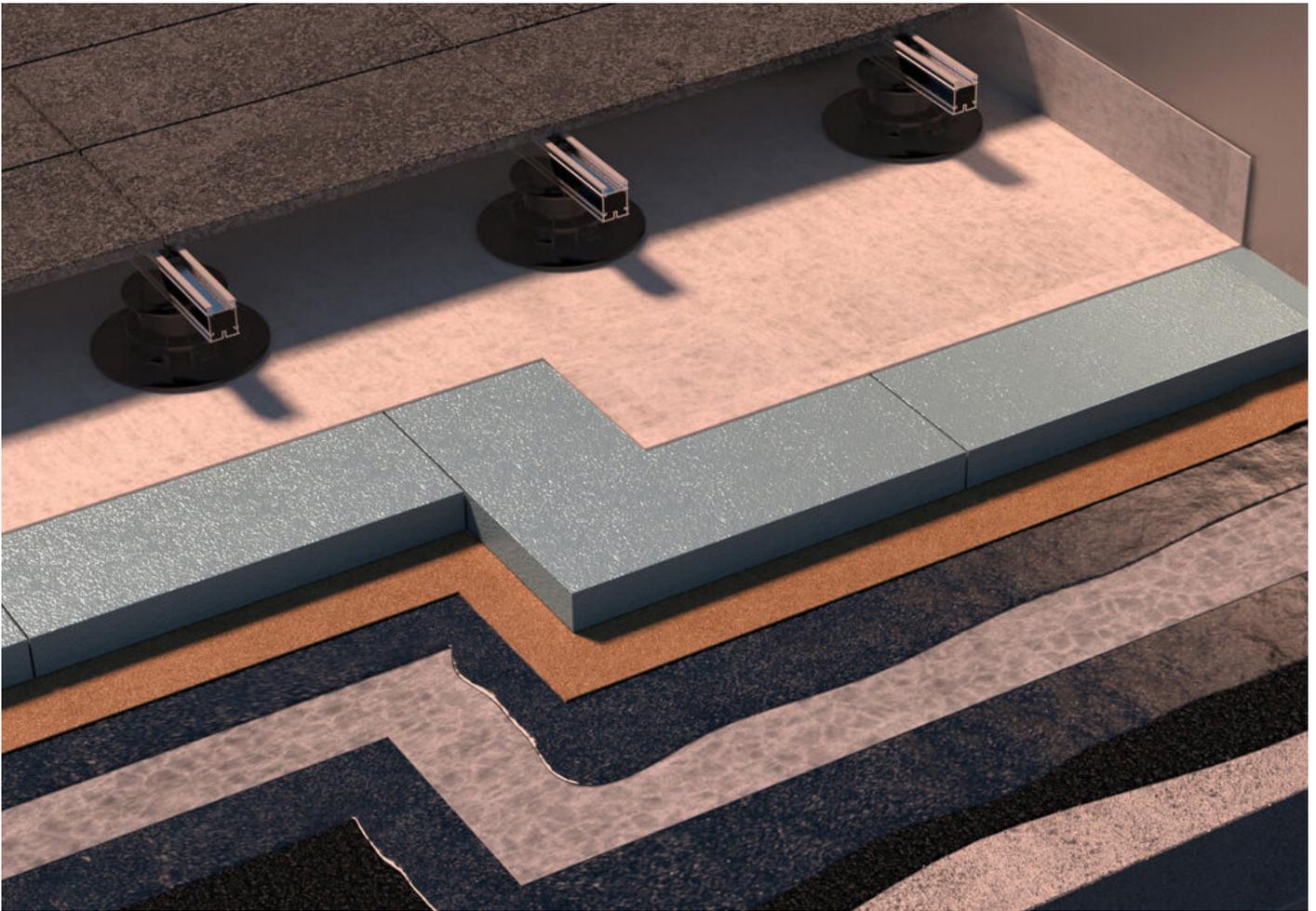


# QI Quantum PLUS<sup>+</sup>



# QI Quantum PLUS<sup>+</sup>

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## General Information

**QI Quantum PLUS<sup>+</sup> Inverted Roof Insulation System** is a rigid Vacuum Insulation Panel (VIP). The VIP panel consists of a compressed fumed silica sand microporous core which is evacuated of air and moisture before being encased and sealed in a special thin, gas-tight, hybrid aluminium foil envelope, encapsulated in a solvent free polyurethane waterproof coating. The coating is a factory applied solvent free two component elastomeric polyurethane waterproofing membrane. The resulting panel gives outstanding thermal conductivity, with the thinnest possible insulation solution.

With a design (aged) thermal conductivity ( $\lambda$ ) of 0.007 W/m.K, the QI Quantum PLUS<sup>+</sup> VIP panel provides an insulating performance that is up to five times better than other commonly available insulation materials. This high level of thermal efficiency combined with minimal thickness enable the QI Quantum PLUS<sup>+</sup> VIP Inverted Roof Insulation system to meet the requirements of Building Regulations Part L, Part M and NHBC Chapter 7.1.

## Suitable applications

QI Quantum PLUS<sup>+</sup> is suitable for use in roofs, roof terraces, enclosed terraces over heated space and insulated walkways in an inverted roof construction. When used in the inverted roof constructions listed in the Fire Performance section below roof constructions incorporating QI Quantum PLUS<sup>+</sup> achieve Broof(t4) Classification to BS EN 13501-5 as required by Approved Document B 2019 edition, Section B4, Limitations on roof coverings.

QI Quantum PLUS<sup>+</sup> is not suitable for use in inverted roof applications on specified attachments such as projecting open balconies, projecting enclosed balconies, recessed open balconies or recessed enclosed balconies.

## Fire Performance

**As a roofing system for roofs, roof terraces, enclosed terraces over heated space and insulated walkways**

In accordance with Annex of Commission Decision 2000/553/EC, when used in an inverted roof specification including an inorganic covering of either loose laid gravel with a thickness of at least 50mm or a mass  $\geq 80$  kg/m<sup>2</sup>, sand/cement screed to a thickness of at least 30mm, or cast stone or mineral slabs of at least 40mm thickness a roof system incorporating QI Quantum PLUS<sup>+</sup> can be considered to be unrestricted under the national Requirements (Classification Broof(t4) to BS EN 13501-5:2016).

**BS EN 13501-5:2016** – When tested with a covering of 50mm thick concrete paving on 50mm high InStar plastic pedestal supports, or Dura Deck Resist composite decking on plastic pedestal supports with a 50mm ballast layer beneath a roof construction incorporating QI Quantum PLUS<sup>+</sup> achieved a classification of Broof(t4) and as such is unrestricted by the National Building Regulations.

**BS 476 Part 3: 2004** – When tested with a covering of 50mm thick concrete paving on 50mm high InStar plastic pedestal supports, or Dura Deck Resist composite decking on plastic pedestal supports with a 50mm ballast layer beneath a roof construction incorporating QI Quantum PLUS<sup>+</sup> achieved a classification of EXT.FAA and as such is unrestricted by the National Building Regulations.

## As a product in isolation

**BS EN 13501-1:2016** – QI Quantum PLUS<sup>+</sup> Inverted Roof Insulation achieves Euro Class E performance.

## Certificates

BBA Certified 20/5769

# QI Quantum PLUS<sup>+</sup>

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## General Information (continued)

### Installation

- Lay in accordance with the installation scheme provided by QI.
- Loose lay and gently butt all joint together.
- DO NOT cut the panels under any circumstances; use XPS Infill for areas requiring cut board.

### Delivery conditions

#### Delivery form

Covered with a plastic hood on a pallet.

### Storage and transport

During shipment, storage, installation and use, this material should not be exposed to flame or other ignition sources.

### Product identification

Information on the pack;

Product name.

Approvals.

Dimensions.

Production date.

# QI Quantum PLUS<sup>+</sup>

PRODUCT DESCRIPTION				
Appearance top side	Anthracite (robotically spray applied coating)			
Core	Fumed silica sand, fleece and foil wrapped and evacuated of air			
Appearance bottom side	Anthracite (robotically spray applied coating)			
DECLARED PERFORMANCE				
Essential Characteristics	Performance	Unit	EN Code	Standard
Ozone Depletion Potential	Zero	-	-	-
Global Warming Potential	<5	-	-	-
Density	180-210	kg/m <sup>3</sup>	-	BS EN 1602: 1997
Mechanical properties				
- Tensile Strength	30	kPa	-	BS EN 1607: 1997
- Compressive strength at 10% deformation	150	kPa	-	BS EN 826: 1996
Dimensions and tolerances*				
- Thickness	<b>22, 27, 32, 37, 42, 47, 52, 57, 62, 67, 72, 77, 82, 87, 92, 97, 102</b>	mm	-	BS EN 823
- Width	<b>202, 302, 402, 502, 602</b>	mm	-	BS EN 822
- Length	<b>302, 402, 502, 602, 702, 802, 902, 1002</b>	mm	-	BS EN 822
Thermal conductivity (aged design value allowing for edge effect)	0.007	W/mK	-	EN 12667: 2001
Thermal Resistance (R-Value) Declared value <sup>(1)</sup>				
20mm	3.333	m <sup>2</sup> K/W	-	
25mm	4.167	m <sup>2</sup> K/W	-	
30mm	5.000	m <sup>2</sup> K/W	-	
40mm	6.667	m <sup>2</sup> K/W	-	
Linear thermal expansion coefficient				
Longitudinal	0.08	mm/m.K	-	-
Transverse	0.06	mm/m.K	-	mm/m.K
Surface temperature	-40 to +80	°C	-	-
Surface	Anthracite coloured polyurethane waterproofing membrane	-	-	-
Edge profile	Butt	-	-	-

\*Panel sizes shown in bold are stocked items, all other dimensions are made to order and may be subject to additional lead time

# QI Quantum PLUS+

DECLARED PERFORMANCE												
WEIGHT PER BOARD		THICKNESS MM										UNIT
Length mm	Width mm	22	27	32	42	52	62	72	82	92	102	mm
1002	602	2.34	2.92	3.50	4.67	5.84	7.01	8.18	9.34	10.51	11.68	kg
1002	402	1.56	1.95	2.34	3.12	3.90	4.68	5.46	6.24	7.02	7.80	kg
1002	302	1.17	1.46	1.76	2.34	2.93	3.52	4.10	4.69	5.27	5.86	kg
602	502	1.17	1.46	1.76	2.34	2.93	3.51	4.10	4.68	5.27	5.85	kg
602	202	0.47	0.59	0.71	0.94	1.18	1.41	1.65	1.88	2.12	2.35	kg
302	202	0.24	0.30	0.35	0.47	0.59	0.71	0.83	0.95	1.06	1.18	kg
WEIGHT PER m <sup>2</sup>		THICKNESS										UNIT
Length mm	Width mm	22	27	32	42	52	62	72	82	92	102	mm
1002	602	3.873	4.841	5.809	7.746	9.682	11.618	13.555	15.491	17.428	19.364	kg/m <sup>2</sup>
1002	402	3.873	4.841	5.809	7.746	9.682	11.618	13.555	15.491	17.428	19.364	kg/m <sup>2</sup>
1002	302	3.873	4.841	5.809	7.746	9.682	11.618	13.555	15.491	17.428	19.364	kg/m <sup>2</sup>
602	502	3.873	4.841	5.809	7.746	9.682	11.618	13.555	15.491	17.428	19.364	kg/m <sup>2</sup>
602	202	3.873	4.841	5.809	7.746	9.682	11.618	13.555	15.491	17.428	19.364	kg/m <sup>2</sup>
302	202	3.873	4.841	5.809	7.746	9.682	11.618	13.555	15.491	17.428	19.364	kg/m <sup>2</sup>
COVERAGE		THICKNESS										UNIT
Length mm	Width mm	22	27	32	42	52	62	72	82	92	102	mm
1002	602	0.603204	0.603204	0.603204	0.603204	0.603204	0.603204	0.603204	0.603204	0.603204	0.603204	m <sup>2</sup>
1002	402	0.402804	0.402804	0.402804	0.402804	0.402804	0.402804	0.402804	0.402804	0.402804	0.402804	m <sup>2</sup>
1002	302	0.302604	0.302604	0.302604	0.302604	0.302604	0.302604	0.302604	0.302604	0.302604	0.302604	m <sup>2</sup>
602	502	0.302204	0.302204	0.302204	0.302204	0.302204	0.302204	0.302204	0.302204	0.302204	0.302204	m <sup>2</sup>
602	202	0.121604	0.121604	0.121604	0.121604	0.121604	0.121604	0.121604	0.121604	0.121604	0.121604	m <sup>2</sup>
302	202	0.061004	0.061004	0.061004	0.061004	0.061004	0.061004	0.061004	0.061004	0.061004	0.061004	m <sup>2</sup>

# QI Quantum PLUS<sup>+</sup>

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## QI Quantum PLUS<sup>+</sup> Pure Inverted Roof Insulation Handling and Installation

### General Information

- The waterproofing system must be BBA Certified for inverted roof applications.
- The waterproofing system must be installed correctly, watertight and clean.
- The surface of the waterproofing should be clean, dry, level and free from projections.
- Where required the roof waterproofing should be inspected for guarantee purposes prior to the installation of the QI Quantum PLUS<sup>+</sup> Inverted Roof Insulation system.
- QI Quantum PLUS<sup>+</sup> Inverted Roof Insulation systems should not be used in association with solvent-based adhesive systems, or be exposed to naked flames or excessive heat.

### Delivery and site handling

- The product is delivered to site bearing the manufacturer's name
- The packaging of the QI Quantum PLUS<sup>+</sup> panels should not be considered adequate for outdoor protection.
- During installation care should be taken to ensure the QI Quantum PLUS<sup>+</sup> panels are not damaged by foot traffic or following trades.
- A protective foot or crawl board should be used during the installation process.
- Regupol RCM, XPS infill, XPS Layer and Grey Thermal Sheet may be walked on during construction.
- QI Quantum PLUS<sup>+</sup> panels should not be cut or penetrated.
- Care must be taken to prevent contact with solvents and materials containing organic components.
- Where large volumes are stored, especially indoors, flammable material and ignition sources should not be permitted in the vicinity and adequate ventilation (at least two air changes per hour) should be ensured.

### Site work

Before commencing read the layout drawing provided with the system to familiarise yourself with the installation methods and layout plan.

#### 1st Layer

Lay the QI Quantum PLUS<sup>+</sup> panels on top of the finished waterproofing and protective rubber crumb layer (if required) in accordance with the layout drawing provided, lightly butting panels together without gaps. During installation care should be taken to ensure the QI Quantum PLUS<sup>+</sup> panels are not damaged by foot traffic or following trades.

Cut XPS Infill boards to fit around the perimeter, penetrations, rainwater outlets etc. in accordance with the layout drawing. Ensure accurate trimming of XPS Infill to achieve close-butting joints and continuity of insulation. XPS Infill should be cut with either a fine toothed saw or by scoring with a sharp knife and snapping the board over a straight edge before cutting the facing on the other side.

### Site work

#### 2nd layer

Install the 2nd layer QI Quantum PLUS<sup>+</sup> panels over the 1st layer of QI Quantum PLUS<sup>+</sup> panels, ensuring that the board joints are tightly butted together in relation to the first layer and in accordance with the layout drawing. During installation care should be taken to ensure the QI Quantum PLUS<sup>+</sup> panels are not damaged by foot traffic or following trades.

#### 3rd Layer

Lay the XPS X MK Water Flow Reducing Layer sheet over the completed insulation layer ensuring a minimum 300mm side and end overlaps. Turn up at the edge of the roof insulation and seal under a flashing.

#### 4th Layer

Install surface finish (paving, ballast, decking or green roof) as specified.

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## QI Quantum PLUS<sup>+</sup> Hybrid Inverted Roof Insulation Handling and Installation

### General Information

- The waterproofing system must be approved for inverted roof applications.
- The waterproofing system must be installed correctly, watertight and clean.
- The surface of the waterproofing should be clean, dry, level and free from projections.
- Where required the roof waterproofing should be inspected for guarantee purposes prior to the installation of the QI Quantum PLUS<sup>+</sup> Hybrid Inverted Roof Insulation system.
- QI Quantum PLUS<sup>+</sup> Hybrid Inverted Roof Insulation systems should not be used in association with solvent-based adhesive systems, or be exposed to naked flames or excessive heat.

### Delivery and site handling

- The product is delivered to site bearing the manufacturer's name
- The packaging of the QI Quantum PLUS<sup>+</sup> panels should not be considered adequate for outdoor protection.
- The QI Quantum PLUS<sup>+</sup> panels should be stored inside a building and raised off the floor.
- During installation care should be taken to ensure the QI Quantum PLUS<sup>+</sup> panels are not damaged by foot traffic or following trades.
- Regupol RCM, XPS infill, XPS Layer and Grey Thermal Sheet may be walked on during construction.
- QI Quantum PLUS<sup>+</sup> panels should not be cut or penetrated.
- Care must be taken to prevent contact with solvents and materials containing organic components.
- Where large volumes are stored, especially indoors, flammable material and ignition sources should not be permitted in the vicinity and adequate ventilation (at least two air changes per hour) should be ensured.

### Site work

Before commencing read the layout drawing provided with the system to familiarise yourself with the installation methods and layout plan.

#### 1st layer

Lay the QI Quantum PLUS<sup>+</sup> panels on top of the finished waterproofing in accordance with the layout drawing provided, lightly butting panels together without gaps. During installation care should be taken to ensure the QI Quantum PLUS<sup>+</sup> panels are not damaged by foot traffic or following trades.

Cut XPS Infill boards to fit around the perimeter, penetrations, rainwater outlets etc. in accordance with the layout drawing. Ensure accurate trimming of XPS Infill to achieve close-butting joints and continuity of insulation. XPS Infill should be cut with either a fine toothed saw or by scoring with a sharp knife and snapping the board over a straight edge before cutting the facing on the other side.

### Site work

#### 2nd layer

Lay the XPS Layer across the roof area, ensuring that the board joints are staggered in relation to the first layer in accordance with the layout drawing. During installation care should be taken to ensure the QI Quantum PLUS<sup>+</sup> panels are not damaged by foot traffic or following trades.

#### 3rd Layer

Lay the XPS X MK Water Flow Reducing Layer sheet over the completed insulation layer ensuring a minimum 300mm side and end overlaps. Turn up at the edge of the roof insulation and seal under a flashing.

#### 4th Layer

Install surface finish (paving, ballast, decking or green roof) as specified.

This information given in good faith and is based on the latest knowledge available to Quantum Insulation Ltd. Whilst every effort has been made to ensure that the contents of the publication are current while going to press, customers are advised that products, techniques and codes of practice are under constant review and liable to change without notice.

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