

COMPOSITE “SANDWICH” PANELS

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Introduction

Composite Panels, also known as “sandwich” panels or “insulated metal” panels because of their method of construction, became a major factor in spiralling insurance costs for UK companies in the late 1990s and early 2000s.

Where composite panels are known to be present, especially non approved panels, many insurers either refuse to offer material damage and business interruption covers at all or increase premiums significantly – increases of up to 1,000% were not unheard of in the late 1990s. Additionally, significant levels of deductible are applied.

What are sandwich panels?

Although differing in size and appearance, composite panels are essentially steel (or occasionally aluminium) faced building panels with various forms of insulation material between the two faces. They are used for both the outer envelope of lightweight buildings, or to create partitions within a building. Panels are typically about one metre wide and may be over 10 metres long. An authentic “composite” panel is factory made and delivered to site ready for fixing, but “split construction” will be encountered, which comprises similar components, erected separately on site.

The types that most concern insurers are those with expanded polystyrene (EPS), those with polyurethane (PUR) and those with basic polyisocyanurate (PIR) cores.

Many panels do have acceptable insulation cores. Unfortunately it is difficult to positively identify the precise core material as fixing methods usually result in the cores not being readily visible, particularly when a panel overlaps the adjacent panel when erected. Underwriters must therefore assume the worst and have no option but to either decline the risk involved or increase the premium significantly and imposing a high level deductible.



The cause of the problem lies with the metal panels, which allow the heat from a fire to spread quickly, and consequently a fire will spread rapidly as the core material ignites some distance away from the original seat of the fire. Expanded polystyrene for example offers no fire resistance whatsoever. Polyurethane does little better with just 15 minutes of resistance. This compares to Mineral Rock Wool (MWRF) that offers between 82 and 245 minutes.

External cladding is often open at the top and bottom. The bottom is usually bonded to the floor and the top forms part of the support structure for the roof or ceiling of the unit. This too is often bonded, so why the risk? The risk comes when cladding is damaged and/or weakened which therefore reduces the fire resistance. If the EPS, PUR or basic PIR catches fire, the fire spreads in a matter of a few minutes. Poisonous gases and plumes of dense black smoke also results.

There have been a number of high profile fire losses in recent years, resulting in significant claims for insurers and a number of deaths including those of firemen. A recent major fire in a bakery in the North West of England claimed the lives of several fire fighters when the building collapsed. Many fire brigades will not now enter any building that may be constructed of composite panels with polystyrene and/or polyurethane cores. This means that the centre of the fire can often not be tackled leading to even more property losses.

Where are they used?

Sandwich panels have been used extensively in areas where insulation and hygiene are a high priority. The food industry, where panels are often coated so that they may be frequently washed down with water sprays, is particularly affected – chilled and frozen wholesalers/distributors; hotels; restaurants; shipping; trains; chilled and frozen hauliers; hospitals; prisons; works canteens; supermarkets; butchers shops; fish mongers etc. The electronic and pharmaceutical industries have also been affected.

Most concern is given where these panels are used internally. External wall and roof panels, whilst still representing a significant risk, have not resulted in such a bad experience as the internal panels.

Why are they used?

- Easy to maintain and clean
- Delivered to site ready to install
- Provide good insulation
- High strength to weight ratio
- Relatively inexpensive, especially EPS



The Loss Prevention Certification Board (LPCB) in conjunction with the Association of British Insurers (ABI) carried out some research into the use of such panels and the panel below compiled from their report illustrates the costs compared to the risk exposure.

Insulation	Cost £/m ² (1999 prices)	Fire Resistance (minutes)	Probability of fire spread	Weight kg/m ²
Expanded Polystyrene (EPS)	35	0	95%	2.22
Polyurethane (PUR)	43	15	75%	2.76
Polyisocyanurate (PIR)	43	15	75%	2.4
LPCB approved PIR	44	17-31	40%	3.0
Modified Phenolic (PHEN)	52	60	40%	13
Mineral Wool (Glass Fibre) (MWGF)	49	26-72	20%	6.72
Mineral Wool (Rock Fibre) (MWRF)	52.5	82-245	20%	10.92
Cellular Glass (CG)	150	60	10%	10.08

All materials tend to comply with "Building Regulations" – to do so does not make panels acceptable to insurers. Manufacturers of EPS, PUR or basic PIR may also quote British Standard designations. These designations are relatively easy to achieve. Significant levels of fire resistance are only available when panels achieve BS476 parts 20, 21 and 22.

Loss Prevention Council Board (LPCB) approved PIR, being a minimum of 80mm thick, is very slightly more expensive, but demonstrates almost double the fire resistance and almost halves the probability of fire spread, which should make a significant reduction to the extent of fire damage.

What should you do?

It is important that you do not rely on any information from current or previous insurers. Some insurers were not as concerned about these panels as they are now and their existence may not have been picked up in previous surveys.

You should determine whether your building has such panels. Insurers now consider the presence of such panels particularly the EPS, PUR and basic PIR types to be a material fact, which must be disclosed. Failure to do so may invalidate your cover and prejudice any claim.

If you do discover composite panels, either internally or externally, it is important that the types be established. If you cannot establish this by examining them, you will need to check with the architect, developer/builders and suppliers as to what type was specified and supplied.

If EPS, PUR or basic PIR panels are discovered, you should give serious consideration to replacing them without delay if you wish to remain insurable.

What alternatives to use will need to be considered carefully in conjunction with your insurers. Whilst Rock Wool (MFRW) panels will provide excellent fire resistance, they are heavy and not suitable for cold stores. They are however ideal for external walls. In the food industry there is a reluctance to use any fibrous material such as mineral wool for hygiene reasons although research suggests where they are enclosed within sandwich panels, there is no significant risk of disease or skin irritation.

The LPCB's "Red Book" lists "approved suppliers" of composite panels that supply products, which meet LPS 1208 and 1181. Underwriters' agreement should be gained before any decision is made, as not all panels may be acceptable.

Loss Prevention Measures you may consider

- Facings and joints must be maintained in good repair to prevent exposure of combustible cores to ignition sources, to maintain the fire resistance of non-combustible panels and to prevent fire spreading into any voids behind the panels.
- Appropriate precautions are necessary for any heater-flue or other potentially hot trunking that passes through panels.
- Repairs involving welding or other obvious ignition sources must never be permitted to composite panels, or in their vicinity unless properly protected by non-combustible or purpose made blankets, drapes or screens and Permit to Work systems are in force.
- It is particularly important that yard storage of combustibles is not against or within 3 metres of walls containing composite panels.
- Exposed bottom edges of external panels (e.g. Where they occur above dwarf brick walls) to be closed off with steel capping wherever practicable.
- Relocate any hazardous processes well away from walls.
- Lining existing cladding with non-combustible materials.
- Sprinklers and/or sub-division by firebreak walls should be considered.
- Automatic smoke detection with remote signalling should be considered.
- If the building is to be repaired or altered then non-combustible panels should be used.

Conclusion

The cost of replacing panels may not be cheap. However the cost of either not replacing combustible panels or not identifying EPS, PUR or PIR panels (which may make you uninsurable or your insurance void) should easily be outweighed by the long term savings in insurance premiums.

Copies of the LPC/ABI's research report can be purchased from the ABI website at www.abi.org.uk.

How Rowlands & Hames can assist you

Please discuss the position with Rowlands & Hames if you are concerned. Different insurers prefer different types of panel and it is important that we may assist you and keep insurers informed throughout. Increasingly insurers are willing to accommodate even polystyrene panels for certain trades and Rowlands & Hames have access to a number of such markets.

Should you require further information on this subject or any other Risk Management or Health & Safety issue, please contact your Account Director at Rowlands & Hames.

Please contact Rowlands & Hames for further information.

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