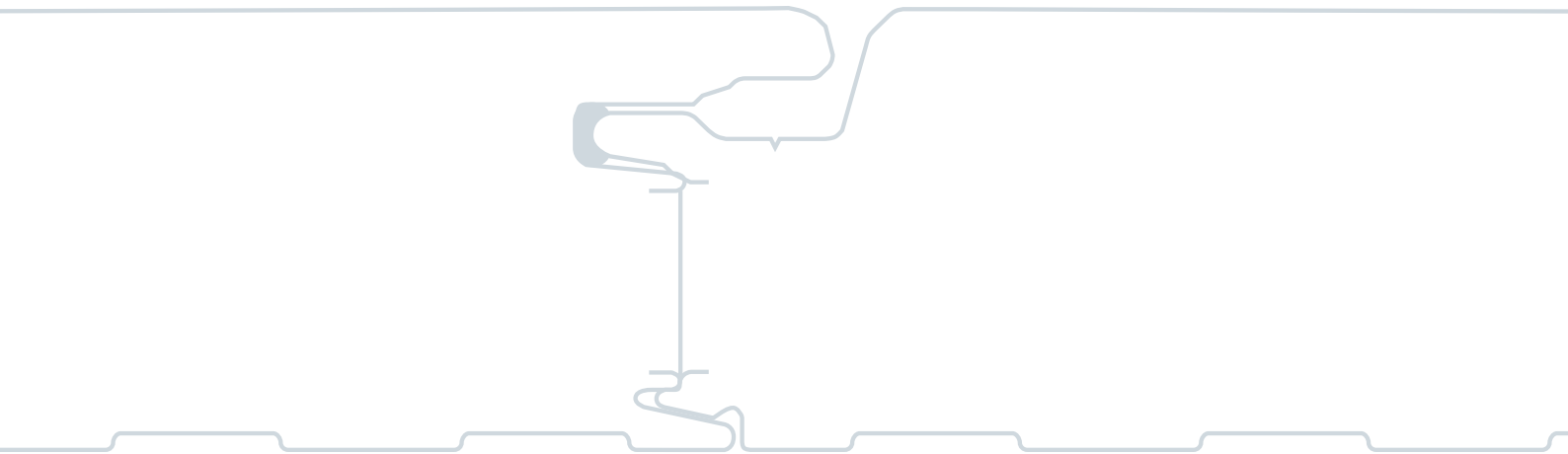


INSULATED ROOF & WALL SYSTEMS



Case Studies

LPCB Approved insulated panels in real fire case studies



Approved to LPS 1181
Certificate No. 186a & 260a



Introduction

There are many myths in the marketplace today surrounding the fire performance of different sandwich panels; the aim of this document is to dispel those myths with facts and evidence. No composite panel in today's marketplace is non-combustible and this is confirmed by the recent clarification from the ABI on clause 4.4 of their Technical Briefing on Fire Performance of Sandwich Panels which states that:

"In respect of external composite panels, these must be suitable for the intended end use application and should either have non-combustible cores or be LPCB approved to the appropriate requirements of LPS 1181 (see paragraph 3.11) and fully satisfy insurers fire resistance requirements (insulation and integrity) through appropriate testing."

This re-confirms the message Kingspan Insulated Panels have been putting to the marketplace for many years now – LPS 1181 is the most stringent and accurate test for evaluating the fire performance of sandwich panels.

"Sandwich panel systems approved by LPCB to LPS 1181 will not make a significant contribution to fire" or "make a significant contribution to fire growth" ABI Technical Briefing

Kingspan Insulated Panels can provide specification compliance with LPS 1181 – EXT A and EXT – B. Not only do our panels perform in testing but as this document proves Kingspan FIREsafe panels also perform in real fire case studies.



The paper we have printed on is from 80% post-consumer waste and the remaining 20% pulp is TCF (Totally Chlorine Free). This fibre is FSC certified (see fsc.org for details). In recognition, the range has been awarded both the NAPM and Eugropa recycled marks, two of the most prestigious and recognisable recycled certificates available. The ink we have used is vegetable based, allowing the document to be recycled.



Case Study 1 - Clifton Comprehensive School, Rotherham - 30th July 2004

A serious fire took place in the roof void of a new school building in Rotherham. In this case Kingspan KS1000 LP (Lo-Pitch) LPCB approved roof panels were exposed to an intense fire in an aerial walkway. The fire was investigated by Tenos and South Yorkshire Fire Service and it was clear that the panels played no role in fire spread and actually played a key role in preventing fire propagation over a compartment wall.

The fire took place just 6 weeks before the facility was due to open; the building contained many thousands of pounds of brand new computers and other equipment. The fact that there was no smoke damage to the equipment and the building opened on schedule demonstrated the excellent fire performance of the cladding system.

Product: KS1000 LP (Lo-Pitch)

Approval: LPS 1181

Investigator(s): Tenos & South Yorkshire Fire Service

Result: *"Panels played no role in fire spread and actually played key role in preventing fire propagation over a compartment wall"*

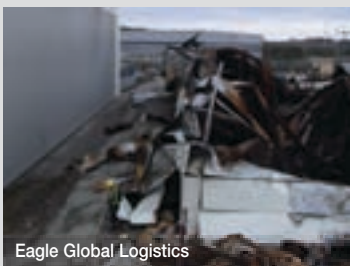


Clifton Comprehensive School

Case Study 2 - Eagle Global Logistics, Purfleet 10th January 2005

A devastating fire at a large logistics warehouse operated by EGL, (Eagle Global Logistics) in Purfleet, demonstrates the impressive fire performance of Kingspan's LPCB (Loss Prevention Certification Board) -approved panels, which played a significant role in preventing fire spread to an adjacent building.

This fire completely burnt out the EGL building. Significantly, the Kingspan panels on the adjacent building, which was only 9 metres from the burnt out unit, played an important role in preventing fire spread. The severe heat



Eagle Global Logistics

and flames generated by the burning building were so intense that the paint coating on the Kingspan panels on part of the next-door building was burnt off but the PIR core did not ignite and no flames or smoke entered the adjoining building.

An investigation by ACE Risk Consultants has concluded that the Kingspan panels that formed part of the external walls of the burnt out building did not play any role in the development and spread of the fire. It has also been reported that the coordinating fire investigation officer had nothing negative to say about the construction of the burnt out building.

Product: Kingspan Architectural Wall Panels (AWP)
Approval: LPS 1181
Investigator(s): Ace Risk Consultants
Result: "Kingspan panels did not play any role in the development and spread of the fire"



Wharfedale Hospital

Case Study 3 - Wharfedale Hospital - 5th July 2003

This is the first recorded fire in a building clad in LPCB approved PIR panels. This fire occurred in an extension to the hospital under construction. An arsonist ignited a solvent based adhesive poured over a large pile of combustible building materials that was stored in the ground floor of the facility. The ground floor was essentially open with the external cladding starting at the first floor level. Kingspan commissioned Tenos to perform an independent investigation into the fire. This involved a visit to site and discussions with West Yorkshire Fire & Rescue. A detailed report is available.

The Tenos report concludes - *"In spite of significant heat generated by the fire (sufficient to damage the intumescent coating and distort the steel beams); the orientation of the cladding panels directly above the fire; and the fact that the fire stopping was not in place; the cores of the panels as evidenced by photograph 2 and 3 did not ignite; did not promote fire spread within the core or to the eaves and did not significantly contribute to the products of combustion."*

These photographs provide a record of the damage and include some explanatory comments.

- 1 Side of the building exposed to direct flame impingement and smoke/heat damage from the ground floor. It is clear that the PIR core has not ignited and has played no role in the fire. The side of the building that experienced a bigger fire attack. Flames appear to have risen to the eaves – a height of approximately 10 metres. The external steel sheet has bowed and delaminated in the areas of flame impingement – however, there is no indication the fire has spread through the cladding.



2

- 2 Sections were cut out of the short panels in order to inspect the steel column behind the panels. The photograph below left shows this more clearly. Close-up of the inspection holes cut in the panel after the fire. The insulation core can be seen clearly and looks to be virtually unaffected by the direct flame impingement on the outer steel facing. The steel column was not affected.



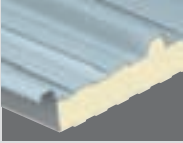


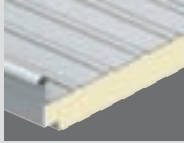

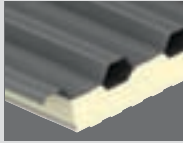
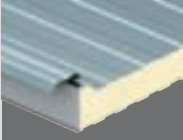

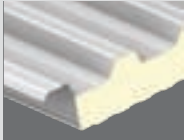
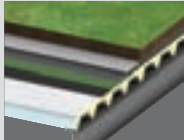


3

- 3 A panel that has been exposed to direct flame impingement on the outer sheet. The metal has been pulled away by contractors to inspect the PIR core. It is clear that the insulation core has been almost unaffected by the fire. Only light charring can be seen.


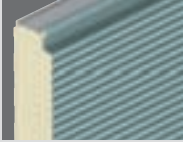








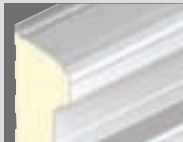







Product: Kingspan Architectural Wall Panels (AWP)
Approval: LPS 1181
Investigator(s): Tenos (with aid of West Yorkshire Fire & Rescue)
Result: "The cores of the panels did not ignite; did not promote fire spread within the core or to the eaves"

Kingspan Insulated Roof, Wall & Façade Systems

Roof Systems

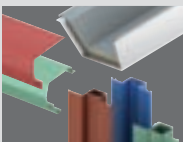
KS1000 RW Trapezoidal	KS1000 SF Secret Fix	KS1000 TS Slate & Tile Support	KS500/1000 ZIP Kingzip® Standing Seam	KS1000 LP Lo-Pitch	Kingspan EnergiPanel™
					
KS1000 CR Curved Roof	Kingspan Roof Tile	KS1000 FC Box Profile	Kingspan Envirodek™	Kingspan Polycarb Rooflight	Kingspan Upstand Rooflight
					

Wall & Façade Systems

KS600, 900 & 1000 Optimo™	KS600, 900 & 1000 MR Micro-Rib	KS600, 900 & 1000 EB Euro-Box	KS600, 900 & 1000 FL Flat	KS600, 900 & 1000 FL-S Stucco	KS600, 900 & 1000 MM Mini-Micro
					
KS600, 900 & 1000 CX Convex	KS600, 900 & 1000 WV Wave	KS600, 900 & 1000 LS Longspan™	KS1000 RW Trapezoidal	KS1000 FC Box Profile	Kingspan EnergiPanel™
					
Kingspan Thermatile	Kingspan Thermabrick™	Kingspan Thermastone	Kingspan WoodTherm™	Kingspan Render Panel	Kingspan Wall-Lite
					

Ancillaries

Gutters, Tophats & Flashings



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