

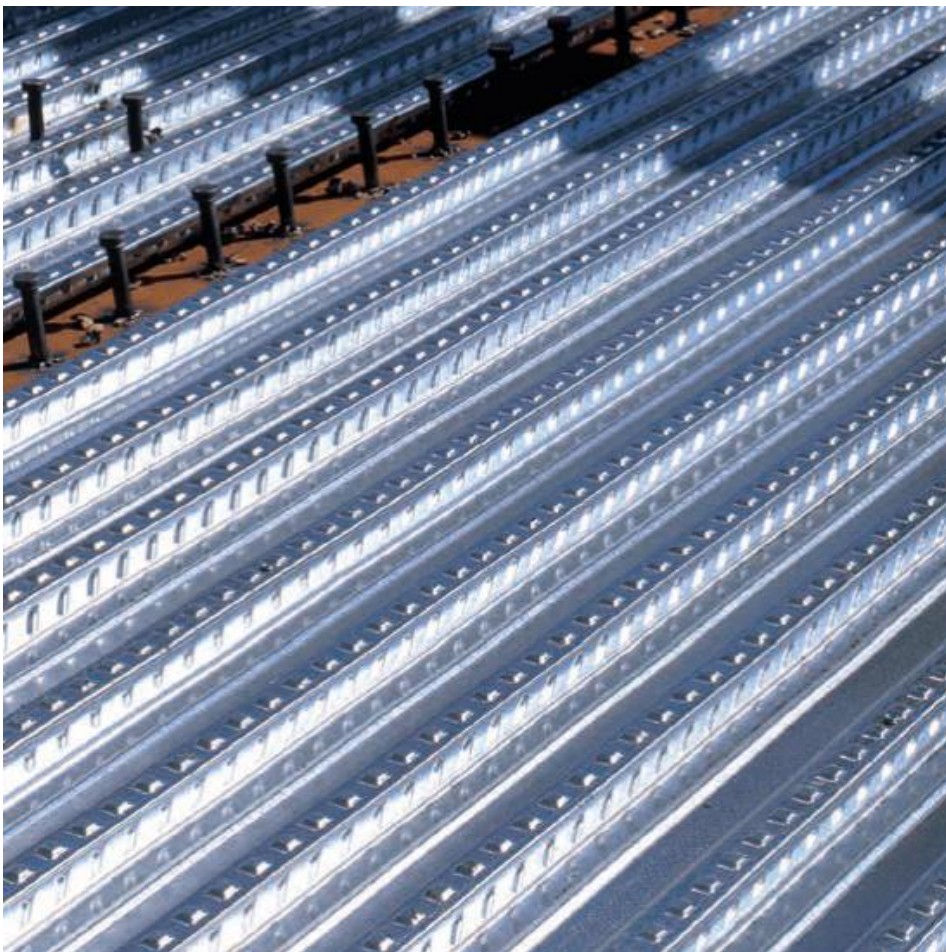


Raised Floor Solutions

Leading approved UK supplier & installer of Kingspan Multideck

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Multideck 50-V3 Data Sheet



Multideck 50-V3

Structural Products & Systems, a sub-division of Kingspan Insulated Panels, is one of Britain's leading designers and manufacturers of structural steel components for the construction industry. Based in Sherburn, North Yorkshire, we operate one of the largest and most advanced production complexes in Europe, manufacturing over 50,000 tonnes of steel products each year. In five decades of trading, we have become an established market leader, renowned for our quality products and innovative designs.

Multideck 50-V3 Floor Decking System

Multideck 50-V3 is a high performance, profiled, galvanised steel floor decking for use in the construction of composite floor slabs. The profile may also be used as a permanent shuttering.

As part of the Kingspan ethos of continuous product and service development, the Multideck 50 system has recently been subject to a number of design improvements that have significantly improved the capability of the product.

As a consequence of the design improvements and an extension of the range of gauges available, the new Multideck 50-V3 provides enhanced performance criteria and the potential to deliver both design and economic benefits compared to the previous V2 system.

Following extensive testing of product performance at both construction and composite stages, the new Kingspan Eurocode design tool has been developed allowing designers to take full advantage of the improvements.

Multideck 50-V3 has the following attributes:

- 50mm 'Dovetail' rib profile, maximising deck bond to concrete;
- Minimum slab depth of 100mm;
- Gauge range available from 0.85mm to 1.20mm;
- Shear keys on flange and webs of ribs give excellent composite performance;
- 1 hour fire performance with 100mm slab depth;
- Fire performance up to 2 hours.
- Acoustic robust solution.

Key benefits to using the Multideck Floor System include:

- The larger range of Multideck gauge thicknesses allow closer matching of design requirements and deck performance, resulting in greater design efficiency.
- Eliminating the need for temporary props, under most conditions, Multideck 50-V3 offers quick and efficient installation.
- A wide range of accessories also allows for easy installation of ceilings and services.
- Our Technical Services Department also provides an engineering and advisory service to specifiers and end users on the use of the Multideck range of composite decks

For information on the full range of Multideck floor decking systems for British Standard (including Multideck 50-V3, 60-V2 + V3, 80-V2 + V3 and 146), please refer to the Multideck Technical Handbook P364 or contact our technical department.

Multideck 50-V3

Material Specification - 450N/mm² Steel

Multideck 50-V3 is manufactured from one continuous steel strip and complies with BS EN 10143 and BS EN 10346. Multideck 50-V3 offers a guaranteed minimum yield strength of 450N/mm² and a minimum total coating mass (including both sides) of 275g/m².

Concrete Volumes and Specification

Use of the Multideck Eurocode design tool allows slab solutions using a range of concrete strengths, please contact our technical team for further information. Density of normal weight concrete: 2550kg/m³ at wet stage. Density of lightweight concrete: 2050kg/m³ at wet stage.

Rake Cutting

Pre-delivery cutting of sections is available. Please contact our Sales Department for details.

Reinforcement

Mesh or bar reinforcement of the slab to control cracking in the concrete at all intermediate supports is required in BS EN 1994-1-1:2004. Steel reinforcement for crack control in the concrete or fire engineering purposes should be in accordance with relevant Eurocodes.

Embossment

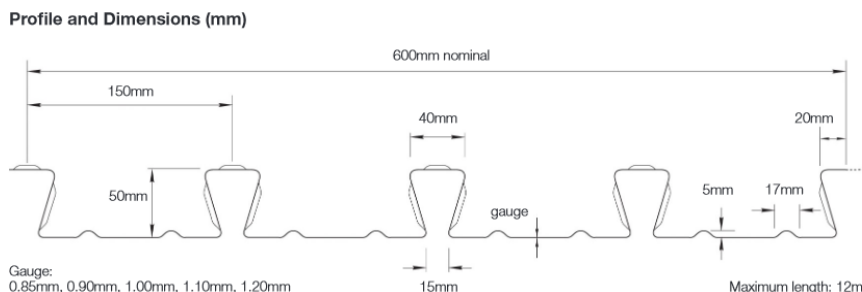
The unique patented combination of embossments on each face of the 'dovetail' provide mechanical connection enhance the shear bond between the hardened concrete and the deck.

References

Engineers are advised to consult the Steel Construction Institute/ The Metal Cladding and Roofing Manufacturers Association (SCI/ MCRMA) MCRMA Technical Paper No 13 SCI Publication No. P300

'Composite Slabs and Beams using Steel Decking: Best Practice for Design and Construction' (Revised Edition)
https://www.steelconstruction.info/images/b/b8/SCI_P300.pdf

Profile and Dimensions (mm)



Multideck 50-V3

Section Properties per Metre Width

Nominal Thickness (mm)	Self Weight		NA Height Sagging (mm)	Inertia (cm ⁴ /m)	Steel Area (mm ² m)	Ultimate Moment Capacity (kNm/m)	
	kg/m ²	kN/m ²				Sagging	Hogging
0.85	11.42	0.112	16.10	56.58	1418	6.40	8.36
0.90	12.89	0.126	16.50	66.15	1605	7.31	9.56
1.00	14.36	0.141	16.60	75.90	1792	8.21	10.75
1.10	15.83	0.155	16.70	83.99	1979	9.12	11.75
1.20	17.29	0.170	16.70	92.16	2165	10.03	12.75

Volume and Weight of Composite Slabs on Multideck 50-V3

Slab Depth (mm)	Concrete Volume (m ³ m ²)	Weight (kN/m ²)	
		Normal Weight Concrete	
		Wet	Dry
100	0.091	2.347	2.257
110	0.101	2.597	2.498
120	0.111	2.847	2.738
130	0.121	3.097	2.978
140	0.131	3.348	3.219
150	0.141	3.598	3.459
160	0.151	3.848	3.699
175	0.166	4.223	4.060
200	0.191	4.849	4.661
250	0.241	6.100	5.862

Notes

- Concrete volumes do not account for deflection
- Excludes weight of steel decking and relates only to weight of concrete.
- Concrete volumes are based upon a calculated minimum value (nominal slab depth). Account should be taken of deck and supporting structure deflections. See the Multideck Technical Handbook for further information.

Multideck 50-V3

Multideck Design Tool:

The design tool covers non-composite design of the deck at the construction stage and composite design of the slab at the normal service stage. The design tool allows fire resistance design for up to 120 minutes in accordance with the UK NCCI and serviceability limit state checks include deflection and vibration.

The output presents design ratios in line with BS EN 1994 parts 1 and 2 for each of the deck profiles available. Both double and single span variations are available in the construction stage. Composite stage slab checks are always considered single spanning. Where double span is selected continuity of the reinforcement is assumed over at least one internal support for the fire stage checks.

Specific information related to the calculation as follows:

1. The deck must lie flat on all supports beams. Point only contact will adversely affect the design loading reducing calculated capacities, for construction details please refer to the Multideck Technical handbook.
2. The self-weight of the slab will be calculated by the design tool accounting for ponded concrete where deflection exceeds slab depth / 10
3. Construction stage loading of 1.5kN/m² for spans equal to or less than 3.0m. Where spans exceed 3.0m a standard 0.75kN/m² UDL is applied with a moving 3.0m patch load of 0.75kN/m² as per BS EN 1991-1-6:2005.
4. The composite slab should meet the requirements of BS EN 1994-1-1:2004 with regard to composite behaviour under normal loading.

5. The concrete grade is a minimum of C25/30 with a minimum cylinder strength of 25N/mm².
6. For concentrated loadings please submit your design case here:
<http://www.kingspanpanels.co.uk/structural/software/eurocode/>
7. Minimum reinforcement mesh sizes shown meet or exceed 0.2% for un-propped spans and 0.4% when propped construction is selected.
8. Mesh reinforcement should be placed near the upper edge of the concrete slab in a zone of 15mm to 40mm from the top of surface. Concrete cover to reinforcement should be increased where slab exposure dictates.
9. Fire resistance calculated to NCCI PN005c-GB.
10. Deflection under construction loading (wet concrete etc.) has been limited to that stipulated in the British NAD to BS EN 1994-1-1:2004. Composite stage Imposed load deflection is limited to span/350 or 20mm, Total load deflection is limited to Span/250. Guidance on span/depth ratios is given in BS EN 1992-1-1:2004.
11. The sound attenuation performance of the composite concrete Multideck slab is as documented and tabulated in the Multideck Technical Handbook.

To access please click here

<https://multideckcalc.mykingspan.com/>

Please note this on-line design tool is password protected, contact your Kingspan representative for details.

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