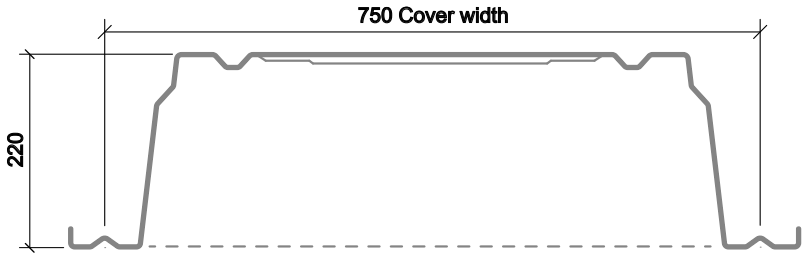
SMD®
Structural Floor and Roof Solutions

Product Data Sheet Floor Deck, Details and Sectional Properties

TR220™



Description

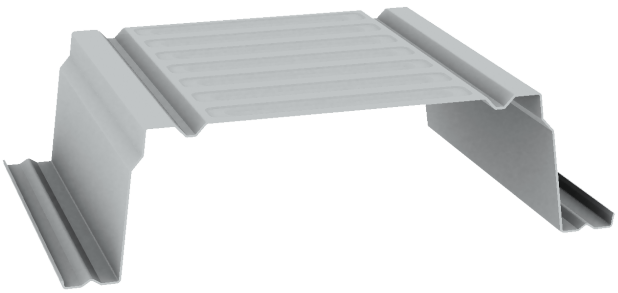
The additive floor TR220 combines high strength of the 220mm deep steel deck profile with the performance of a ribbed reinforced concrete slab to provide a long span floor solution. The use of TR220 installed to bottom flanges provides a slim floor construction to reduce the structural zone without the need for intermediate supports.

Benefits

- Un-propped spans up to 6m subject to slab depth – refer Load Tables for specific slab depth.
- Lightweight compared to other long-span flooring solutions
- Reduces structural floor zone, utilising slab depth within beam web

Specification

- 750mm cover width
- 220mm deep



Gauges

- 1.13mm
- 1.25mm

Steel Grade

- S350

Finishes

- Galvanised (Z275)
- Interior liner

Profile Properties

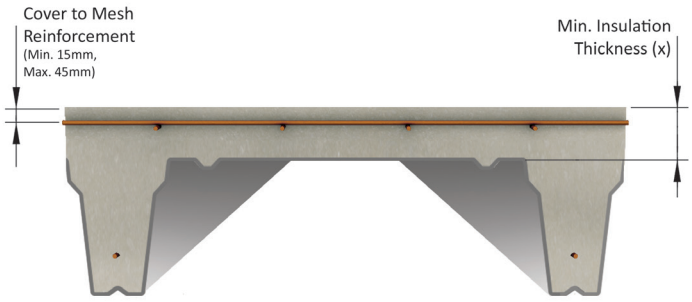
Nominal Thickness mm	Design Thickness (bare steel) mm	Weight of Profile kg/m²	Weight of Profile kN/m²	Height of Neutral Axis mm	Area of Steel mm²/m	Moment of Inertia cm⁴/m
1.13	1.09	14.80	0.150	159.90	1681	1374.2
1.25	1.21	16.40	0.160	159.90	1866	1525.5

Section properties are calculated assisted by testing in accordance with Eurocode 3.

Fire Insulation Thickness

Minimum Insulation Thickness (x) of Concrete (mm)

Fire Rating	NWC	LWC
1.0 Hour	60	80
1.5 Hour	90	100
2.0 Hour	120	120
3.0 Hour	NA	NA
4.0 Hour	NA	NA



The image and table above details the minimum insulation thickness required to suit fire design criteria in accordance with BS EN 1994-1-2.

Concrete Volume and Weight

Slab Depth mm	Volume of Concrete m^3/m^2	Weight of Concrete (Normal Weight) Wet (kN/m^2)	Dry (kN/m^2)	Weight of Concrete (Lightweight) Wet (kN/m^2)	Dry (kN/m^2)
300	0.117	3.04	2.93	2.46	2.34
350	0.167	4.34	4.18	3.51	3.34
400	0.217	5.64	5.43	4.56	4.34

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 and reinforcement weight only, they do not include the weight of the deck. Concrete weights are based on the concrete densities specified in BS EN 1991-1-1 as follows: Normal Weight Concrete – 26kN/m³ (wet) and 25 kN/m³ (dry), Lightweight Concrete – 21kN/m³ (wet) and 20 kN/m³ (dry).

Load Tables (Eurocode)

Steel Grade S350 – Normal Weight Concrete

Total Unfactored Applied Load (kN/m^2) Maximum Permissible Span (m)

Span Condition	Fire Rating (hours)	Slab Depth (mm)	Mesh	1.13mm Gauge 3.5	5.0	7.5	10.0	1.25mm Gauge 3.5	5.0	7.5	10.0
Single	1.0	300	A193	5.75 (16)	5.64 (16)	5.75 (20)	5.58 (20)	5.95 (16)	5.64 (16)	5.95 (20)	5.58 (20)
		350	A393	-	-	-	-	5.55 (16)	5.55 (16)	5.55 (20)	5.55 (20)
		400	A393	-	-	-	-	5.25 (16)	5.25 (16)	5.25 (20)	5.25 (20)
	2.0	340	A252	-	-	-	-	5.16 (25)	4.75 (25)	5.40 (32)	4.92 (32)
		370	A393	-	-	-	-	5.23 (25)	4.85 (25)	5.35 (32)	5.10 (32)
		400	A393	-	-	-	-	5.25 (25)	4.94 (25)	5.25 (32)	5.25 (32)
Single (Propped)	1.0	300	A393	7.70 (20)	7.00 (20)	7.35 (25)	6.56 (25)	7.70 (20)	7.00 (20)	7.55 (25)	6.73 (25)
		350	2×A393	-	-	-	-	7.73 (20)	7.14 (20)	7.75 (25)	6.97 (25)
		400	2×A393	-	-	-	-	7.79 (20)	7.27 (20)	7.93 (25)	7.19 (25)
	2.0	340	2×A252	5.14 (25)	4.73 (25)	5.39 (32)	4.91 (32)	5.14 (25)	4.73 (25)	5.39 (32)	4.91 (32)
		370	2×A393	-	-	-	-	5.20 (25)	4.83 (25)	5.55 (32)	5.09 (32)
		400	2×A393	-	-	-	-	5.27 (25)	4.92 (25)	5.70 (32)	5.25 (32)
Single (Propped x2)	1.0	300	A393	7.70 (20)	7.00 (20)	7.35 (25)	6.56 (25)	7.70 (20)	7.00 (20)	7.55 (25)	6.73 (25)
		350	2×A393	-	-	-	-	7.73 (20)	7.14 (20)	7.75 (25)	6.97 (25)
		400	2×A393	-	-	-	-	7.79 (20)	7.27 (20)	7.93 (25)	7.19 (25)
	2.0	340	2×A252	5.14 (25)	4.73 (25)	5.39 (32)	4.91 (32)	5.14 (25)	4.73 (25)	5.39 (32)	4.91 (32)
		370	2×A393	-	-	-	-	5.20 (25)	4.83 (25)	5.55 (32)	5.09 (32)
		400	2×A393	-	-	-	-	5.27 (25)	4.92 (25)	5.70 (32)	5.25 (32)

Parameters assumed for span tables:
Figures contained in this table are based on design to BS EN 1993-1-3 unless noted otherwise. For extensive calculations covering specific design cases contact SMD Technical Team.

Spans: Measured centre to centre of supports.
Bearing: Assumed support width of 400mm with minimum deck bearing of 50mm.
Concrete: Normal concrete NC30/37. The wet weight of reinforced concrete is taken to be 26kN/m³ and dry concrete 25kN/m³.
Bar: Figures in brackets indicate diameter of bottom bar reinforcement required, 1 bar per trough.
*Propping: Where propping is indicated, additional support devices may be required as part of the propping system, contact SMD Technical team for guidance.