

Insight: Insulated Metal Panels

Recognizing the Risk

Insulated Metal Panels (IMPs), also referred to as “sandwich panels”, can present a hidden fire hazard that has contributed to numerous large fire losses. Traditionally common in refrigerated spaces and food manufacturing, IMPs have gained in popularity for use in construction of many other applications from manufacturing to high rise commercial office buildings. There are numerous advantages to using IMPs including shorter construction times, lower cost, and providing a finished washable surface. But use of IMPs can come with increased fire risk depending on what type of insulation core is used.



The IMPs can appear innocuous once they are installed since only their metal facings are visible. These noncombustible surfaces conceal the insulating core, for which numerous insulation types are available. These different insulating materials create a full spectrum of fire risk for IMPs with some capable of rapid, uncontrolled fire spread. See Figure 1, below for a comparison of the fire hazard posed by the most common insulation core types on the market today.

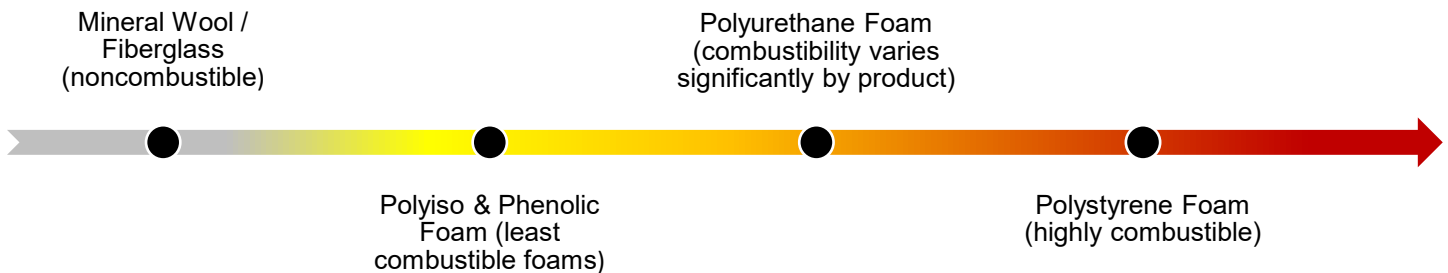


Figure 1 Typical Combustibility Range of IMP Insulation Types

IMPs have undergone extensive laboratory fire testing over several decades which has shown that those with combustible insulation can present a unique challenge to ceiling sprinkler systems and manual firefighting efforts. Numerous examples of fires involving IMPs occur around the globe each year. Case studies and laboratory testing clearly show that fire will self-propagate through IMPs containing polystyrene and some polyurethane insulations.

Once a fire is established within an IMP core, it can spread behind the metal facing of the wall panels where it is shielded from sprinkler discharge and hose streams. And rapid delamination, caused by the intense heat, will expose more insulation (i.e. fuel for the fire) and allow more oxygen to reach the fire. An added challenge with IMPs using a polystyrene core is the risk of an ignitable liquid pool fire forming at the base of the wall from the melted insulation. Composite panels are another construction product and similar to IMPs but have facings made from or containing plastics and typically pose an even greater fire hazard than metal-faced IMPs.

Even when an IMP fire is controlled by sprinklers and/or manual response, the smoke damage can still be devastating. Burning plastic insulation, by its nature, releases large amounts of thick, black smoke that can be both corrosive and toxic. While the fire may be contained to a small area, smoke could fill a large part of the building, exposing building materials and contents. And restarting operations after a fire can be delayed by weeks or more to allow time for widespread clean-up, decontamination, and recertification of products and processes.

Controlling the Hazard

There are several recommended actions depending on various factors and detailed evaluation.

For new construction: select only insulated metal panels that are non-combustible or contain foam insulation that is of low combustibility as certified / listed by a nationally recognized testing agency.

For existing buildings: first investigate the type of insulation within the IMPs as well as the manufacturer and model name of the panels. Risk improvement solutions may include covering the panels with thermal barriers, installing or upgrading sprinkler protection, and/or replacing the panels with alternative certified/listed products that are noncombustible.

Managing the Risk

While sprinkler protection modifications, panel replacement, or covering are not always practical, good loss prevention management programs can help in reducing the likelihood and severity of a fire. Critical risk management actions include:

- Safely managing all hot work operations by using AIG's Hot Work Permit Program with hot work being prohibited on or near IMPs without extraordinary measures.
- Maintaining safe separation distances between IMPs and heat or ignition sources such as battery chargers, refrigeration equipment, electrical equipment, processes using ignitable liquids, hydraulic systems, lube oil, etc.
- Maintaining safe separation distances between IMP interior and exterior faces and combustible storage -always ensuring clear wall perimeter aisles for IMP inspection and maintenance.
- Educating local fire departments and first responders on the nature of the hazard, emergency response coordination and location of the IMPs; including providing drawings highlighting the IMPs and other site-specific hazards.
- Implementing an inspection and maintenance program for IMPs to identify and correct loose panels, impact damage, exposed insulation, combustible storage near the panels, etc.
- Completing infrared surveys of electrical equipment and rotating machinery to mitigate possible ignition sources.

References & Resources

AIG Insight: Control of Contractors

AIG Insight: Hot Work

[For more information, contact your local AIG Risk Engineer.](#)

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