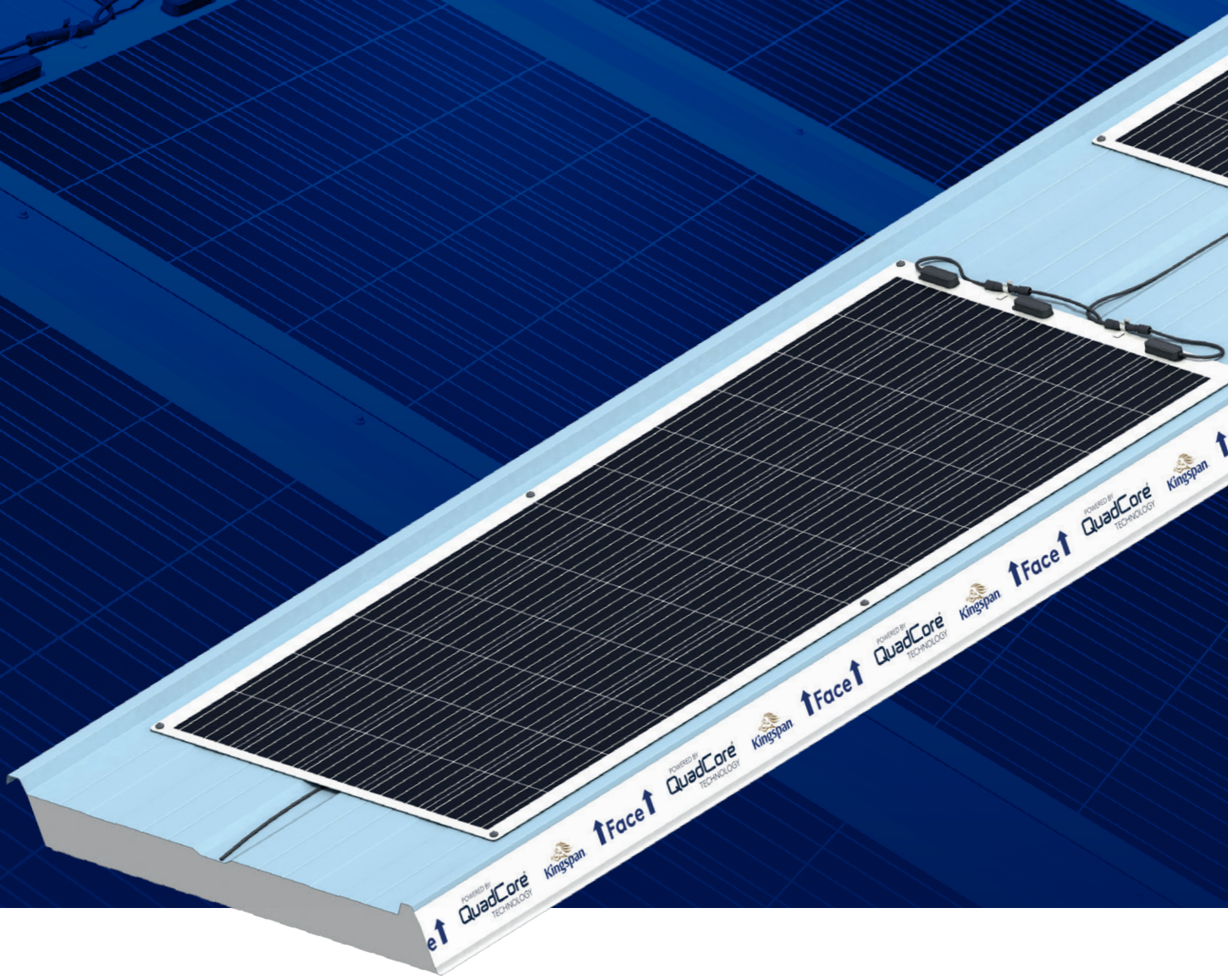
Insulated Panels
UK & Ireland

Protected by Kingspan WARRANTY

QuadCore® PowerPanel Pitched Roof Panel

Data Sheet



POWERED BY QuadCore® TECHNOLOGY

Kingspan®

QuadCore® PowerPanel Pitched
Product Data

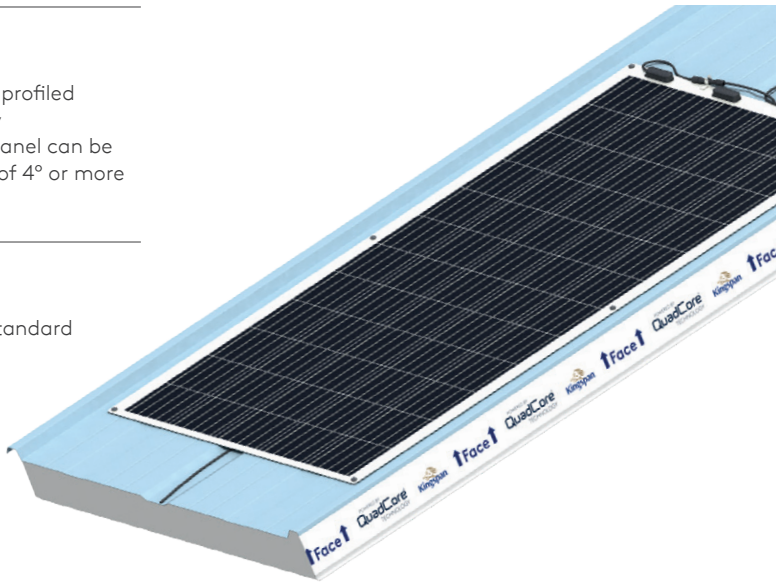
Applications

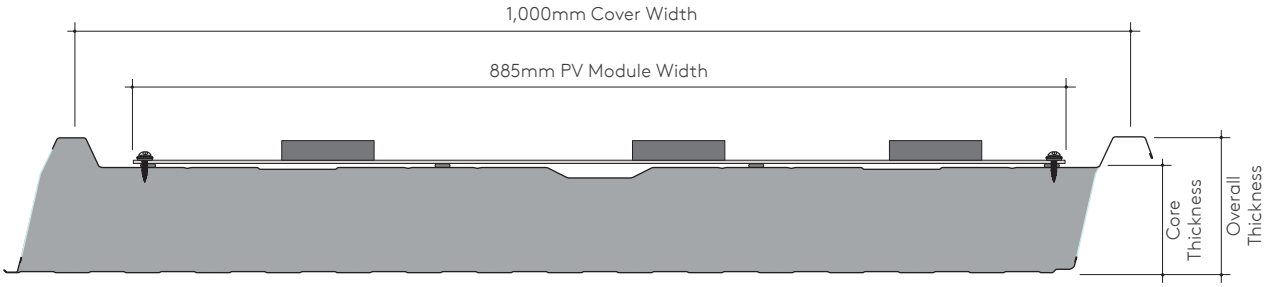
QuadCore® PowerPanel Pitched is a through-fix profiled insulated roof panel system with high-efficiency monocrystalline photovoltaic technology. This panel can be used for building applications with roof pitches of 4° or more after deflection.

Available Lengths

QuadCore® PowerPanel Pitched is available in standard lengths from 2.2 metres to 15 metres.

Note: Additional costs and transport restrictions may apply for non-standard lengths. All lengths may change for export (outside of the UK and Ireland).





Dimensions, Thermal Performance, Output & Weight

Core Thickness (mm)	76	103	118	153
Overall Thickness (mm)	104	131	146	181
U-value (W/m²K)	0.25	0.18	0.15	0.12
Weight (kg/m²)*	12.9	14.0	14.6	15.9
Cover Width (mm)	1,000			
Solar Cell	Monocrystalline Silicon (60 cells)			
Module Power Output (Wp)	310			
Module Dimensions (mm)	2,002 x 885 x 2			
Module Weight (kg)	5			

The QuadCore® insulation used in QuadCore® PowerPanel Pitched has a Thermal Conductivity (λ) of 0.018W/m.K

QuadCore® PowerPanel Pitched has a Thermal Transmittance (U-value), calculated using the method required by the Building Regulations Part L2 (England & Wales), Building Standards Section 6 (Scotland), Part L (Republic of Ireland) and Part F2 (Northern Ireland).

* Weight includes insulated panel and photovoltaic module.

Insulate + Generate

Insulation Core

QuadCore® PowerPanel Pitched is manufactured with a HCFC, CFC and HFC free QuadCore insulation core.

POWERED BY QuadCore® TECHNOLOGY

Certification and Testing

Reaction to Fire

QuadCore® PowerPanel Pitched Roof Panels are classified B-s1,d0, when tested on the internal face of the product, according to the European Reaction to Fire classification system (Euroclasses) BS EN 13501-1:2018 under the certified name KS1000PPP when using the following internal liner:

- CLEAN*safe* 15.

Please contact Kingspan Tech-eXchange for information relating to the external face.

Roof Applications

QuadCore® PowerPanel Pitched is tested to:

- BROOF(t4) to BS EN 13501-5: 2016 under the certified name KS1000PPP for panel thicknesses 76 - 153mm and all roof pitches.

QuadCore® PowerPanel Pitched is a new product and is undergoing a series of testing and certifications. Please consult Kingspan Tech-eXchange or your local Kingspan commercial representative regarding the latest testing and accreditation the product has achieved.

Environmental

Kingspan Insulated Panels produced in the UK are certified to BES 6001 (Framework Standard for the Responsible Sourcing of Construction Products) 'Very Good'.

All Kingspan Insulated Panels manufacturing facilities across the UK and Ireland are 100% Net Zero Energy. In addition, facilities located in Kingscourt, Holywell and Sherburn generate renewable energy onsite which contributes to that sites energy mix.

Kingspan Insulated Panels procure steel that is made from 15 – 25% recycled content. Kingspan insulated panels directly contribute to BREEAM® / LEED® credits.

Air Leakage

An air leakage rate of $3m^3/hr/m^2$ at 50Pa or less can be achieved when using Kingspan insulated roof panels.

For information on detailing required to achieve lower air leakage rates please contact Kingspan Tech-eXchange.

Acoustic

Sound Reduction Index (SRI)

Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
SRI (dB)	19	19	19	22	19	35	39	46

QuadCore® PowerPanel Pitched has a single figure weighted sound reduction Rw = 25dB. Results are based on panels of similar profile and core material.

Materials

Substrate

Metallic protected steel to BS EN 10346: 2015.

Please contact Kingspan Tech-eXchange for information on other substrates.

For information on our photovoltaic module please see the specific section at the end of this document.

Coatings – External Weather Sheet

- Kingspan XL Forté: Consists of a multi-layer organic coating, embossed with a traditional leather-grain finish.

Coatings – Internal Liner Sheet

- Kingspan CLEAN*safe* 15: The coating has been developed for use as the internal lining of insulated panels. Standard colour is "bright white" with an easily cleaned surface.

QuadCore® PowerPanel Pitched is a new product and is undergoing a series of testing and certifications. Please consult Kingspan Tech-eXchange or your local Kingspan commercial representative regarding the latest information on coatings options.

Panel End Cut Back

Standard Cut Back Eaves	75mm
Class A End Lap	75mm

For further information in relation to end laps please contact Kingspan Tech-eXchange.

Product Tolerance

Cut to Length	±5mm
Cover Width	±2mm
Thickness (Core ≤ 100mm)	±2mm
Thickness (Core > 100mm)	±2%
End Square	±3mm

QuadCore® PowerPanel Pitched
Product Data

Handing

The QuadCore® PowerPanel Pitched can be manufactured in both left to right handed (LH) and right to left handed (RH).

Quality & Durability

QuadCore® PowerPanel Pitched is manufactured from the highest quality materials, using state of the art production equipment to rigorous quality control standards, complying with BS EN ISO 9001 standard, ensuring long term reliability and service life. The panels are also being manufactured under Environmental Management System Certification BS EN ISO 14001, Energy Management System Certification BS EN ISO 50001 and Occupational Health and Safety Certification BS EN ISO 45001.

Warranty

Kingspan Panel Warranty covering the following subject to project specific information:

- 25 year thermal performance warranty
- 25 year structural performance warranty
- Up to 25 year external coating warranty

The QuadCore® PowerPanel Pitched photovoltaic module is covered under the following warranties:

- 12 year product warranty
- 25 year liner power warranty

Packing

QuadCore® PowerPanel Pitched is stacked with the top sheet facing up to protect the photovoltaic module. The top and sides are protected by either cardboard or polystyrene and spiral wrap stretch polyfilm. The number of panels in a pack will vary depending on thickness.

Core Thickness (mm)	76	103	118	153
No. Panels per Pack	11	7	7	6

Note: Applies to UK pack sizes. Please contact Kingspan Technical Services for export information.

Sea Freight

Fully timber crated packs are available on projects requiring delivery by sea freight shipping, at additional costs. Alternatively, steel containers can be used. Special loading charges apply.

Delivery

All deliveries (unless indicated otherwise) are by road transport to project site. Off-loading is the responsibility of the client.

Site Installation Procedure

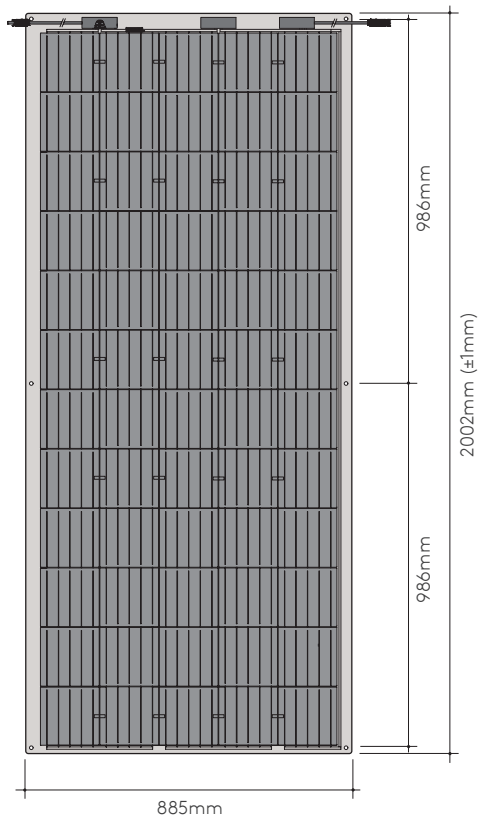
Site assembly instructions and construction details are available from Kingspan Tech-eXchange.

Insulate + Generate

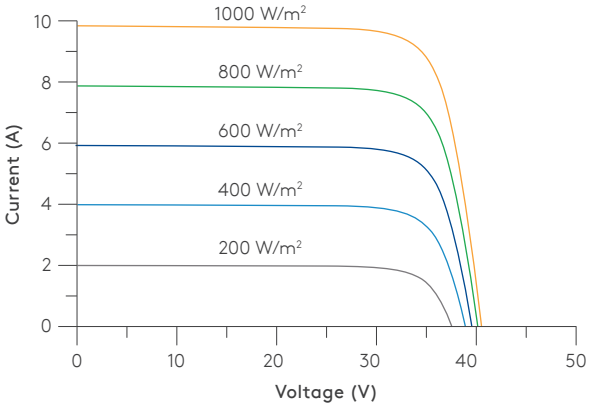
QuadCore® PowerPanel Pitched PV Module

60 Cell Monocrystalline Module

- **Super lightweight:** Weighs only 5kg – 74% lighter than conventional glass modules.
- **Aesthetic:** Low profile allows seamless integration with underlying installation surface.
- **Durable:** The first glass-free module to pass the same durability tests as conventional glass modules, including IEC 61215: 2016, IEC 61730: 2016 and UL1703 (USA). Additionally, the module has passed PID, salt mist and ammonia corrosion tests.
- **Power tolerance:** 0-5W.
- **Warranty:** 12 year product warranty and 25 year PV performance warranty.



I-V Curve



Electrical Characteristics

STC	SMF310M-5X12UW
Maximum Power (P_{max})	310
Maximum Power Voltage (V_{mp})	33.3
Maximum Power Current (I_{mp})	9.31
Open-circuit Voltage (V_{oc})	40.5
Short-circuit current (I_{sc})	9.81
Module Efficiency	17.6%
Operating Temperature	-40°C - 85°C
Maximum System Voltage	1000 V DC (IEC)
Maximum Series Fuse Rating	20 A
Application Class	Class A
Power Tolerance	0-5W
NMOT	**SMF310M-5X12UW**
Maximum Power (P_{max})	233
Maximum Power Voltage (V_{mp})	30.7
Maximum Power Current (I_{mp})	7.59
Open-circuit Voltage (V_{oc})	37.6
Short-circuit current (I_{sc})	8.04

STC / NMOT: Irradiance 800 W/m², Ambient Temp. 20°C, AM = 1.5, Wind Speed 1m/s.

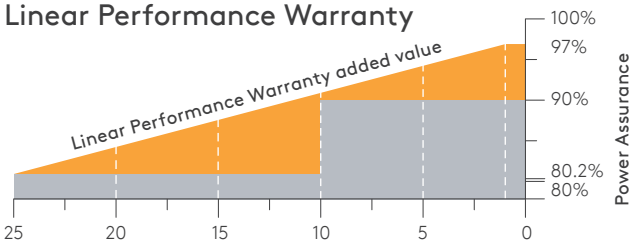
Temperature Characteristics

Nominal Module Operating Temperature (NOMT)	41°C (±2°C)
Temperature Coefficient of P_{max}	-0.38% / °C
Temperature Coefficient of V_{oc}	-0.28% / °C
Temperature Coefficient of I_{sc}	0.020% / °C

Mechanical Characteristics

Solar Cell	Monocrystalline Silicon (158.75mm)
No. Cells	60 (5x12)
Module Dimensions (mm)	2,002 x 885 x 2
Weight (kg)	5
Backsheet	White
J-box	IP68 Rated
Output Cables	Photovoltaic Technology Cable 4mm x2 (+)150mm / (-)450mm
Connector	MC4 Compatible

Linear Performance Warranty



QuadCore® PowerPanel Pitched
Load / Span Tables

Structural Tables

QuadCore® PowerPanel Pitched Roof Panel with 0.03kN/m² permanent loading.
Load / span tables (to be compared against calculated characteristic (i.e. unfactored) wind load values.

Single Span

Core Thickness (mm)	Load Type	Span (m)														
		Uniformly distributed imposed load (kN/m²)														
		0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4
76	Pressure	8.40	6.26	5.14	4.43	3.89	3.45	3.08	2.75	2.28	1.90	1.59	1.34	1.13	0.95	0.81
	Suction	8.56	6.39	5.28	4.57	4.04	3.61	3.25	2.93	2.65	2.40	2.18	1.99	1.81	1.66	1.53
103	Pressure	9.67	7.60	6.50	5.75	5.17	4.67	4.22	3.82	3.46	2.95	2.53	2.18	1.88	1.63	1.42
	Suction	10.38	8.19	7.04	6.26	5.66	5.13	4.67	4.25	3.87	3.53	3.23	2.95	2.71	2.49	2.29
118	Pressure	10.54	8.45	7.33	6.56	5.95	5.41	4.93	4.49	4.03	3.47	3.00	2.61	2.27	1.99	1.75
	Suction	11.19	9.00	7.85	7.06	6.43	5.87	5.36	4.83	4.40	4.05	3.74	3.47	3.18	2.93	2.60
153	Pressure	12.41	10.28	9.13	8.10	6.92	6.03	5.35	4.80	4.35	3.97	3.65	3.38	3.13	2.78	2.48
	Suction	12.83	10.67	9.52	8.38	7.20	6.32	5.63	5.08	4.63	4.25	3.93	3.66	3.43	3.22	3.04

Double Span

Core Thickness (mm)	Load Type	Span (m)														
		Uniformly distributed imposed load (kN/m²)														
		0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4
76	Pressure	8.40	5.63	3.88	2.88	2.24	1.79	1.47	1.24	1.05	0.91	0.79	0.69	0.61	0.54	0.48
	Suction	8.56	5.31	3.66	2.72	2.13	1.74	1.46	1.25	1.10	0.98	0.88	0.80	0.74	0.69	0.64
103	Pressure	9.11	6.24	4.40	3.31	2.60	2.11	1.75	1.47	1.26	1.09	0.96	0.84	0.75	0.67	0.60
	Suction	9.00	5.63	3.95	2.98	2.35	1.92	1.62	1.39	1.22	1.08	0.98	0.89	0.82	0.76	0.71
118	Pressure	9.16	6.50	4.62	3.50	2.76	2.24	1.86	1.58	1.35	1.17	1.03	0.91	0.81	0.72	0.65
	Suction	9.07	5.99	4.25	3.23	2.56	2.10	1.77	1.52	1.33	1.19	1.07	0.97	0.89	0.83	0.77
153	Pressure	9.26	6.93	5.04	3.86	3.07	2.51	2.10	1.78	1.53	1.33	1.16	1.03	0.92	0.82	0.74
	Suction	9.22	6.76	4.89	3.76	3.02	2.49	2.11	1.82	1.60	1.42	1.28	1.16	1.06	0.98	0.92

1 Values have been calculated using the method described in BS EN 14509: 2013, for dark coloured panels.

2 The following deflection limits have been used:
- Short Term Pressure loading $^{L}/_{200}$.
- Short Term Suction loading $^{L}/_{150}$.
- Long Term loading $^{L}/_{100}$.

3 All panel thicknesses have been calculated with a minimum support width of 50mm and intermediate support width of 50mm. Larger support widths are possible.

4 The actual wind suction resisted by the panel is dependent upon the number of fasteners and the material of the supporting element.

5 The fastener calculation should be carried out in accordance with the appropriate standards.

6 For intermediate values linear interpolation may be used.

7 The allowable steelwork tolerance between bearing planes of adjacent supports is ±5mm.

QuadCore® PowerPanel Pitched
Load / Span Tables

Structural Tables

QuadCore® PowerPanel Pitched Roof Panel with 0.03kN/m² permanent loading.
Load / span tables (to be compared against calculated characteristic (i.e. unfactored) wind load values.

Triple Span

Core Thickness (mm)	Load Type	Span (m)														
		Uniformly distributed imposed load (kN/m²)														
		0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4
76	Pressure	8.40	6.26	4.48	3.33	2.60	2.11	1.76	1.50	1.29	1.13	0.99	0.88	0.79	0.71	0.64
	Suction	8.56	6.38	4.40	3.30	2.63	2.18	1.86	1.62	1.44	1.29	1.17	1.08	0.99	0.92	0.86
103	Pressure	9.67	7.09	4.95	3.73	2.95	2.41	2.02	1.73	1.50	1.32	1.17	1.04	0.94	0.85	0.77
	Suction	9.88	6.96	4.88	3.71	2.97	2.47	2.12	1.85	1.65	1.48	1.35	1.24	1.15	1.07	1.00
118	Pressure	9.99	7.33	5.15	3.90	3.09	2.53	2.13	1.82	1.58	1.39	1.23	1.10	0.99	0.90	0.82
	Suction	9.93	7.23	5.10	3.89	3.12	2.60	2.23	1.95	1.74	1.56	1.43	1.31	1.21	1.13	1.06
153	Pressure	10.07	7.52	5.54	4.22	3.36	2.77	2.33	2.00	1.74	1.53	1.36	1.22	1.10	0.99	0.90
	Suction	10.05	7.52	5.55	4.26	3.44	2.87	2.46	2.16	1.92	1.73	1.58	1.45	1.34	1.25	1.17

1 Values have been calculated using the method described in BS EN 14509: 2013, for dark coloured panels.

2 The following deflection limits have been used:
- Short Term Pressure loading $^{L}/_{200}$.
- Short Term Suction loading $^{L}/_{150}$.
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6 For intermediate values linear interpolation may be used.

7 The allowable steelwork tolerance between bearing planes of adjacent supports is ±5mm.

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Eighth Issue | 05/2022