Kingspan TEK® Delivery Partner

As the original Kingspan TEK® Delivery Partner, we stylishly design, precision engineer and expertly install SIPs homes throughout the UK.

SIPS @CLAYS

/ DATA SHEET

Structural Insulated Panel Technology

Timber, worldwide, is traditionally the most widely used building material. It is easy to handle, natural and brings flexibility to design.

Today, many buildings are built with a traditional timber frame structure and this trend is growing as Building Regulations / Standards strive for better thermal performance and the construction industry increasingly moves towards faster and lighter methods of construction. Structural Insulated Panel (SIP) technology is the next generation of timber based construction.

In the UK and Ireland, demand for offsite construction methods such as SIPs is growing rapidly. This is being driven by factors such as the availability of on-site skills being at an all time low.

Building Regulations / Standards are demanding much higher levels of energy efficiency. This is challenging many traditional construction systems and, in some instances, forcing people to look at alternative ways of meeting the requirements more economically. Unparalleled energy efficiency combined with high build-speed and the low site wastage make the Kingspan TEK® Building System a very cost effective way of achieving and exceeding the thermal requirements of the Building Regulations / Standards.

Kingspan TEK® Building System Walls with 102.5 mm Brickwork Outer Leaf

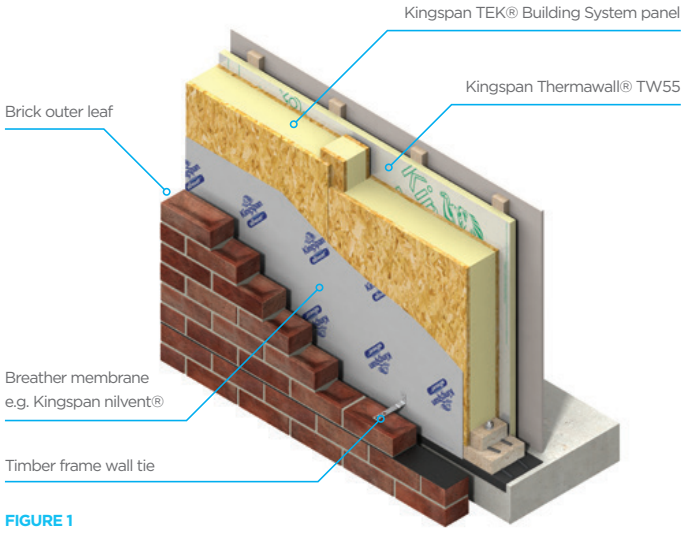

FIGURE 1

TYPICAL CONSTRUCTIONS AND INDICATIVE U-VALUES

ASSUMPTIONS

The U-values in the tables that follow have been calculated, under a management system certified to the BBA Scheme for Assessing the Competency of Persons to Undertake U-value and Condensation Risk Calculations, using the method detailed in BS EN ISO 6946: 2017 / I.S. EN ISO 6946: 2007 (Building components and building elements. Thermal resistance and thermal transmittance. Calculation methods) and using the conventions set out in BR 443 (Conventions for U-value calculations).

BBA CERTIFICATE CS/1004-4 U Value Competency Scheme

The U-values in the tables that follow are valid for the constructions shown in the details immediately above. Unless otherwise stated, the U-values quoted are based on an internal construction comprising a 3 mm plaster skim on 12.5 mm plasterboard fixed to 50 x 25 mm softwood timber battens. The external finishes are as specified in the examples themselves.

NB For calculations which do not feature additional internal insulation, a 4% bridging factor has been assumed for walls and 1% for pitched roofs. The thermal conductivity of the timber has been assumed at 0.12 W/mK.

NB Calculations assume that the use of a foil faced breather membrane yields an airspace thermal resistance of 0.54 m2K/W.

NB For the purposes of these calculations the standard of workmanship has been assumed good and therefore the correction factor for air gaps has been ignored. NB The figures quoted are for guidance only. A detailed U-value calculation together with condensation risk analysis should be completed for each individual project.

NB If your construction is any different to those specified and / or to gain a comprehensive U-value calculation along with a condensation risk analysis of your project please consult the Kingspan Insulation Technical Service Department for assistance (see rear cover for details).

U-values for Kingspan TEK® Building System Walls with Various Thicknesses of Additional Insulation and Different Breathable Membranes

Thickness of Kingspan TEK® Building System Panels (mm)	Thickness of Kingspan Thermawall® TW55 (mm)	U-value (W/m^2K)	
		Standard Breathable Membrane	Foil Faced Breathable Membrane
142	0	0.19	0.18
142	20	0.15	0.15
142	25	0.15	0.15
142	30	0.14	0.14
142	40	0.13	0.13
142	50	0.13	0.12
142	60	0.12	0.12
142	70	0.11	0.11
142	75	0.11	0.11
142	80	0.11	0.10
142	90	0.10	0.10
172	0	0.16	0.15
172	20	0.13	0.13
172	25	0.13	0.12
172	30	0.12	0.12
172	40	0.12	0.11
172	50	0.11	0.11
172	60	0.11	0.10
172	70	0.10	0.10

***INDICATIVES VALUES ARE FOR GUIDANCE ONLY.**
A DETAILED ANALYSIS SHOULD BE COMPLETED FOR EACH INDIVIDUAL PROJECT.

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TYPICAL CONSTRUCTIONS AND INDICATIVE U-VALUES

Kingspan TEK® Building System Walls with 10 mm Polymer Rendered 100 mm Dense Blockwork Outer Leaf

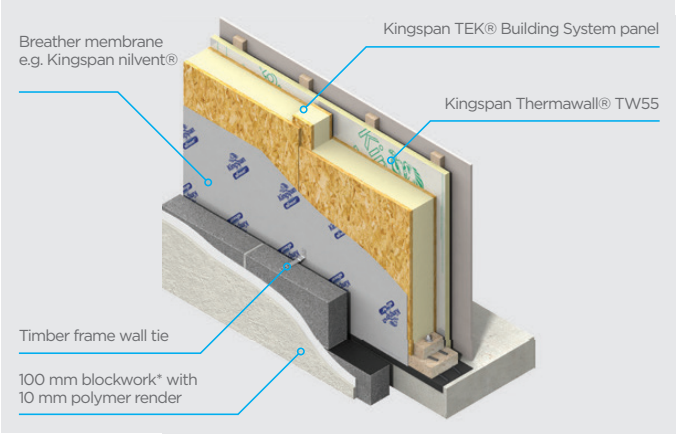

FIGURE 2

Kingspan TEK® Building System Wall Panels with Ventilated Cladding

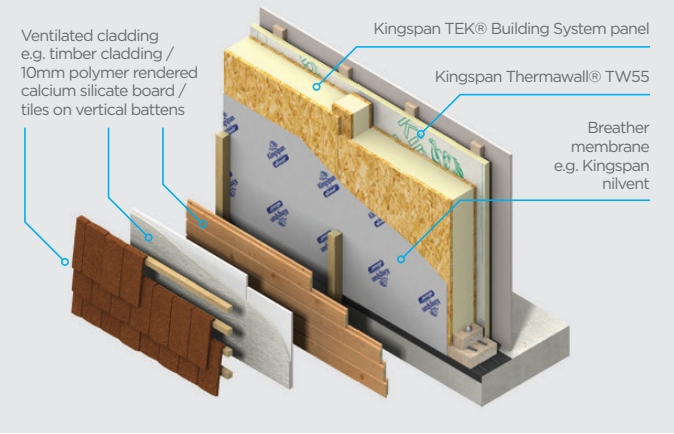

FIGURE 3

U-values for Kingspan TEK® Building System Walls with Various Thicknesses of Additional Insulation and Different Breathable Membranes			
Thickness of Kingspan TEK® Building System Panels (mm)	Thickness of Kingspan Thermawall® TW55 (mm)	U-value (W/m^2K)	
		Standard Breathable Membrane	Foil Faced Breathable Membrane
142	0	0.19	0.18
142	20	0.15	0.15
142	25	0.15	0.14
142	30	0.14	0.14
142	40	0.13	0.13
142	50	0.13	0.12
142	60	0.12	0.11
142	70	0.11	0.11
142	75	0.11	0.11
142	80	0.11	0.10
142	90	0.10	0.10
172	0	0.16	0.15
172	20	0.13	0.13
172	25	0.13	0.12
172	30	0.12	0.12
172	40	0.12	0.11
172	50	0.11	0.11
172	60	0.11	0.10
172	70	0.10	0.10

* Calculations assume Dense Block of λ-value 1.13 W/mK

U-values for Kingspan TEK® Building System Walls with Various Thicknesses of Additional Insulation		
Thickness of Kingspan TEK® Building System Panels (mm)	Thickness of Kingspan Thermawall® TW55 (mm)	U-value (W/m^2K)
142	0	0.20
142	20	0.16
142	25	0.15
142	30	0.15
142	40	0.14
142	50	0.13
142	60	0.12
142	70	0.12
142	75	0.11
142	80	0.11
142	90	0.11
172	0	0.17
172	20	0.14
172	25	0.13
172	30	0.12
172	40	0.12
172	50	0.11
172	60	0.11
172	70	0.10

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TYPICAL CONSTRUCTIONS AND INDICATIVE U-VALUES

Kingspan TEK® Building System Wall Pitched Roofs

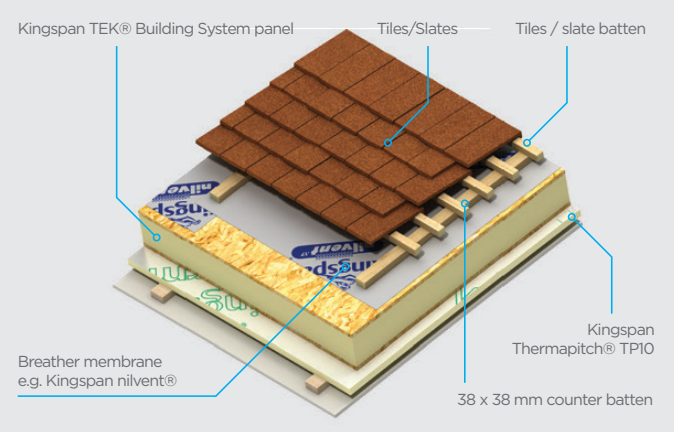

FIGURE 4

U-values for Kingspan TEK® Building System Walls with Various Thicknesses of Additional Insulation and Different Breather Membranes		
Thickness of Kingspan TEK® Building System Panels (mm)	Thickness of Kingspan Thermapitch® TP10 (mm)	U-value (W/m^2K)
142	0	0.19
142	20	0.16
142	25	0.15
142	30	0.15
142	40	0.14
142	50	0.13
142	60	0.13
142	70	0.12
142	75	0.11
142	80	0.11
142	90	0.10
172	0	0.16
172	20	0.13
172	25	0.13
172	30	0.12
172	40	0.12
172	50	0.11
172	60	0.11
172	70	0.10

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DESIGN CONSIDERATIONS
EXTERNAL WALLS & ROOFS

Internal Lining

All Kingspan TEK® Building System panels should be lined internally with plasterboard. The minimum plasterboard requirement may vary subject to statutory requirements for fire and acoustics. Please consult the Kingspan Insulation Technical Service Department (see rear cover for details) for definitive guidance on your construction.

Where services need to be fixed on an external Kingspan TEK® Building System wall or roof there are two options for creating a service cavity:

- a single layer of min. 12.5 mm plasterboard on min. 25 mm deep by 50 mm wide vertical timber battens (see Figure 5); or
- a double layer of 12.5 mm plasterboard - the layer closest to the TEK® Building System panel should be chased out to create a cavity for services. The second layer should be 12.5 mm vapour check plasterboard (see Figure 6).

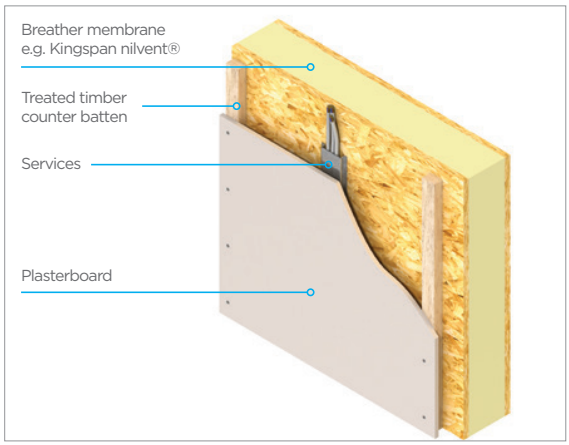

FIGURE 5

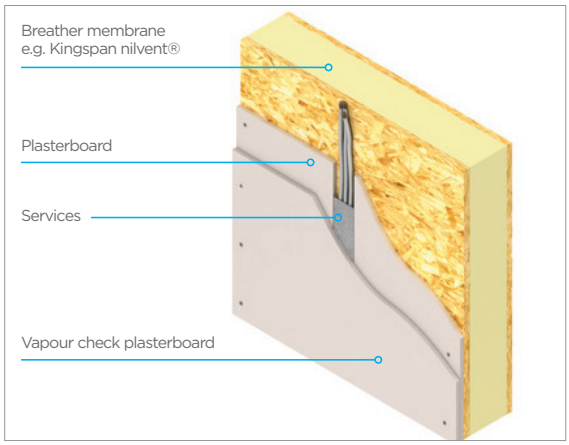

FIGURE 6

Where services need to be fixed and there is an additional layer of insulation, e.g. Kingspan Thermawall® TW55, fixed to the inside of the Kingspan TEK® Building System panels, a service cavity can be created by installing a single layer of min. 12.5 mm plasterboard on min. 25 mm deep by 50 mm wide vertical timber battens (see Figure 7).

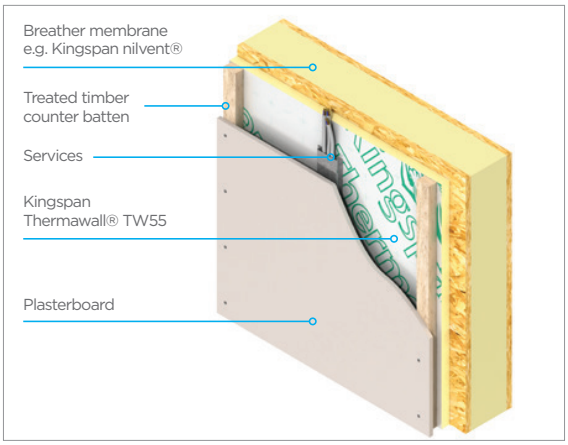

FIGURE 7

In all cases the need for electrical sheathing / conduit should be assessed in accordance with Building Regulations / Standards and BS 7671: 2008 + A3: 2015 (Requirements for Electrical Installations. IET Wiring Regulations).

Where an electrical back box must be fixed to a Kingspan TEK® Building System wall or roof, the electrical back box must be either surface mounted, or the service cavity must be sufficiently wide to accommodate a flush fitting electrical back box. Under no circumstances should the OSB/3 facing and / or the insulation core of the TEK® Building System panels, or any internal insulation, be 'chased out' to accommodate service fittings.

Where cabled services do not need to be fixed to the Kingspan TEK® Building System panel, a single layer of min. 12.5 mm plasterboard can be fixed direct to the panel (see Figure 8).

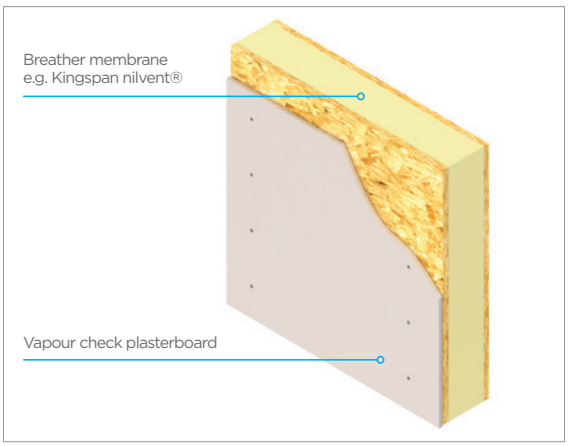

FIGURE 8

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