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INDEPENDENT SAFETY & RISK SERVICES

OCCUPATIONAL HEALTH AND SAFETY RISK MANAGEMENT INSURANCE SURVEYING & REPORTING

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Protecting your Workplace and Business Assets

TECHNICAL NEWSLETTER

(for information only – not for operational use)

EPS

Expanded Polystyrene Foam (sandwich panel walls and ceilings)

The problem
(for the Insured and the Broker)

- EPS is a foam plastic which has poor fire characteristics
- EPS is not an attractive fire risk for Insurers

The solution

- Make the EPS risk acceptable to Insurers at reasonable premium levels by;
  - protecting the EPS, or
  - replacing the EPS.

EPS is cheap, provides good insulation for cold rooms, it is lightweight and durable, water resistant (it does not wick like rockwool), and meets hygiene requirements in the food industry.

BUT – EPS ignites and burns readily, producing large volumes of toxic fumes. Total destruction is expected if involved in a fire.

PROTECTING EPS (difficult and expensive)

Some Insurers provide cover based on Maximum Probable Loss (MPL) estimates. An EPS risk with no fire compartmentation may be considered to be 100% MPL, which restricts or denies an Insurer's acceptance of the risk.

If the EPS is to remain in place (or used in new construction), any form of fire protection for the EPS risk must be acceptable to the Insurer, before considering costs to be incurred in achieving fire protection.

Fire protection (minimum to maximum)

- Portable fire extinguishers, fire hose reels, fire hydrants
- Heat detectors (monitored)
- Switch off of master electrical control switch during idle hours
- Smoke detectors (monitored)
- VESDA (very early smoke detection alarm)
- Fire compartmentation (fire walls and self-closing automatic fire doors), upon which the MPL is calculated
- Automatic fire sprinklers

Even with the maximum fire protection, an EPS risk may not be acceptable to some Insurers.

REPLACING EPS (difficult with existing buildings)

Referring to the Hierarchy of Building Materials, an Insurer's acceptance level may begin at PIR Class 1 (refer description of PIR Class 1 in the notes of this Technical Newsletter).

NOTE – A PIR Class 1 risk should not be considered as "non-combustible". It may require sprinklers, depending on the occupancy and combustible or flammable nature of goods stored within the building.

Buildings burn down as a result of the contents within the building catching fire. An empty building is unlikely to burn down, except for arson or where an electrical fault occurs with EPS walls and ceilings.

Hierarchy of building materials (low to high fire risk)

LIKELY TO BE ACCEPTED BY INSURER

- Masonry (concrete or brick)
- Sheet steel
- Sheet aluminium
- Gypsum
- Rockwool (or mineral fibre)
- Phenolic steel clad panels (PF)
- Polyisocyanurate steel clad panels (PIR) Class 1

NOT LIKELY TO BE ACCEPTED BY INSURER

- Polyisocyanurate steel clad panels PIR Class 2
- Expanded Polystyrene steel clad panels (EPS)
- Acrylonitrile Butadiene Styrene (ABS)
- Polyurethane sheet (PU)
- Wood

Two types of plastic – thermoplastic and thermosetting

EPS (a thermoplastic material) melts in a fire (like a polystyrene cup). PIR (a thermosetting material) only chars (like the handle on a frypan).

- Polystyrene (EPS) foam core is thermoplastic (softens when heated), it melts with heat causing gaps which reduce the structural strength of the EPS panels which then buckle and open the joints, introducing flame and air into the core. Flames then spread in between the panels leading to collapse of EPS walls and ceilings due to the vertical heat rise.
- Polyisocyanurate (PIR) foam core is a thermosetting material. It does not melt, flow or drip when exposed to fire. It forms a strong char that helps protect the foam core and prevent flame spread within the panels.

Two types of PIR – PIR Class 2 and PIR Class 1

- PIR Class 2 – may be unacceptable to Insurers as it will self-propagate in a fire, the material will burn.
- PIR Class 1 – will not self-propagate and will therefore self-extinguish with the removal of fire flame. The material has limited combustibility.

NOTE – Kingspan Insulated Panels advises their range of PIR Class 1 insulated panels for walls, facades and ceilings is FM approved, meaning they have undergone rigorous fire testing.

– FM Global dominates testing and insurance in fire resistant and non-combustible wall and ceiling materials. It has approximately 1,500 engineers and a US$80 million research facility dedicated to assessing risk.

CONTACTS

- Phenolic (PF) trade name Polyphen is FM approved, phone (03) 9614 0621, see www.polyphen.com.
- PIR – now manufactured in Australia by Kingspan Insulated Panels, phone 1800 098 604 or (02) 9673 5069.
- Buyer's Guide for Sandwich Panels and associated materials – PFPA, phone (02) 9416 0451, see www.pfpa.com.au.
- AIS – Australian Insulation Supplies, phone (02) 9417 9494, see www.ais-group.com.au.
- Bondor Core Panels, phone (02) 9609 0888.