

Multideck 60-V3 Data Sheet



Multideck 60-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 60-V3 Floor Decking System

Multideck 60-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 60 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 60-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 60-V3 has the following attributes:

- 60mm 'Trapezoidal' rib profile, maximising deck span and concrete efficiency;
- Minimum slab depth of 120mm;
- Gauge range available from 0.9mm to 1.20mm;
- Shear keys on flange and webs of ribs give excellent composite performance;
- 1 hour fire performance with 130mm 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 60-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, 80-V2 + V3 and 146), please refer to the Multideck Technical Handbook P364 or contact our technical department.

Multideck 60-V3

Material Specification - 450N/mm² Steel

Multideck 60-V3 is manufactured from one continuous steel strip and complies with BS EN 10143 and BS EN 10346. Multideck 60-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

Load/span tables are based on Grade C25/30 concrete having a design cylinder strength of 25N/mm². Solutions using other concrete strengths are possible, 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

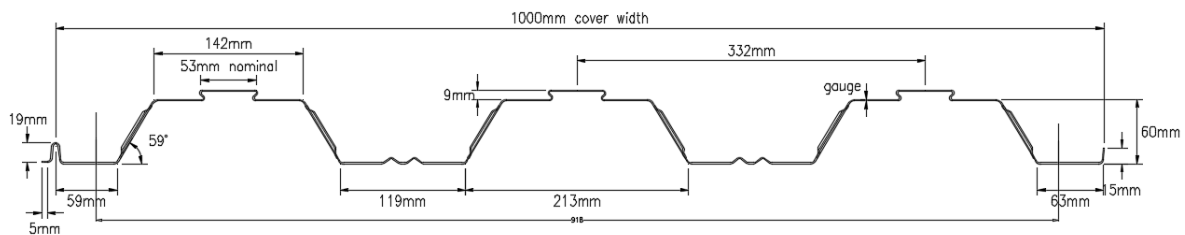
Raised diagonal embossments in opposite directions on each face provides a mechanical connection to enhance the bond between the hardened concrete and Multideck 60-V3.

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)



Gauge = 0.9, 1.0, 1.1 and 1.2mm

Maximum length = 12 meters

Multideck 60-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
0.90	9.34	0.092	39.40	81.00	1137.87	8.13	7.04
1.00	10.37	0.102	36.60	91.83	1270.18	10.14	8.74
1.10	11.41	0.112	35.00	102.70	1402.49	12.16	10.45
1.20	12.45	0.122	35.00	112.30	1534.80	14.17	12.00

Volume and Weight of Composite Slabs on Multideck 60-V3

Slab Depth (mm)	Concrete Volume (m ³ m ²)	Weight (kN/m ²)	
		Normal Weight Concrete	
		Wet	Dry
120	0.085	2.197	2.113
130	0.095	2.447	2.353
140	0.105	2.697	2.594
150	0.115	2.947	2.834
160	0.125	3.197	3.074
175	0.140	3.573	3.435
200	0.165	4.198	4.036
250	0.215	5.449	5.238

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 60-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.

UK

Kingspan Limited
Greenfield Business Park No. 2,
Greenfield, Holywell, Flintshire,
North Wales, CH8 7GJ
T: +44 (0) 1352 716100
F: +44 (0) 1352 710161
www.kingspanpanels.co.uk

For the product offering in other markets
Please contact your local sales representative
or visit www.kingspanpanels.com

Care has been taken to ensure that the contents of this publication are accurate, but Kingspan Limited and its subsidiary companies do not accept responsibility for errors or for information that is found to be misleading. Suggestions for, or description of, the end use of application of products or methods of working are for information only and Kingspan Limited and its subsidiaries accept no liability in respect thereof.

10/2018