.92	4.54	3.79	3.23	4.99	4.61	3.92	3.35	5.09	4.73	4.14	3.59
			160	A393	5.32	4.98	4.20	3.59	5.38	5.06	4.34	3.72	5.48	5.18	4.51	3.97
			200	2 x A252	6.01	5.70	4.91	4.21	6.11	5.80	5.06	4.36	6.22	5.91	5.23	4.64
	1.5	150	A393	5.11	4.56	3.95	3.41	5.16	4.61	3.98	3.54	5.25	4.69	4.06	3.63	
		175	A393	5.32	4.78	4.17	3.75	5.37	4.83	4.21	3.79	5.48	4.93	4.30	3.86	
		200	2 x A252	5.71	5.18	4.55	4.10	5.79	5.25	4.61	4.16	5.93	5.37	4.72	4.26	
	2.0	160	A393	4.82	4.32	3.75	3.36	4.86	4.35	3.77	3.38	4.93	4.41	3.83	3.43	
		180	2 x A252	5.21	4.70	4.10	3.69	5.25	4.73	4.13	3.71	5.31	4.78	4.18	3.76	
		200	2 x A252	5.36	4.86	4.26	3.85	5.39	4.89	4.29	3.87	5.47	4.95	4.35	3.93	

For more comprehensive tables covering a wider range of slab depths, loadings, fire ratings and mesh sizes visit our website at [www.smdltd.co.uk](http://www.smdltd.co.uk)

# TR80<sup>+</sup>™ Fire tables (BS5950)

## TAB-Deck™ Fibres - Normal Weight Concrete


Total Unfactored Applied Load (kN/m<sup>2</sup>) Maximum Permissible Span (m)

Span Condition	Fire Rating (hours)	Slab Depth (mm)	Steel Fibre	0.9mm Gauge				1.0mm Gauge				1.2mm Gauge			
				3.5	5.0	7.5	10.0	3.5	5.0	7.5	10.0	3.5	5.0	7.5	10.0
Double 	1.0	140	HE 1.0/50	4.35	3.93	3.43	3.09	4.50	4.07	3.56	3.20	4.84	4.39	3.84	3.45
		160	HE 1.0/50	4.19	4.18	3.68	3.33	4.49	4.35	3.84	3.47	5.02	4.66	4.12	3.72
		200	HE 1.0/50	3.78	3.78	3.78	3.78	4.13	4.13	4.13	4.03	4.63	4.63	4.63	4.31
	1.5	150	HE 1.0/50	3.57	3.23	2.82	2.54	3.72	3.37	2.94	2.65	3.98	3.60	3.15	2.84
		175	HE 1.0/50	3.88	3.54	3.13	2.63	3.99	3.64	3.22	2.71	4.22	3.85	3.40	3.08
		200	HE 1.0/50	3.78	3.78	3.54	3.22	4.13	4.07	3.63	3.31	4.63	4.27	3.81	3.47
	2.0	160	HE 1.0/50	3.58	3.24	2.85	2.38	3.69	3.35	2.94	2.46	3.91	3.55	3.12	2.62
		175	HE 1.0/50	3.68	3.35	2.96	2.50	3.79	3.46	3.05	2.58	4.02	3.67	3.24	2.73
		200	HE 1.0/50	3.78	3.78	3.41	2.88	4.13	3.92	3.50	2.96	4.45	4.10	3.66	3.33

# TR80<sup>+</sup>™ Fire tables (BS5950)

## TAB-Deck™ Fibres - Lightweight Concrete

Total Unfactored Applied Load (kN/m<sup>2</sup>) Maximum Permissible Span (m)

Span Condition	Fire Rating (hours)	Slab Depth (mm)	Steel Fibre	0.9mm Gauge				1.0mm Gauge				1.2mm Gauge			
				3.5	5.0	7.5	10.0	3.5	5.0	7.5	10.0	3.5	5.0	7.5	10.0
Double 	1.0	140	HE 1.0/50	4.54	4.07	3.52	3.15	4.71	4.22	3.65	3.27	5.05	4.53	3.93	3.51
		160	HE 1.0/50	4.51	4.38	3.82	3.43	4.76	4.51	3.94	3.54	5.34	4.84	4.23	3.80
		200	HE 1.0/50	4.10	4.10	4.10	4.03	4.48	4.48	4.48	4.13	4.98	4.98	4.86	4.41
	1.5	150	HE 1.0/50	3.78	3.39	2.94	2.63	3.92	3.51	3.05	2.73	4.17	3.73	3.24	2.90
		175	HE 1.0/50	4.09	3.70	3.23	2.77	4.21	3.80	3.33	2.85	4.44	4.01	3.51	3.16
		200	HE 1.0/50	4.10	4.10	3.79	3.43	4.48	4.39	3.88	3.51	4.98	4.59	4.06	3.67
	2.0	160	HE 1.0/50	3.83	3.44	2.99	2.53	3.97	3.57	3.10	2.60	4.24	3.81	3.32	2.98
		180	HE 1.0/50	4.22	3.82	3.35	2.80	4.33	3.92	3.44	2.88	4.55	4.12	3.61	3.25
		200	HE 1.0/50	4.10	4.10	3.63	3.28	4.48	4.22	3.72	3.36	4.83	4.41	3.89	3.52

For further guidance on the design of TAB-Deck™ fibre reinforced slabs, download the TAB-Deck™ design manual at [www.smdltd.co.uk](http://www.smdltd.co.uk)

# TR80<sup>+</sup>™ Fire Insulation Thickness

## Minimum Insulation Thickness (x) of Concrete (mm)



Concrete Weight	1 hr	1.5 hr	2 hr	3 hr	4 hr
NWC	60	70	80	115	130
LWC	60	70	80	100	115

The image and table above details the minimum insulation thickness required to suit fire design criteria – in accordance with BS5950 Part 8.



For product calculations and slab design, download our Design Software via our website

## Need more information?

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or email our Technical Team on [technical@smdltd.co.uk](mailto:technical@smdltd.co.uk)