

Insulated Panel Buildings - risk management

Helping our customers stay in business by reducing risk

Fire safety

Fire risk of expanded plastic insulated panel construction

Expanded polystyrene insulated panel (EPS) has been used as a building material in New Zealand for more than forty years. The product features a core of EPS with metal skins laminated on opposite sides creating a 'sandwich panel'. EPS is used extensively in buildings across the farming sector and food industry for external cladding and roofing of the building.

While EPS may be the practical choice for commercial builds, research shows it does not perform well in certain fires, which is a concern for fire safety and structural damage.

Fire risk of EPS construction

EPS is considered a high risk building material for commercial properties because polystyrene is a combustible thermoplastic that softens and melts when heated.

When it's involved in a fire EPS produces highly toxic smoke that can kill humans and livestock and contaminates farm contents and buildings.

In a fire the core material melts. With its structural strength lost, the panels buckle allowing the joints to expand and the steel covering to delaminate. This results in a complete loss of the building's structural strength which means an almost certain collapse. Buildings constructed from EPS panels can also cause major difficulties for fire fighters including:

- rapid fire spread
- loss of the building's structural integrity
- production of heat, smoke and toxins that may require evacuation of neighbours

It's worth noting there are alternative insulated panel construction products available that are fire resistant and meet the requirements of New Zealand insurers and the Building Code.

Minimising fire risk EPS

In order to minimise the risk of fires in foamed plastic insulated panels, we recommend you follow the guidelines below:

Ensure there is no bare exposure of any plastic core

- Repair any panel perforation (resulting in exposure of the plastic core) or other damage immediately.
- Keep all service penetrations through the panels sealed tight.
- Ensure all electrical wiring penetrations are in conduit and the correct electric cable used
- Ensure no potential exists for exposure of the plastic core to temperatures above 75°C including flues, vents and ducts
- Arrange for an inspection report of all electrical wiring and lighting from a registered electrician. complete any necessary remedial action without delay.
- Consider using a non-combustible insulating panel type for all future building extensions or alterations.

General fire safety

A proven method of controlling a coldstore fire is with a properly designed and maintained automatic sprinkler system.

Hand-operated fire extinguishers or hose reels are necessary to provide first aid fire protection

Fire extinguishers and hose reels

Best practice for a business premises is the installation of hand-operated fire extinguishers and/or hose reels.

- Accidental fires are more likely to occur during working hours due to the greater use of electrical equipment, heating and normal processes.
- Fire extinguishers should be installed by approved contractors and mounted on brackets with clear signage indicating their positions so they can be easily located in an emergency.
- They require annual servicing by approved contractors to ensure they remain ready for use and they should also be checked regularly by staff on site.
- Care should be taken to use the right type of fire extinguisher. Using the wrong fire

extinguisher on certain fires can sometimes have disastrous results e.g. never use water extinguishers on burning liquids or oils or electrical fires.

All fire extinguishers should be selected, installed and maintained in accordance with New Zealand standards NZS 4503:2005 and NZS 1850:2009. Your local fire protection company will be familiar with these Standards

Evacuation plan and drill

In the event of an emergency, the speed with which people can safely exit the building can mean the difference between life and death.

It is recommended that

- You have an evacuation plan and fire drill so you, your family and employees are aware of the procedure should evacuation become necessary
- Fire drills for family and staff can help agree evacuation plans and meeting areas, problems or danger areas, equipment problems or failures
- Fire exits and evacuation routes are checked to ensure they are not obstructed in any way.