



## **INSURANCE BEST PRACTICE IN EPS MANAGEMENT**

### **Why is this an Issue?**

EPS “sandwich” panels became available in the 1980s and were quickly adopted in the construction of:

- cool rooms
- cold stores
- freezers.

The panels are made from two metal sheets and a layer of combustible foam plastic

Since the adoption of this material a number of fire have occurred involving EPS panels

The following report from Zurich Australia (2011) outlines the lessons learned from a sandwich panel fire at a major food processing factory.

*“The fire started in a staging area for plastic packaging trays, and despite the area being attended and the presence of automatic smoke detection, the fire was able to quickly develop.*

*The fire was detected at an early stage by an operator who unsuccessfully discharged an extinguisher. Despite their best efforts, the fire quickly spread to the EPS (expanded polystyrene) sandwich panel ceiling.*

*Before the fire fighters could mount any first attack, the fire had spread the full length of the main production building, associated loading dock and cold store, overall a length of around 100 metres.*

*Over 100 fire fighters eventually attended and were able to contain the fire to the main building and protect the large ammonia receivers adjacent to the building.*

*The key lessons coming out of this fire was a reinforcement of previous experience:*

- *EPS panel ceilings are very susceptible to fires starting beneath them*



- *Fires starting under EPS panel ceilings spread very rapidly. The fire spreads across the ceiling as the panels progressively delaminate and the EPS melts and vapourises to fuel. Fires can also spread inside the wall and ceiling panels, before bursting out at the panel seams*
- *The fire load from EPS wall and ceiling panels is enough on its own to cause deformation and collapse of major steel roof beams*
- *Fire brigades are unlikely to contain a developed EPS panel fire and they will not enter the building due to the risk of collapse*

## **What is Best Practice?**

The following controls are designed to avoid starting EPS fires. The objective is to keep ignition sources away from the combustible core of the panel.

Suggested Controls:

- Always ensure that sparks or heat from cutting and welding is well separated from EPS panels.
- Never conduct cutting, welding, grinding or any other hot work directly on EPS panel.
- Do not mount electrical switches, panels, switchboards, or other electrical appliances directly onto EPS panels.
- Other ignition sources such as heaters, cookers, forklift rechargers and hazardous processes should not be located near EPS panels.
- Electrical panels and other equipment located in EPS areas should be maintained and tested on a regular schedule. Thermographic scanning should be undertaken on sub boards
- Hot services such as exhaust ducts and heating lines which pass through EPS panels should have non combustible insulated sleeves fitted to prevent heat being transferred to the panel.



## How do I attend to this?

1. Implement EPS Permit to work for own Staff and Contractors. Sample is attached
2. Undertake regular inspection to ensure there are no holes or open areas in the panels
3. Undertake annual thermoscanning of switch boards.
4. Implement "Hot Work" Permit system



## PERMIT TO WORK

### ON COMBUSTIBLE COMPOSITE BUILDING PANELS

**NO WORK** is permitted on combustible polystyrene “sandwich” panel, or any other composite building panels that have a core of combustible material, without a Permit. The White copy of this permit must be displayed prominently at the work site, and returned when work is completed.

Date: Permit No.: Issuer:

Building: Department: Area:

Work Required, and any special precautions needed:

Does the work require penetration of the non-combustible outer layers of the panels: Yes / No

If Yes, what tools will be used to cut the panels:

**Hot Work:** Is any Hot Work (cutting, welding, grinding, etc) being carried out, or due to be carried out, within 5 metres of the nominated work site during the validity period of the Permit: Yes / No

If Yes, has a Hot Work Permit been issued: Yes / No (Hot Work Permit No.: )

#### Checklist:

- Production staff in the area concerned have been advised.
- No heat producing cutting/drilling equipment to be used directly on the panels.
- Fire extinguisher or hoses reel available at the work site.
- Equipment will not be mounted directly on the panels unless through-bolted and properly supported.
- Electrical switches and fittings will not be recessed into the panel.
- All joints and exposed combustible material protected against sparks and flying hot fragments.

#### AUTHORISATION:

I have checked the location where the work is to be carried out and I am satisfied that all appropriate precautions have been taken.

This permit is valid for one shift only - From: am/pm On: / / To: am/pm On: / /

Production Dept. – Signed: Title:

Safety/Maintenance - Signed: Title:

#### OPERATOR

I understand that I am authorised to undertake on combustible building panels only as specified above.

Signed: Date:

#### FINAL CHECK

I have rechecked the location between 30 and 90 minutes after completion of the work and I am satisfied that the work has been carried out in a safe manner and there is no residual fire risk.

- All joint cover strips (vertical & horizontal) removed on the panel have been replaced.
- All holes in the non-combustible outer layers have been fitted with a permanent cover and sealed.
- All penetrations through the panel have been fitted with a metal bush or collar and sealed.
- There is no evidence of fire or hot panel surfaces in the areas where work has been carried out.
- All rubbish and combustible waste materials have been removed.

Signed: Title:

Date: Time:



# HOT WORK PERMIT

|                             |                   |   |       |
|-----------------------------|-------------------|---|-------|
| <b>Date:</b>                | ...../...../..... | <b>Full Name of Person Carrying Out Work:</b> | _____ |
| <b>Company:</b>             | _____             | <b>Signature:</b>                             | _____ |
| <b>Responsible Officer:</b> | _____             | <b>Fire Watch:</b>                            | _____ |

**Section A: To be completed prior to work**

| <b>WORK TO BE DONE (Description &amp; Location)</b> | <b>TIME OF ISSUE</b> | <b>TIME OF EXPIRY</b> |
|---|----------------------|-----------------------|
| _____<br>_____                                      | : am/pm              | : am/pm               |

| <b>PRECAUTIONS</b>  | <b>CHECKLIST</b>   | <b>IF "NO" DESCRIBE</b> |
|---|--|-------------------------|
| <b>Fire Protection</b>  |  |                         |
| 1. Sprinklers in service (If installed)   | <input type="checkbox"/> Yes <input type="checkbox"/> No |                         |
| 2. Detection systems isolated and impairment form completed   | <input type="checkbox"/> Yes <input type="checkbox"/> No |                         |
| 3. Portable extinguishers and fire hose reels available   | <input type="checkbox"/> Yes <input type="checkbox"/> No |                         |
| <b>Area Preparation</b>   |  |                         |
| 4. Floors swept clean of combustibles   | <input type="checkbox"/> Yes <input type="checkbox"/> No |                         |
| 5. Combustible floors wet down, covered with damp sand, metal or other shields  | <input type="checkbox"/> Yes <input type="checkbox"/> No |                         |
| 6. All combustible material or flammable liquids removed from the area  | <input type="checkbox"/> Yes <input type="checkbox"/> No |                         |
| 7. All wall and floor openings /penetrations appropriately sealed   | <input type="checkbox"/> Yes <input type="checkbox"/> No |                         |
| 8. Is surrounding construction non-combustible and without combustible coverings  | <input type="checkbox"/> Yes <input type="checkbox"/> No |                         |
| 9. Covers suspended around work to collect sparks   | <input type="checkbox"/> Yes <input type="checkbox"/> No |                         |
| 10. If working on enclosed equipment (tanks, containers, ducts, dust collectors, etc) has enclosed space precautions been taken | <input type="checkbox"/> Yes <input type="checkbox"/> No |                         |
| <b>Fire Watch</b>   |  |                         |
| 11. To be provided during and 60 minutes after work   | <input type="checkbox"/> Yes <input type="checkbox"/> No |                         |
| 12. Trained in the use of fire equipment and in sounding the fire alarm   | <input type="checkbox"/> Yes <input type="checkbox"/> No |                         |

**Section B: To be completed after work**

| <b>FINAL CHECK-UP</b> | <b>CHECKLIST</b> | <b>TIME WORK COMPLETED</b> |
|-----------------------|------------------|----------------------------|
|-----------------------|------------------|----------------------------|



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|  |  |              |
|--|--|--------------|
| Work area and all adjacent areas where sparks might have spread were inspected for at least 60 minutes after the work was completed and no fire conditions were noted. | <input type="checkbox"/> Yes <input type="checkbox"/> No | :      am/pm |
|--|--|--------------|

|  |                                       |
|--|---------------------------------------|
| <b>Signature of Operator:</b> _____                          | <b>Signature of Fire Watch:</b> _____ |
| <b>Signature of Responsible Office (If satisfied):</b> _____ |                                       |