

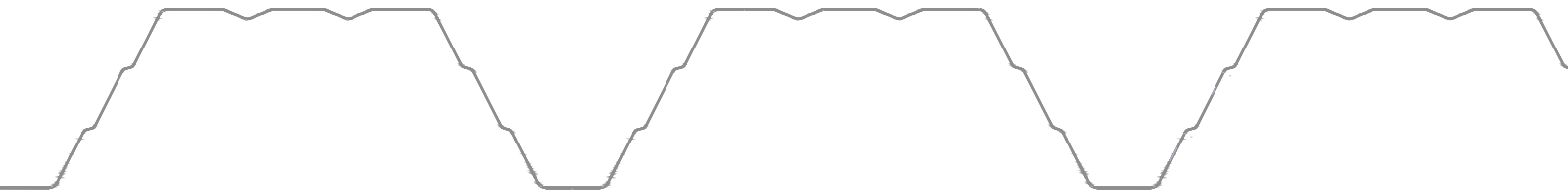
INSULATED ROOF SYSTEMS



Kingspan X-dek

KS1000 XD – Longspan Roofpanel

Insurer Approved **FIREsafe** Systems



X-dek™ Frame-to-Frame Long Spanning Insulated Roof Deck

X-dek™ is an insulated roof deck combining a structural deck, FIREsafe insulation and a metal top sheet into one product. Designed to support a choice of site applied standing seam or membrane finishes, X-dek™ provides a clear span capability of up to 6 metres, and is faster to install than alternative built-up roof deck systems. The internal face of the deck is pre-finished with a fresh white inner finish, providing a smooth clean interior appearance. X-dek™ is suitable for flat roof applications and is available with a Kingspan Warranty guaranteeing the thermal and structural performance of the panel for up to 25 years.

Key Features

X-dek™ is a frame-to-frame insulated structural roof deck

Key features include:

Structural & Design

- Up to 6 metre spanning capability.
- Suitable for flat roof applications.
- Choice of membrane suppliers.
- Choice of standing seam systems.
- Requires no/limited secondary steelwork.
- Lengths available up to 15 metres.
- Provides a clean internal pre-finished interior building surface.

Fast Installation

- Ability to use pack-to-roof mechanical handling removes need for manual handling.
- Reduced time on roof due to ease of installation.
- Reduction in quantity of components traditionally used on site eg. vapour control layer, fasteners etc.
- Facilitates earlier slab, services and fit-out trades - providing faster project completion and handover.
- Accelerates roof construction time.

Internal

- Clean, white internal appearance
- Suitable for suspension of internal lighting, secondary sprinkler pipe runs, heating/cooling ducting, roof ventilation & others, please consult the Kingspan Technical Service.

Guarantees & Warranties

X-dek™ is covered by the Kingspan Warranty, providing a guarantee of up to 25 years for thermal and structural performance.

System Benefits

- Pre-engineered, frame-to-frame structural insulated roof deck.
- Fully complies with national safety requirements.
- Suitable for frame-to-frame spanning of up to 6 metres.
- Rapid, single component, single-fix installation – up to 1,200m² per day.
- End-of-life solutions are available.
- U-Value 0.19 W/m²K.
- X-dek™ can contribute significantly an air tightness off roof solution due to lack of cavities between steel deck and insulation
- Firesafe insulated panel system.

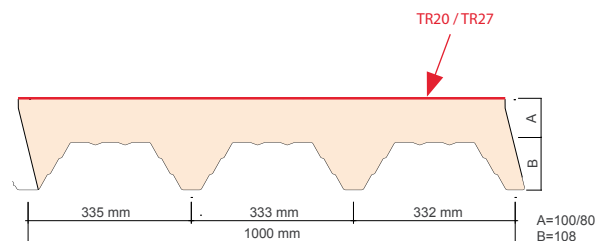
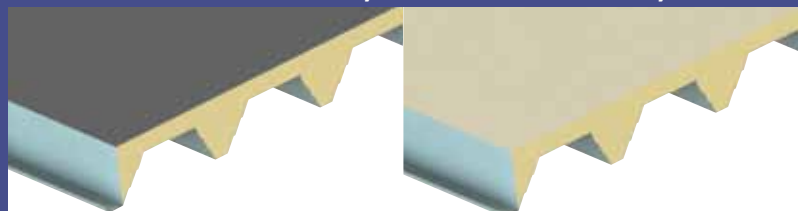


Design Versatility

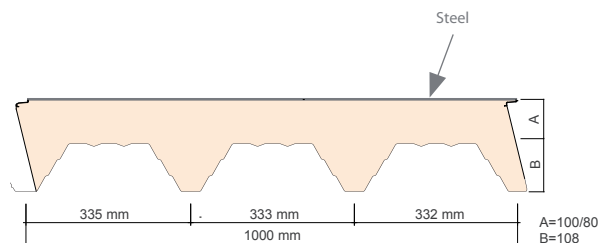
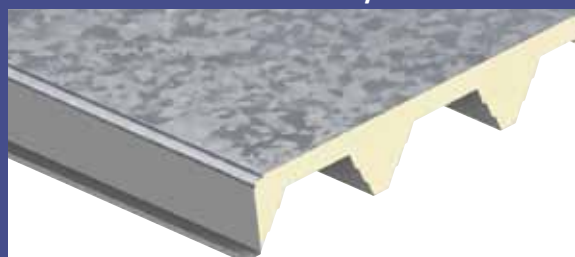
Products compatible with X-dek™ include:

- Range of single ply membranes including PVC/TPO/TPE etc.
- Standing seam options.
- Mechanically fixed systems.
- Adhered systems.
- Range of bitumen waterproof systems including Asphalt and Torch-on solutions.

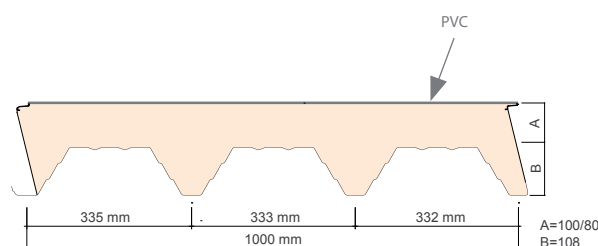
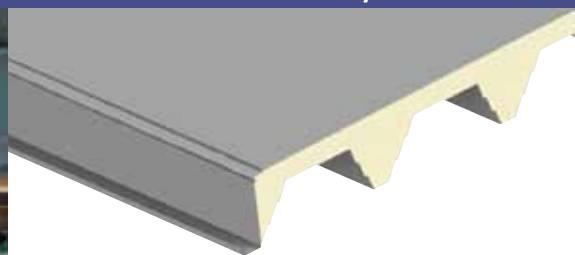
KS1000 XD / TR20 - KS1000 XD / TR27



KS1000 XD / Steel



KS1000 XD / PVC



* regarding KS1000 XD / PVC, please contact Technical department Kingspan

Water-tight works

Each KS1000 XD panel-roof must be finished with waterproof membrane. KS1000 XD can be used with conventional site applied membrane finished flat roof applications, which provides the specifier with a wide range of finish possibilities. Due to the type of the top finish (steel, TR20 or TR27) different types of membrane can be used and different technique of fastening can be used. Please see the table below which indicates the possible top solutions

KS1000 XD top option in relation to Waterproof finish solution (Application Table)			
Polymer membranes PVC, TPO, EPDM, ...		Bitumen Membranes	
Adhered	Mechanically fixed	Torch-on	Mechanically fixed
steel, TR27 (PVC – fleece backed)	steel, TR27	TR20	Steel, TR20

The installation of particular roofing membrane must be carried out according to the Supplier instructions in relation to the membrane fixing method. The water-tightness and durability of the roof is very much depending on the way how the top membrane has been fitted.

Product Data

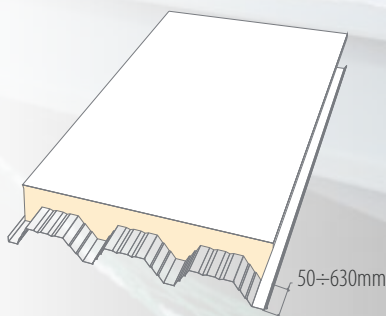
Application

X-dek™ panels are insulated membrane covered roof panels suitable for flat roofs for all building applications except where there are low temperature internal conditions. The KS1000 XD panel secures the base for final waterproof covering of the roof installed by others.

- X-dek panels are insulated roof panels suitable for flat roofs roof slope > 1%
- X-dek is the „long-span“ composite roofing panel, which provides the necessary structural strength and stiffness and the required level of thermal insulation. An outer membrane is applied on site as a waterproof barrier.
- The KS1000 XD panels are suitable for „Green Roof“ solutions
- The XD panels can be used as „standard“ panel and as a part of steel structure „structural“ panel (restraining for the rafters)

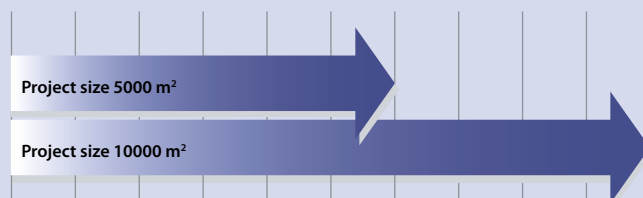
Available lengths

Standard lengths 2.5 to 13.5 meters. 13.5 – 15metres maximum can be supplied but are subject to a transport surcharge. All the Panels are manufactured with CUT-BACK (on bottom trapezoidal steel) the standard cut-back is 50mm, the maximum available is 630mm.

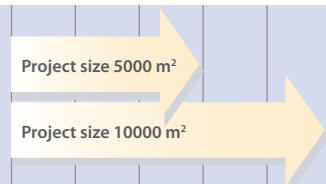


Build speed

Multipart Built-up Systems



Kingspan Insulated system



weeks 1 2 3 4 5 6 7 8 9 10



- ✓ Fast Build cuts site time by 100% – reduces prelims and attendance costs.
- ✓ Maximises investor/occupier trading income opportunity.
- ✓ Factory manufactured system facilitates zero defect installation and build quality.

Material – Steel

Internal skin:

Hot-dipped zinc coated steel according to EN 10326:2004.
Grade S350GD+Z275 coated with Polyester 25 microns RAL 9002 – standard thickness 0.9mm, on special request available 1.1mm.

External skin:

Hot-dipped zinc coated steel according to EN 10326:2004.
Grade S220GD+Z275 – thickness 0.7mm galvanised steel with a 5 microns clear film conversion layer for bonding to. Available profiles on top sheet: MiniBox or Flat.

TR20 – Bitumen impregnated glass fiber membrane suitable for multi layer torch on systems,

TR27 – Glass tissue facing suitable for mechanically fixed or fully adhered single ply PVC or EPDM membrane.

Insulation core

The rigid closed cell insulation core is available in the following specification:

Isophenic rigid foam – IPN (HCFC Free), nominal density of 40 kg/m³. Available nominal thickness of the core 80mm and 100mm.

Seals

Factory Applied Side Joint Seal

All side joints have a factory applied anti-condensation tape made of standard PE side foam.

Performance

Thermal Insulation

$\lambda=0,022$ W/mK:

Panel Thickness (mm)	R value [(m ² K)/W]	U Value [W/m ² K]
80 / Option I	4,21	0,23
80 / Option II	4,03	0,24
100 / Option I	5,12	0,19
100 / Option II	4,86	0,20

Biological

Kingspan panels are normally immune to attack from mould, fungi, mildew and vermin, no urea formaldehyde is used in the construction, and the panels are not considered deleterious.

Fire

Kingspan KS1000 XD roof panels has been tested according to EN1365 as load bearing roof element. The ratings achieved are presented in the table below:

Panel Type	FIRE Rating	Max. bending moment
KS1000 XD 80 TR20	REI 15	6.621 kNm
KS1000 XD 100 TR27	REI 15	7.725 kNm
KS1000 XD 100 (steel)	REI 30	7.725 kNm

Product Data

Acoustics

KS1000 XD (X-dek™) panels have acoustic parameters as below:

Type of panel	Parameters according to Type of panel EN ISO 717-1:1999		
	RA1 [dB]	RA2 [dB]	RW [dB]
KS1000 XD 80/100	26	23	27
KS1000 XD 80/100 TR20/TR27	25	22	26

Sound absorption factor: $\alpha_{av} = 0,1$

Weight

Panel thickness	Internal Steel Thickness	Steel-Steel [kg/m ²]	TR 20 / TR27 [kg/m ²]	PVC [kg/m ²]
XD 80	0,9	21,4	15,9	16,9
	1,1	23,7	18,2	19,2
XD 100	0,9	22,2	19,1	17,8
	1,1	24,6	19,1	20,1

Quality and durability

Kingspan Insulated panels are manufactured from the highest quality materials, using state of the art production equipment to rigorous quality control standards, complying with ISO9001 standard, ensuring long term reliability and service life.

Guarantees & Warranties

Kingspan will provide external coating and product warranties and guarantees on an individual project basis.

Kingspan Roof Panel KS1000 XD X-dek™

ADVANTAGES & BENEFITS

<ul style="list-style-type: none"> ✓ Unique engineered solution of composite panel dedicated especially for „FLAT ROOFS“ 	<ul style="list-style-type: none"> • Possible application on roof slope starting from 1.5%. • Low risk of “human factor” in installation. Single part system safe and easy to install.
<ul style="list-style-type: none"> ✓ Big load bearing capacity of panel secured by bottom deep trapezoidal deck gauge at least 0.9mm 	<ul style="list-style-type: none"> • Possibility of installation directly to the steel rafters. Purlin sub-structure not required. Reduction of steel consumption. • Bottom deep trapezoidal deck can provide the lateral restraint for the rafters.
<ul style="list-style-type: none"> ✓ Product solution allows to carry out installation of panels regardless of the weather conditions. 	<ul style="list-style-type: none"> • At built-up systems the installation must be carried out at “dry conditions” to avoid “capture” of water and humidity at insulation core and between the layers of roof. Increase of moisture by 1% of volume at insulation layer of MMMF – decreases the thermal insulation roughly by 15%.
<ul style="list-style-type: none"> ✓ IPN insulation core fully fills the whole section of XD panel providing maximum thermal performance. 	<ul style="list-style-type: none"> • Excellent thermal performance of roof, which reduces the heating costs and emission of CO₂ of whole building. • U-value range: 80 mm thick core – 0,23 W/m²K 100 mm thick core – 0,19 W/m²K • Continuous IPN core eliminates the cold bridges and the risk of interstitial condensation • Due to very low humidity absorption factor for the IPN foam, the risk of physical degradation of insulation core (increase of “lambda” value) is very small • Rigid IPN core allows to walk safely over the panels – very low risk of mechanical compression of insulation core – no visible “traffic paths” after installation and less stress on the laps / joints of the membrane over the lifetime of the building.
<ul style="list-style-type: none"> ✓ Very low unit weight of XD panels, depending on option amounts from 14 up to 25 kg/m² 	<ul style="list-style-type: none"> • Lower dead load of roof covering which results in savings at steel section design.
<ul style="list-style-type: none"> ✓ Rapid installation process – one panel + waterproof membrane, instead of few layers one by one. 	<ul style="list-style-type: none"> • Fast track construction – enables to start internal works earlier and finally can reduce the overall installation time, offering the owner the earlier operation of the building.
<ul style="list-style-type: none"> ✓ The top finish of XD panel can be prepared for application of various waterproof membranes. This gives the designer/contractor the chance to choose any type of waterproof membrane. The panels are offered with required accessories for final finish. 	<ul style="list-style-type: none"> • Waterproof membrane delivery can be in scope wof Kingspan or Roofing Contractor • The Contractors can use their experience at installation of various waterproof membranes. • All roofing elements available at one supplier. Technical support from one company • Reliability of experienced solutions and materials which guarantee long durability of whole roofing • The installation of various smoke-vents, roof-lights, fans and other technical equipment is possible on the XD panels.
<ul style="list-style-type: none"> ✓ KS1000 XD panels are manufactured from the highest quality materials, using state of the art production equipment to rigorous quality control standards, complying with ISO9001:2000 standards. 	<ul style="list-style-type: none"> • Factory controlled high quality • Guaranteed long term reliability, service life and technical performance of panels.
<ul style="list-style-type: none"> ✓ 25 years guarantee on thermal, static and fire performance of XD panels 	