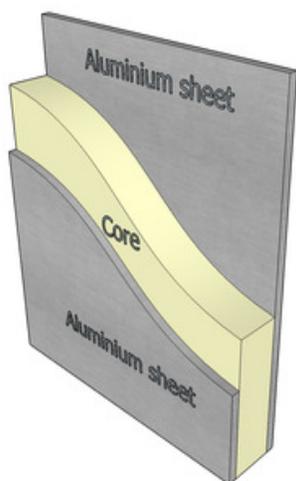


Sandwich Panel related fires have resulted in major property damage and business interruption losses over the years.

What are Sandwich Panels?

Sandwich Panels or Composite Panels are structures made up of three layers: a low-density core and a thin metal or plastic skin-layer bonded to each side. Over the years, they have been used extensively in external wall and roof construction of a wide variety of buildings, including cold storage, warehousing, hotels, exhibition halls, clean room environments and the food industry. Sandwich Panelling is also often used to construct internal structures within larger buildings.



Sandwich Panels are popular because they offer:

- Good insulation to curb heat / cold transmission.
- Reduces sound transmission.
- It is a lightweight building material.
- Provides for easy and speedy construction.
- Ease of wash down which is essential for many industries.
- Carries a relatively low cost.

The Risks of Sandwich Panels

The fire risks associated with certain types of sandwich panels should be fully understood as building control legislation does not consider the full implications in this regard.

Both combustible and non-combustible sandwich panels are available on the market, however, panels with non-combustible cores are often more expensive and cannot be used in all industries. Panels with a mineral wool core,

which is preferred by Insurers, cannot be used in the cold storage industry and are more expensive than other types of panels. Most sandwich panel cores are made of combustible materials such as polystyrene and polyurethane foam.

The main risks posed by combustible sandwich panels include:

- Potential rapid fire spread within the panel due to the high combustibility of the core material.
- The concealed core poses difficulty when fighting such a fire.
- The melting polystyrene core creates a spreading burning liquid fire, which increases the rate of the spread of fire.
- The materials when burnt, release a dense corrosive and toxic smoke.

When a sandwich panel core catches fire, its chemical nature makes it difficult to extinguish and contain. This makes it very difficult and dangerous for the fire brigade to fight such a fire and they may often be limited to the use of defensive fire-fighting tactics. Their main focus will therefore be on the prevention of loss of life, and the further spread of fire to neighbouring properties.

In the event of a fire in a building that utilizes sandwich panels, the large quantities of dense black smoke creates significant difficulty to fire-fighters when faced with an intense fire and the following conditions apply:

- Rapid fire spread, which can lead to flashover conditions thus limiting the operational ability of the attending fire crews,
- Sudden local collapse of sandwich panel systems may pose a risk towards occupant (including fire-fighter) life safety,
- Structural collapse may also limit Fire Brigade access and therefore restrict fire-fighters to a defensive fire attack,
- Intense heat and smoke may hinder Fire Brigade set-up and initial fire attack by limiting the effective distance from the building and/or area of fire origin.

- Reliance will be placed on external attack from aerial type fire appliances,
- An internal attack in many instances may not be possible, hence restricting fire-fighting personnel from conducting search and rescue, fire containment and extinguishment activities,
- The environmental conditions maybe extremely hazardous as a result of the harmful acrid smoke produced by the core material of the sandwich panels. Smoke inhalation may present a serious health and safety risk to occupants and fire-fighters.

It is therefore of the utmost importance that clients understand the need for sound risk management practice within their organisations, as well as the importance of a well designed and implemented fire prevention programme to manage their risks.



Controlling the Fire Hazards

To effectively control the fire hazards involved, it is imperative to have both human and physical controls in place.

The human controls aim to reduce the likelihood of a fire occurring and ensure an effective response in the event of a fire. Important human elements to consider include:

- Ensuring that management loss prevention programmes are implemented and followed. This includes good housekeeping, self-inspections, smoking controls and emergency organisation regulations.
- Identifying and labelling all combustible core sandwich panels and regularly inspecting them for damage that exposes the core. Where the core is exposed, this should be repaired as quickly as possible with fire retardant materials.
- Combustible materials and flammable liquids should not be stored near the panels.

- Infrared thermography inspections should be conducted at least annually to identify electrical hot spots and any deficiencies should be addressed immediately.
- Implement an appropriate permit to work procedure whenever work is undertaken on or near panels.

Physical element controls aim to reduce or mitigate the damage in the event of a fire. Physical controls that should be considered:

- For new buildings, extensions or replacements every effort should be made to use panels containing non-combustible materials, such as mineral wool and fibreglass.
- Where combustible panels cannot be avoided, ensure to use panels that have undergone an appropriate test and approval process.
- Panels should be firmly fixed to the building frame in line with manufacturer's installation guidance to reduce early delamination of the facing in a fire.
- Provide automatic sprinkler protection to an appropriate standard.
- Impact barriers should be installed to mitigate physical damage to the panels.
- Penetration through the panel should be avoided, but where necessary, cables or services that pass through should be contained within non-combustible housing and openings sealed with fire-stopping materials.
- Direct mounting of equipment and machinery should be prohibited.

For further information on Sandwich Panel risks, please contact RMS.

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