

A risky sandwich

Insulated Sandwich Panels (ISPs) are used widely in the construction industry and although some customers are aware of the hazards presented by those panels with a combustible core, few take on the risk improvement recommendations submitted by Vero risk specialists. With the help of our Brokers, Vero is trying to improve our mutual customer's understanding of the risk and implement all risk improvement recommendations.

It has been 50 years since we first saw an ISP used in Australian construction. Originally the domain of cool rooms, this building product has found its way into commercial, industrial and residential properties.

ISPs generally consist of two outer metal sheets (steel, aluminium, other) with a stabilising core of insulation sandwiched between them. The metal sheets are bonded to the insulation core so the panel acts as a composite unit under load. The panel cores are made of a variety of materials including Expanded Polystyrene.



Common uses

ISPs have been widely used due to their excellent thermal properties, smooth easily cleanable surfaces, relatively cheap purchase price and structural properties which has led to their widespread use in the following industries:

- Food and beverage processing and manufacturing
- Pharmaceutical manufacturing
- Chillers, Freezers and Cool Storage Warehouses
- But... they can appear anywhere! Spray booths are commonly made from Expanded Polystyrene panels.

The core issue

ISPs with an Expanded Polystyrene core have the worst fire record, but it is the most common panel material. There are other types of panels equally or nearly as combustible. It all comes down to the ease of fire ignition, high heat and smoke release, as shown in the following.



Wood

- Ignition after 5 min at 600°C
- Heat release 12-20MJ/kg
- Consumed at a steady rate (~0.5-1mm/min depending upon the species)

Expanded Polystyrene

- Melts at 205°C
- Emits flammable gas at 364°C
- Heat release ~40MJ/kg
- High smoke release (100 times that of ordinary combustibles)

Why worry?

Major destructive fires involving ISPs include:

- Inghams, Somerville, Vic. (A\$114 million) – January 2010
- Icepak Coolstores, Tamahere (Hamilton), NZ – April 2008
- Tegal Poultry, Christchurch, NZ (>NZ\$50 million) – January 2007
- Fonterra, Takaka, NZ (>NZ\$100 million) – June 2005
- George Weston Tip Top (Bakery), Fairfield, NSW (>A\$150 million) – May 2002.
- Ernest Adams (Bakery) Christchurch, NZ (NZ\$41.5 million) – June 2001
- Westgate Cold Storage, Brooklyn, Vic. (A\$60 million) – June 2001.

Risk improvement progress has been made

Panel manufacturers, the insurance industry and panel users have become increasingly risk aware. Over the last 5 years there have been advances with non-combustible panel cores at an affordable price, refinement in underwriting strategies and the acceptance of risk improvement recommendations to some degree BUT.... Vero Risk Engineering finds...

Only 50% of customers implement risk improvement recommendations

Considering the risk profile, Vero continues to submit risk improvement recommendations to customers to curtail the risk associated with these combustible panels. Our recommendations include actions such as:

- Change to non-combustible panels
- Relocate forklift battery chargers away from ISPs
- Do not conduct hot work in the vicinity of these panels
- Do not cut or penetrate
- Report/repair damages immediately
- Cover exposed core immediately
- Contact management to report damage, infringements and permit to work
- Label panels to ensure awareness of staff/contractors as to the hazards presented and the risk control actions.

Concerningly, these recommendations are in Vero's top 5 and only 50% of customers appreciate the importance and subsequently implement them.



An interim measure

Notably, the most ideal risk improvement is to replace combustible ISPs with a non-combustible panel. There are however likely barriers to this, and customers may consider alternatives such as a staged replacement program.

In the interim, employees and contractors working on site need to know the risks associated with these combustible panels and understand the necessary risk controls as explained above. Consequently, we have designed a Danger label to be placed on all combustible panels in a prominent and clearly observed position.

Together with employee education and contractor induction programs which highlight the risks and controls, Vero hopes to significantly improve upon our customer's adoption of risk improvement recommendations.

Let's talk technical

Use the Danger label in this article as your guide for printing your own in terms of wording and size, size of the actual label, colour and print upon adhesive vinyl that may be adhered to the panels.

When made aware of the risk, one of our customer's commenced a program to implement our recommended strategies. They recognised the importance of letting their employees and contractors know the risk and understand the necessary risk controls as well as the necessity to maintain combustible panels in good condition while they remain on site. Consequently, our customer printed up several Danger labels and placed them on all ISPs in a prominent and clearly observed position.

References

1. RM Insight issue 38: Insulated sandwich panels (ISP)
2. Risk information – Property: Expanded or Extruded Polystyrene (EPS) sandwich panels
3. Self-inspection checklist – Risk control for combustible insulated sandwich panels
4. Insulated Sandwich Panel (ISP) Work Permit (cold work)

vero.com.au

The information is intended to be of a general nature and is not legal advice. Subject to any rights you may have under any law, AAI Limited ABN 48 005 297 807 (trading as Vero Insurance) does not accept any legal responsibility for any direct or indirect loss or damage, incurred as a result of reliance upon it. Please make your own enquiries

Date written: 3/7/2024

V11293 22/07/24 A

For more information 

www.vero.com.au/risk-management

Contact us at riskengineering@vero.com.au