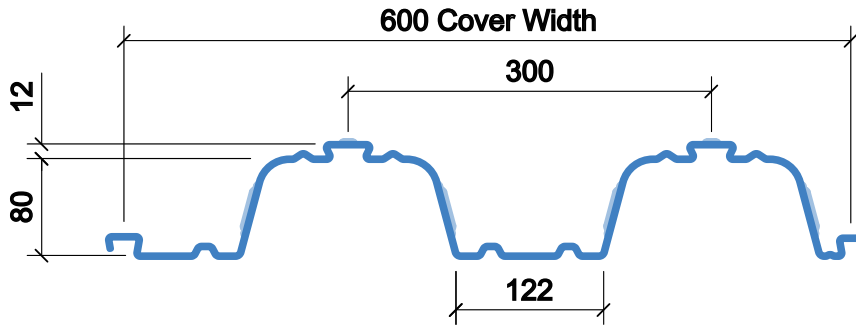


## Product Data Sheet Floor Deck, Details and Sectional Properties

### TR80+™



The TR80+ profile was introduced in 2009, as a truly composite trapezoidal deck profile with high load spans. The TR80+ profile enables load spans in excess of 4.5 metres which helps in further reducing secondary beams in the buildings making it a popular choice in all buildings especially where further extended secondary beam spans are required.

#### Benefits

- Un-propped spans in excess of 4.5m
- Reduced concrete volume
- Fire rating up to 4 hours
- Trough stiffeners positioned to ensure central stud position
- Soffit Wedge Nut fixings available with 1kN load capacity

#### Gauges

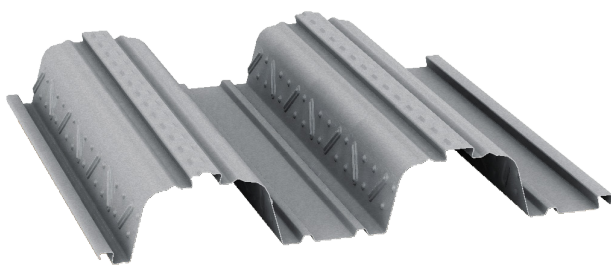
- 0.9mm
- 1.0mm
- 1.2mm

#### Specification

- 600mm cover width
- 80mm deep (92mm to top re-entrant)

#### Steel Grade

- S350
- S450



#### Finishes

- Galvanised (Z120)
- Galvanised (Z275)

#### Profile Properties

Nominal Thickness mm	Design Thickness (bare steel) 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 (S350)	Moment of Inertia cm <sup>4</sup> /m (S450)
0.9	0.86	11.37	0.112	42.30	1385	172.9	175.2
1.0	0.96	12.59	0.123	42.40	1539	192.3	190.3
1.2	1.16	15.10	0.148	42.50	1860	231.1	220.1

# Fire Insulation Thickness

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

Fire Rating	NWC	LWC
1.0 Hour	60	60
1.5 Hour	70	70
2.0 Hour	80	80
3.0 Hour	115	100
4.0 Hour	130	115



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

## 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	2.22	1.79	1.70
150	0.106	2.50	2.45	1.98	1.88
160	0.116	2.74	2.68	2.17	2.05
170	0.126	2.97	2.91	2.35	2.23
180	0.136	3.21	3.14	2.54	2.41
200	0.156	3.68	3.60	2.91	2.76
225	0.181	4.27	4.18	3.38	3.20
250	0.206	4.86	4.76	3.85	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).

## S350 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	Total Unfactored Applied Load (kN/m <sup>2</sup> ) Maximum Permissible Span (m)											
				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

Figures shown in red are governed by the normal (composite) or fire stages, greater spans can be achieved by increasing reinforcement - refer to SMD Elements® Design Software, Elements® Span Check App or The SMD White Book for more extensive design information.



For full design notes relating to these tables refer to SMD's The White Book, Floor Deck Design Guide and Tables.

\*\* Single span design limits are based on single span deck with the slab being continuous over at least one internal support (end span condition). For true single span slabs with no continuity, refer to SMD Elements® Design Software as additional bottom reinforcement will be required.

# S450 Load Tables (BS5950)

## Steel Grade S450 – 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	
<b>Single**</b> 	1.0	140	A142	4.164	3.843	3.399	3.046	4.269	3.953	3.500	3.141	4.418	4.172	3.703	3.319	
		160	A193	3.969	3.969	3.765	3.445	4.104	4.104	3.866	3.538	4.250	4.250	4.062	3.719	
		200	A393	3.641	3.641	3.641	3.641	3.819	3.819	3.819	3.819	3.984	3.984	3.984	3.984	
	1.5	150	A142	4.062	3.414	2.976	2.680	4.180	3.500	3.054	2.746	4.331	3.672	3.203	2.883	
		170	A193	3.875	3.812	3.414	3.085	4.031	3.891	3.484	3.149	4.176	4.046	3.633	3.281	
		200	A393	3.641	3.641	3.641	3.641	3.819	3.819	3.819	3.819	3.984	3.984	3.984	3.984	
	2.0	160	A193	3.969	3.257	2.850	2.573	4.104	3.304	2.899	2.612	4.250	3.399	2.984	2.688	
		170	A252	3.875	3.600	3.211	2.903	4.031	3.641	3.250	2.938	4.176	3.747	3.335	3.015	
		200	A393	3.641	3.641	3.641	3.538	3.819	3.819	3.819	3.577	3.984	3.984	3.984	3.680	
	<b>Double</b> 	1.0	140	A142	4.550	3.907	3.399	3.046	4.945	4.031	3.500	3.141	5.492	4.257	3.703	3.319
			160	A193	4.422	4.375	3.827	3.445	4.682	4.492	3.930	3.538	5.281	4.680	4.126	3.719
			200	A393	3.976	3.976	3.976	3.976	4.366	4.366	4.366	4.366	4.879	4.879	4.879	4.600
1.5		150	A142	4.459	3.414	2.976	2.680	4.810	3.500	3.054	2.746	5.383	3.672	3.203	2.883	
		170	A193	4.300	3.891	3.414	3.085	4.567	3.969	3.484	3.149	5.195	4.141	3.633	3.281	
		200	A393	3.976	3.976	3.976	3.938	4.366	4.366	4.366	4.000	4.879	4.879	4.538	4.125	
2.0		160	A193	4.422	3.257	2.850	2.573	4.682	3.304	2.899	2.612	5.219	3.399	2.984	2.688	
		170	A252	4.296	3.657	3.211	2.903	4.562	3.703	3.250	2.938	5.188	3.796	3.335	3.015	
		200	A393	3.976	3.976	3.945	3.577	4.366	4.366	3.984	3.616	4.879	4.577	4.054	3.680	

Figures shown in red are governed by the normal (composite) or fire stages, greater spans can be achieved by increasing reinforcement - refer to SMD Elements® Design Software, Elements® Span Check App or The SMD White Book for more extensive design information.

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\*\* Single span design limits indicated are based on single span deck with the slab being continuous over at least one internal support (end span condition). For true single span slabs with no continuity, refer to SMD Elements® Design Software as additional bottom reinforcement will be required.