EXTERIOR WALL ASSEMBLIES

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1.0 SCOPE

This data sheet provides property loss prevention recommendations for the exterior wall assembly categories listed below.

- Single-skin panel
- Insulated metal panel (IMP)
- Metal composite material (MCM)
- High pressure laminate (HPL)
- Other types of assemblies containing cavities or air gaps
- Wall-Mounted, Building-Integrated Photovoltaic (BIPV) Façade Systems

This document consolidates content from other data sheets and serves as the hub for this portion of construction. Depending on the topic, there may be limited guidance or reference to other applicable standards.

1.1 Hazards

Exterior wall assemblies are critical to protecting a facility and its contents from exposure to natural hazards and exterior fire. Maintaining the integrity of this portion of construction is essential for loss prevention.

1.1.1 Natural Hazards

Exterior wall assemblies face multiple natural hazards such as wind, wind-driven rain, windborne debris, and hail. When these hazards damage the exterior walls, the consequences can extend throughout the facility, causing process interruptions and direct property damage to both the building and its contents. Natural hazard exposure can also drive insidious losses through moisture intrusion, reduced thermal performance, and deterioration of interior finishes and contents.

1.1.2 Exterior Fire Exposure

Significant thermal damage can occur to exterior wall assemblies when subjected to hazards related to external or internal fire exposure, including the following:

- Flame propagation through exterior windows during interior flashover
- Adjacent structure fires
- Improperly located external combustible materials (such as dumpsters, vehicles, or stored goods)
- Wildland fire exposures
- Arson

Many existing fire test methods for exterior wall systems do not fully represent real world fire exposures, and recent fire events have demonstrated limitations in current test protocols. This reinforces the need for careful evaluation of materials and configurations used in exterior wall assemblies.

1.2 Changes

October 2026. This is the first publication of this document.

2.0 LOSS PREVENTION RECOMMENDATIONS

2.1 Introduction

All recommendations are intended to supplement, not supersede, the requirements of FM Approved products or assemblies.

Refer to Table 2.1 for supplemental recommendations by listed subject.

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Table 2.1. Data Sheet References

Subject	*FM Property Loss Prevention Data Sheet*
Storage of building materials during construction	1-0, *Safeguards During Construction*
Exterior fire exposure	1-20, *Protection Against Exterior Fire Exposure*
Wind design pressures	1-28, *Wind Design*
Hail exposure	1-34, *Hail Damage*
Protection of exterior walls from electrical equipment and vehicles	5-4, *Transformers* 5-19, *Switchgear and Circuit Breakers* 7-39, *Material Handling Vehicles*
Avoiding hot work around plastic construction materials	10-3, *Hot Work Management*

2.1.1 For buildings under construction, limit storage of plastic building materials, in accordance with Data Sheed 1-0, *Safeguards During Construction*.

2.1.2 Store combustible materials away from buildings in accordance with Data Sheed 1-20, *Protection Against Exterior Fire Exposure*.

2.1.3 Do not conduct hot work around plastic construction materials since these areas are considered high-risk areas per Data Sheed 10-3, *Hot Work Management*. Use the FM Hot Work Permit System to supervise hot work operations in accordance with Data Sheet 10-3.

2.1.4 Refer to Data Sheet 5-4, *Transformers*, Data Sheet 5-19, *Switchgear and Circuit Breakers* and Data Sheet 7-39, *Material Handling Vehicles*, for guidance on spacing electrical equipment and material handling vehicles near plastics or combustible construction.

2.2 Construction and Location

Install wall assemblies meeting the applicable recommendations in the standards listed in Table 2.1 in addition to A or B:

A. For exterior walls requiring a specific fire endurance rating, install the more conservative of either what is required by code or recommended by the applicable FM Data Sheet.

B. For exterior walls not requiring a specific fire endurance rating, install either FM Approved exterior wall assemblies or assemblies consisting entirely of noncombustible components.

FM Approved exterior wall assemblies and fenestration products are tested in accordance with the FM Approvals Examination Standards in Table 2.2 and can be found in the *Approval Guide*, an online resource of FM Approvals. Using individually FM Approved components that have not been FM Approved for use together does not constitute an FM Approved exterior wall assembly.

Table 2.2. FM Approvals Examination Standard References

Product Category	*FM Approvals Examination Standard*
Wind resistant windows, doors, and shutters	FM 4350, *Examination Standard for Windstorm Resistant Fenestrations*
Cavity wall assemblies	FM 4411, *Examination Standard for Cavity Wall Systems*
Building integrated photovoltaic modules installed on exterior wall surfaces	FM 4483, *Examination Standard for Building Integrated Photovoltaic Wall Mounted Systems*
Exterior wall systems without air gaps	FM 4881, *Examination Standard for Class 1 Exterior Wall Systems*

2.2.1 General Guidance

2.2.1.1 Fire

Apply the recommendations in this data sheet to reduce fire spread within exterior wall assemblies exposed to exterior fires. For recommendations related to interior exposure fires including protection, refer to data sheets covering specific hazards and protection.

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2.2.1.2 Impact (Hail and Windborne Debris)

Install exterior wall assemblies, doors and windows with impact ratings for the hail and/or windborne debris exposure determined in accordance with Data Sheets 1-34, and 1-28, respectively.

2.2.1.3 Wind

Install exterior wall assemblies, doors and windows rated for the wind pressures and windborne debris resistance determined in accordance with Data Sheet 1-28.

2.2.2 Single-Skin and Insulated Metal Panels (IMPs)

This section does not apply to wall assemblies that include cavities/air gaps or the following:

- Metal composite material (MCM) (refer to Section 2.2.3)
- High pressure laminate (HPL) (refer to Section 2.2.3)
- Cavity walls (refer to Section 2.2.4)
- Wall-Mounted Building-Integrated Photovoltaic (BIPV) (refer to Section 2.2.5)
- Exterior wall coating systems.

2.2.2.1 Install FM Approved assemblies in accordance with the FM Approval listing under FM Class 4881.

2.2.2.2 Refer to Data Sheet 1-57 for recommendations related to the interior side of wall assemblies including interior fire exposure and protection.

2.2.2.3 Arrange insulated metal panels to avoid creation of concealed spaces per Data Sheet 1-57.

2.2.2.4 Where FM Approved products or assemblies are not available, refer to recommendations A through C.

A. Secure polyurethane or polyisocyanurate core insulated panels vertically (Figure 2.2.2.4-1) by through fastening (bolts or screws) at the top and bottom of each panel and then fastening at the intermediate members of the inner skin every 10 ft (3 m) vertically. For locations not prone to tropical cyclone as defined in DS 1-28, panels may span up to 27 ft (8 m) horizontally and are secured at the building columns only. Provide joint securement per the insulated metal panel section of DS 1-57.

B. Secure polyurethane or polyisocyanurate core insulated panels with panel securement (Figure 2.2.2.4-2) to the structural framework every 10 ft (3 m) or less (horizontally) and at each structural upright. For locations not prone to tropical cyclone as defined in DS 1-28, panels may span up to 27 ft (8 m) horizontally and are secured at the building columns only. Provide joint securement as recommended in the insulated metal panel section of DS 1-57.

C. Secure polyurethane or polyisocyanurate core insulated panels vertically with channel securement by fastening at the top and bottom of each panel and fastening at the intermediate members of inner skin a maximum of every 10 ft (3 m) vertically (Figure 2.2.2.4-3). For locations not prone to tropical cyclone as defined in DS 1-28, panels may span up to 27 ft (8 m) horizontally and are secured at the building columns only. Provide joint securement per the insulated metal panel section of DS 1-57.

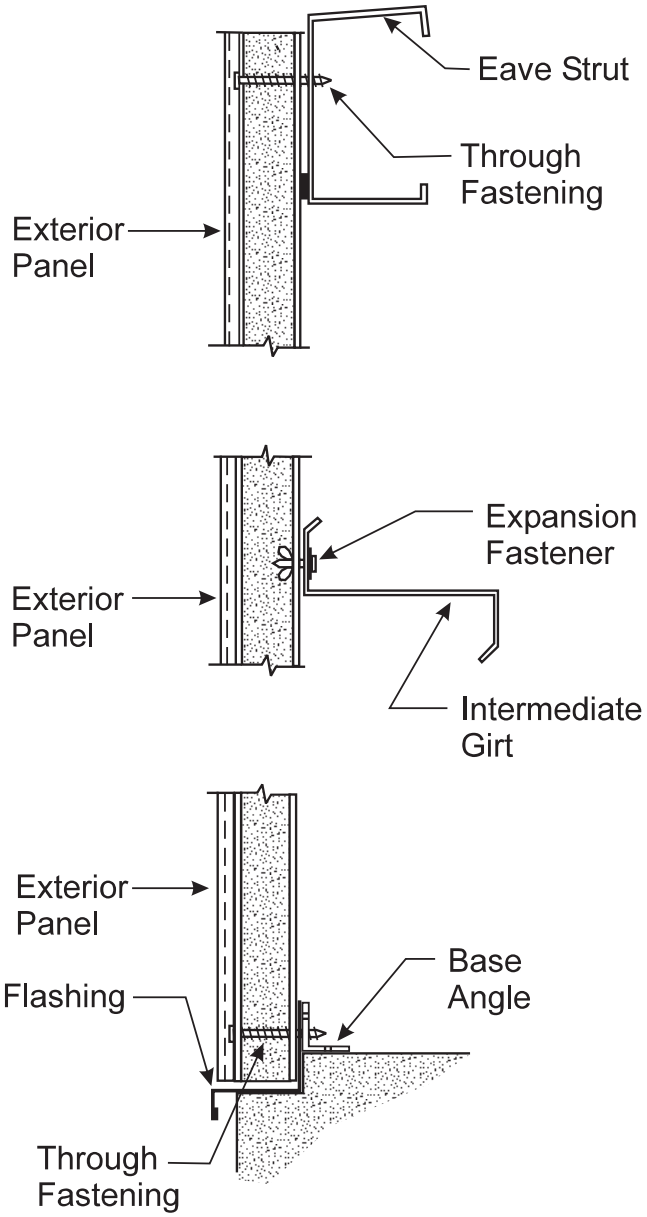
2.2.3 Metal Composite Materials (MCM) and High-Pressure Laminate (HPL)

2.2.3.1 Install FM Approved MCM and HPL in accordance with the FM Approval listing under FM Class 4411.

2.2.4 Other Types of Assemblies Containing Cavities or Air Gaps

This section applies to assemblies that include a cavity or air gap but do not fit the category of MCM, HPL, or BIPV. This includes assemblies that may be referred to by design professionals as high-performance building envelopes in which a cavity or air gap is present.

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NOTES:
1. If supports (girts) are 10 ft (3 m) OC or less (approx) then no additional panel joint securement (battens, stitch screws, etc.) is needed.
2. If panel joints are metal tongue and groove no additional joint securement is needed.

Fig. 2.2.2.4-1. Wall panel securement with through fastening

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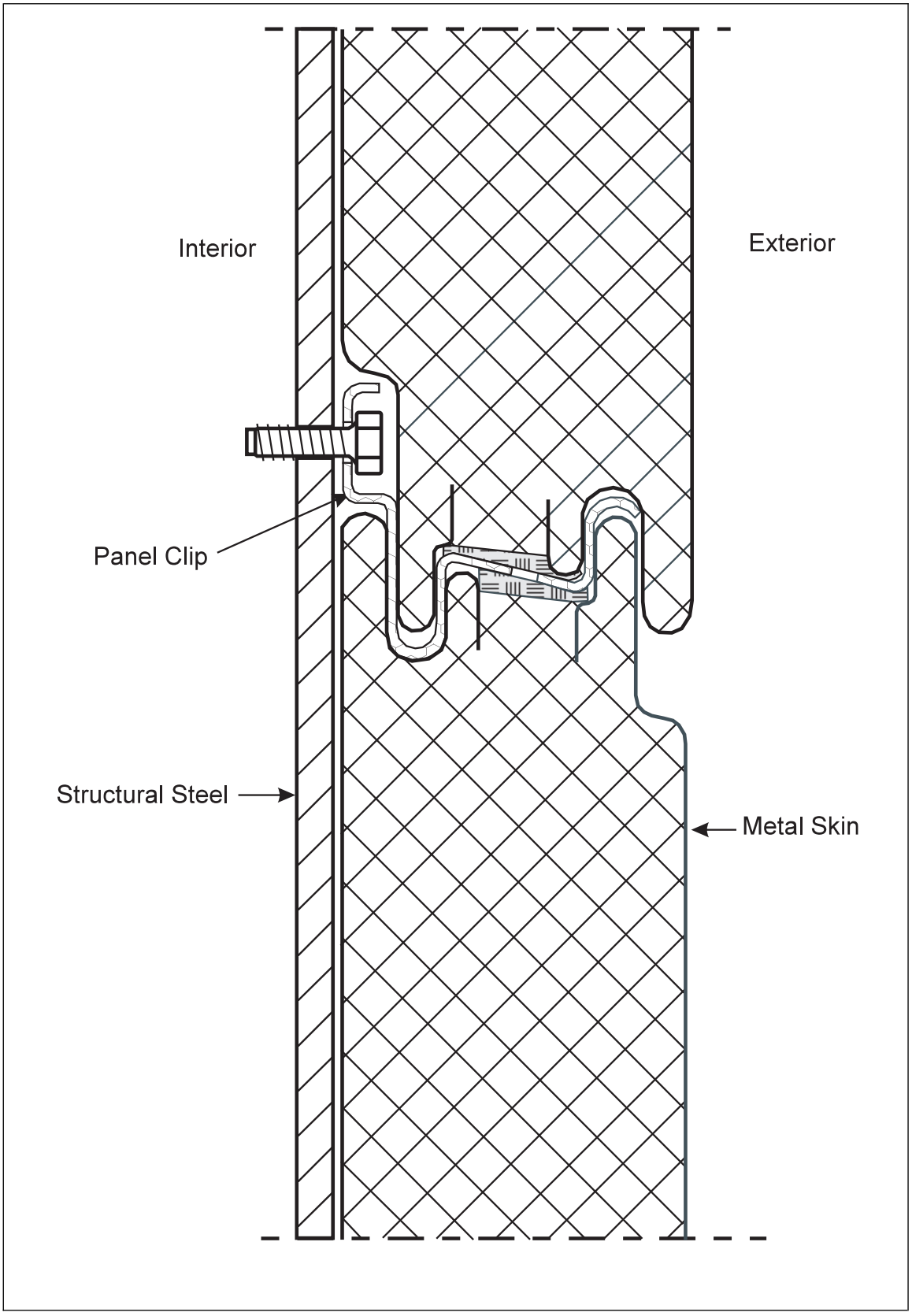


Fig. 2.2.2.4-2. Panel clip with tongue-and-groove joint

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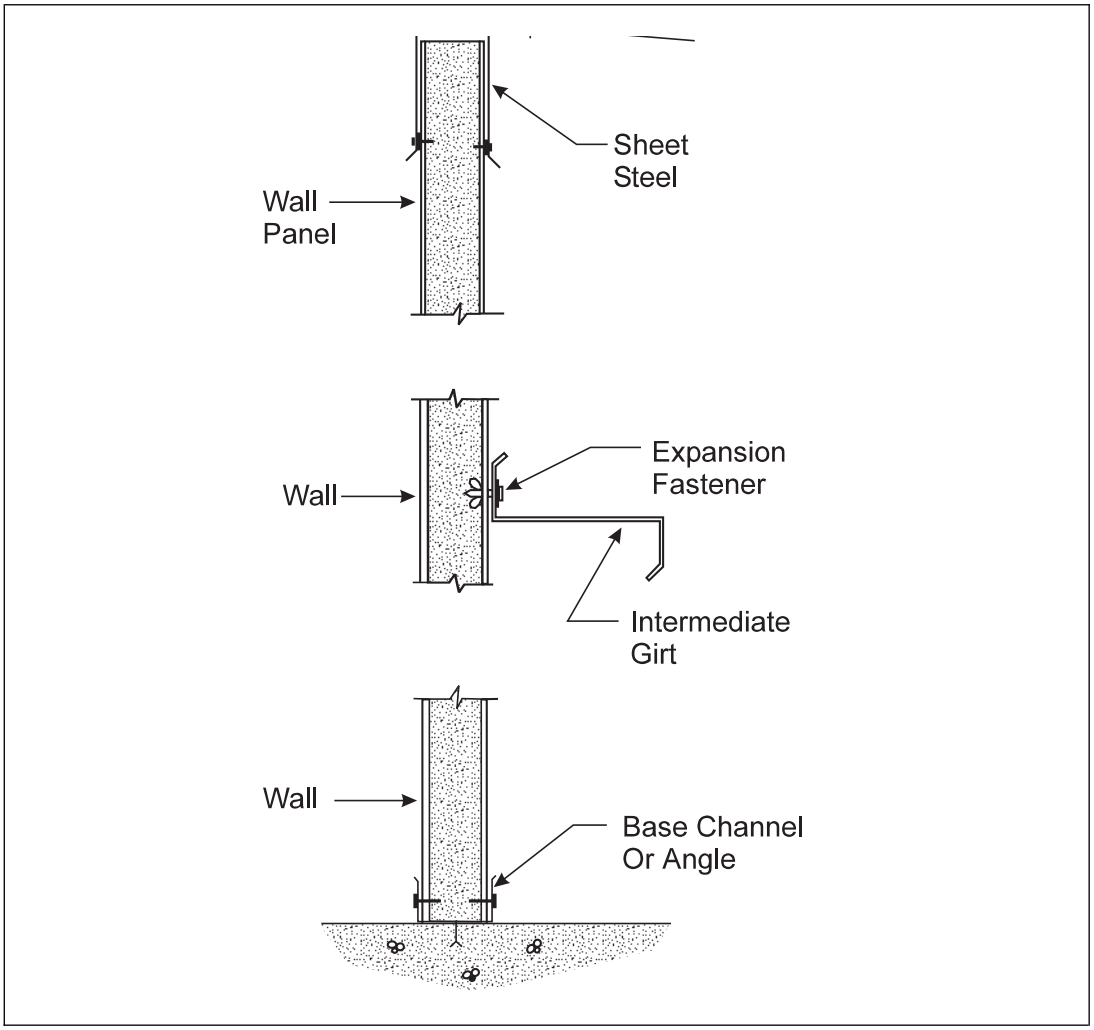


Fig. 2.2.2.4-3. Wall panel with channel securement at the top and bottom

2.2.4.1 Install one of the following types of assemblies:

A. FM Approved assembly in accordance with the FM Approval listing under FM Class 4411.

B. Assembly consisting of all of the following:

1. Noncombustible cladding/rainscreen
2. Noncombustible insulation
3. Weather resistive barrier (WRB) covered by noncombustible insulation.

2.2.5 Wall-Mounted Building-Integrated Photovoltaic (BIPV) Façade Systems

2.2.5.1 Install FM Approved wall mounted BIPV façade systems in accordance with the FM Approval listing under FM Class 4483.

2.3 Operations and Maintenance

2.3.1 Punctures and Penetrations

2.3.1.1 Maintain thermal and sheathing material barriers free of punctures, holes, or other damage that exposes the insulation. Fill small penetrations with an FM Approved firestopping material.

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2.3.1.2 Repair thermal barriers and sheathing materials by placing a similar material or a metal plate over the damaged areas. If using sheathing materials, overlap the damaged area by at least 1 in. (2.5 cm) and secure in place with self-tapping screws.

3.0 SUPPORT FOR RECOMMENDATIONS

3.1 Loss History

3.1.1 Illustrative Losses

3.1.1.1 The Grenfell Tower Fire

The Grenfell Tower fire is a prominent example of a unsprinklered residential building with a highly combustible exterior facade. MCM panels were applied to the exterior of the building, and comprised of a polyethylene core, ventilated cavity and polyisocyanurate foam behind the panel. The fire started within an unsprinklered dwelling unit and ultimately created a post flash over fire which spread through the window framing to the exterior facade. Once the exterior MCM panels were exposed to the fire, fire spread rapidly up the building exterior. As the fire spread vertically, the fire spread into the building and ultimately to the entire exterior of the façade. The use of polyethylene core panel, combustible insulation and the ventilated cavity led to the rapid-fire spread.

3.2 Construction and Location

3.1.1 General

Some assemblies will not align with one of the categories in this document. This document should not be considered comprehensive, but rather a guide of recommendations by FM for those assemblies for which there is sufficient experiential history.

3.2.2 Insulated Metal Panels (IMPs)

For additional background information on IMP, refer to Data Sheet 1-57, Section 3.2.1.

3.2.3 Metal Composite Materials (MCM) and High-Pressure Laminate (HPL)

Metal composite panels are made from three common materials: aluminum, steel, and zinc. Sandwiched between the two metals is a composite core, which is made from plastics. Aluminum is the most common and these are referred to as ACM panels (aluminum composite material) by the industry. These assemblies generally include both insulation and a weather resistive barrier (Figure 3.2.3), as well as the ACM/MCM panels. FM uses the term MCM to cover all three metals. Information on testing of zinc panels is not available, but zinc will have a lower melting point than aluminum.

3.2.3.2 High Pressure Laminates

3.2.3.2.1 (Reserved)

3.2.4 Other Types of Assemblies Containing Cavities or Air Gaps

High-performance building envelopes are designed to separate the exterior and interior elements. These envelopes are specifically designed to stop air leaks, drafts, and moisture infiltration. This design is achieved mainly by delineating and installing a WRB to control infiltration and moisture. Most high-performance building envelopes contain an air gap, insulation (exterior and interior), and a WRB. A properly designed, high-performance building envelope assists in reducing heating and colling demands, thereby reducing energy consumption.

3.2.4.1 Cavity Walls

Cavity wall fire tests were conducted using noncombustible outer panels, insulation of various types adhered to a noncombustible substrate with water-based adhesive, and a 2 in. (50 mm) air space.

A side-by-side test in which one assembly used 4 in. (100 mm) expanded glass (EG) as the insulation and the other 4 in. (100 mm) expanded polystyrene (EPS) as the insulation resulted in almost no involvement

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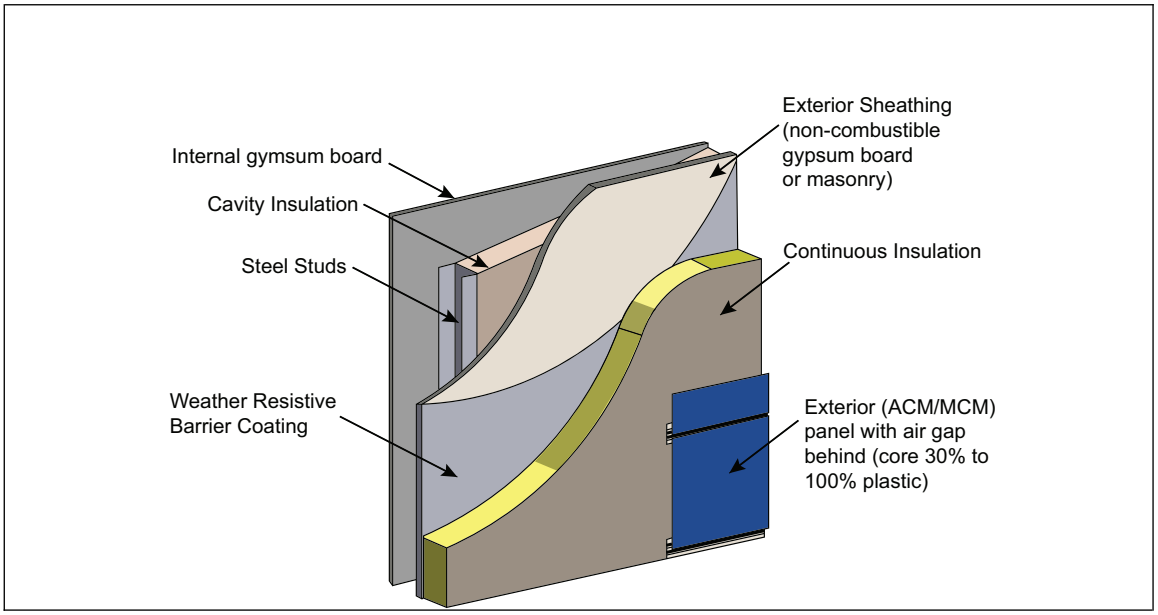


Fig. 3.2.3. Example of a complete cladding assembly system

for the EG assembly; conversely, the EPS assembly burned to the end of the array, produced considerable black smoke, and failed. See Fig. 3.2.4.1-1 for EPS burning/smoke and Fig. 3.2.4.1-2 for the side-by-side comparison.

Additional tests with two brands of 2 in. (50 mm) extruded polystyrene insulation produced considerable flaming and smoke, with foam consumed along the full top length of both assemblies.

A further test using FM Approved, 4 in. (100 mm) thick, foil-faced polyisocyanurate insulation was successful.

3.2.5 Building Integrated Photovoltaic (BIPV) Facade System

Unlike roof-mounted photovoltaics (PV), wall-mounted BIPVs are integrated into the façade construction of the building. These BIPV modules are similar in appearance and mounting details to MCM panels, which include an air cavity behind the module. Flexible BIPV panels that adhere directly to existing facades, without an air cavity, are also available.

The PV modules mounted on the wall of facades are commonly referred to as BIPV façade systems. The term BIPV can also be used for curtain wall glass systems or skylights that have photovoltaics constructed within the unit.

Some countries will complete fire testing of BIPV modules using a combination of small bench scale component testing and/or unrepresentative sloped roof testing. These tests are not adequate to determine the fire hazard of a wall-mounted façade system.

No standardized testing is globally available for BIPV façade systems. In the United States, the 2024 edition of the IBC requires testing of PV modules to UL 1703, which is the photovoltaic sloped-roof-fire test. The code allows installation of tested PV modules in a vertical position to construct BIPV facades, which have greater fire propagation risk than a rooftop system as tested under UL 1703. See FM Data Sheet 1-15, *Roof-Mounted Solar Photovoltaic Panels*.

A recent external study (R. Stølen, T. Li, T. Wingdahl, and A. Steen-Hansen, ″Large- and small-scale fire test of a building integrated photovoltaic (BIPV) façade system,″ *Fire Safety Journal*, vol. 144 p. 104083, 2024. https://doi.org/10.1016/j.firesaf.2023.104083) using large-scale SP-105 façade test standard with glass-plastic BIPV module over gypsum backing and a 2.6 in. (65 mm) cavity resulted in a failure. The flames reached the top of the setup approximately 30 minutes from the ignition and produced falling debris. Falling debris is common with BIPV panels, as the glass breaks due to heat fluxes. Glass breakage of PV panels on a façade will expose the combustible core encapsulants and cells, contributing to fire growth within the cavity.

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Fig. 3.2.4.1-1. Fire test of cavity wall assembly using foam polystyrene insulation

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Fig. 3.2.4.1-2. Side-by-side comparison of EG assembly (on the left) and EPS assembly (on the right)

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FM Research conducted a project to investigate fire propagation with respect to BIPV facades using the 16 ft Parallel Panel Test (PPT) of FM Approval Standard 4411. The research project focused on wall-mounted BIPV façade systems, including cavity-wall systems and flexible BIPV modules.

The following test data is provided for information only. Table 3.2.5-1 shows the module size, thickness of the panel, encapsulant and the current fire testing certifications. BIPV modules typically consist of a solar cell encapsulated between high strength tempered glass layers, with each glass layer approximately 2 to 6 mm thick.

Table 3.2.5-1. Testing of BIPV Façade Panels

Sample and Tech	*Module Sizem x m*	*Total Thickness (mm)* *Superstrate Thickness (mm)* *Substrate Thickness (mm)*	*Encapsulant and Thickness (mm)*	*Fire Testing Certifications*
a–4mm (sc-Si)	1.6 x 0.7	Total: 9 Glass Superstrate: 3.9 Glass Substrate: 3.9	POE, PET, PE, PPE Superstrate: 0.6 Substrate: 0.6	DIN EN13501-1: B-s1, d0
b–3mm (CIGS)	1.6 x 0.7	Total: 5.5 Glass Superstrate: 3 Glass Substrate: 2.1	POESuperstrate: 0.2 Substrate: 0	UL 790: Class C DIN EN13501-1: B-s2, d0
g–4mm (sc-Si)	1.7 x 1.0	Total: 9.8 Glass Superstrate: 4 Glass Substrate: 4	EVA Superstrate: 0.9 Substrate: 0.9	UL 1703 passed EN 13501-1
g–6mm (sc-Si)	1.7 x 1.0	Total: 13.8 Glass Superstrate: 6 Glass Substrate: 6	EVA Superstrate: 0.9 Substrate: 0.9	UL 1703 passed EN 13501-1
FlexPV (CIGS)	2.6 x 1.0	Total: 1 PET Superstrate: 0.4 PET Substrate: 0.4	TPO Superstrate: 0.2 Substrate: 0	UL 1703: Class A

Note: sc-Si: single-crystal silicon
CIGS: Copper-indium-gallium-diselenide
mc-Si: multi-crystalline silicon
POE: Polyolefin
PET: Polyethylene terephthalate
PE: Polyethylene
PPE: Polyphenylene ether
EVA: Ethylene vinyl acetate
ETFE: Ethylene Tetrafluoroethylene
TPO: Thermoplastic POE

Table 3.2.5-1 provides information collected during the FM Research testing program, showing the peak heat release rate, cavity thermal couple (CTC), surface thermal couple (STC), peak heat flux (HFG) and peak burnt heights. Table 3.2.5-1 and Table 3.2.5-2 are connected to show product information and testing results. FM Research conducted tests with BIPV modules in both uncharged (open-circuit – OC) and maximum power (MP) charged states. Charging a BIPV module can increase fire-spread hazards but is dependent upon factors such as, glass thickness, cavity restrictors and the module type (double-sided glass or flexible). However, test on non-propagating BIPV systems show minimal differences between charged and uncharged states. This difference indicates that the charge status may not have a clear effect on non-propagating BIPV modules and systems.

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Table 3.2.5-2. Compilation of the 16-ft PPT Results, Including Uncharged and Charged Tests

Sample and Configuration	*Peak HRR (kW)*	*Peak CTC @12 ft (3.7 m) °F (°C)*	*Peak STC @15 ft (4.6 m) °F (°C)*	*Peak HFG @16 ft (4.9 m) (kW/m²)*	*Peak Burnt Height ft (m)*		*Pass/ Fail*
					Cavity	Exterior	
a–4mm OC	1400	1070 (576)	80 (27)	10	16 (4.9)	14 (4.3)	Fail
a–4mm MP	2300	1340 (727)	440 (227)	20	16 (4.9)	16 (4.9)	Fail
b–3mm OC	1150	1286 (697)	350 (176)	10	16 (4.9)	16 (4.9)	Fail
g–4mm OC	1600	1178 (637)	458 (237)	30	16 (4.9)	16 (4.9)	Fail
g–4mm MP	2450	1214 (657)	368 (187)	20	16 (4.9)	16 (4.9)	Fail
g–6mm OC	780	242 (117)	206 (97)	< 2	< 8 (2.4)	< 8 (2.4)	Pass
g–6mm MP	850	260 (127)	206 (97)	< 2	< 8 (2.4)	< 8 (2.4)	Pass
FlexPV OC	11000	NA	--	180	NA	16 (4.9)	Fail
FlexPV MP	10900	NA	1700 (927)	180	NA	16 (4.9)	Fail

Note: OC – Open Current
MP – Maximum Power
CTC – cavity thermal couple
STC – surface thermal couple
HFG – Peak heat flux

All BIPV panels tested were comprised of a glass-glass module with mineral wool insulation in the cavity. Primary fire hazards are related to shattering of the glass, cavity fire spread, and the burning of cables and plastic encapsulants. This variability confirms the need to assess the entire system, such as panels, electrical cables, insulation, air cavity and mounting systems, as these can affect the outcomes. The research resulted in a new FM Approvals Examination Standard (see FM 4483 for performance criteria).

The 16-ft PPT results for uncharged BIPV cavity-wall façade systems effectively captured the fire spread dynamics. During the tests, propane flames from the burner shattered the bottom BIPV glass modules, allowing flames to enter the cavity. Fire propagation within the cavity was driven by pyrolysates from cables and plastic encapsulants released after the shattering of substrate glass. As the fire spread up the cavity, flames spilled over the exterior through various joint openings, eventually causing the adhesives (used to mount modules) to burn and significant flaming debris to fall onto the burner. The falling and shattering of BIPV modules onto the propane burner ignited the combustible plastic encapsulants, causing further Heat Release Rate (HRR) spikes. The results highlighted the need to evaluate the complete BIPV façade system using a relevant, large-scale façade fire test such as the 16-ft PPT.

The results from the flexible BIPV tests revealed accelerated flame spread, with a maximum flame height much higher than the 16 ft (4.9 m) height of the setup. The peak HRR measured approximately 11 MW within 100 seconds of ignition for both OC and MP tests. Unlike the double-sided glass BIPV cavity-wall systems, the laminated plastic superstrate of the flexible BIPV allowed surface flame spread to dominate the vertical fire growth.

3.2.6 Concrete Walls Filled with Foam Plastic-Based Insulation

Thermoset foam plastics like polyurethane and polyisocyanurate typically char when exposed to fire compared to thermoplastics, like polystyrene, that tend to soften and creep or flow when exposed to heat. Consequently, thermoset foam plastics tend to perform more favorably from a fire spread perspective particularly when installed in a vertical orientation.

Encapsulation of foam plastic within a concrete wall is a positive factor, but exterior fire exposure from storage near or against walls remains a concern based on loss history. Due to variability in construction practices and potential exposures, the best advice of FM is to use materials in this application that have passed fire testing in accordance with ANSI/FM 4880.

4.0 REFERENCES

4.1 FM

Data Sheet 1-0, *Safeguards During Construction*
Data Sheet 1-20, *Protection Against Exterior Fire Exposure*
Data Sheet 1-28, *Wind Design*
Data Sheet 1-57, *Plastics in Construction*
Data Sheet 5-4, *Transformers*

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Data Sheet 5-19, *Switchgear and Circuit Breakers*
Data Sheet 7-39, *Material Handling Vehicles*
Data Sheet 10-3, *Hot Work Management*

4.2 FM Approvals

Class Number 4411, *Examination Standard for Cavity Wall Systems*
Class Number 4881, *Examination Standard for Class 1 Exterior Wall Systems*
Class Number 4483, *Examination Standard for Building Integrated Photovoltaic Wall Mounted Systems*

FM *Approval Guide*

APPENDIX A GLOSSARY OF TERMS

Approval Guide: An online resource of FM Approvals that lists FM Approved products and services.

Building, low-rise: Any building with an occupied floor located less than or equal to 75 ft (23 m) above the lowest level of fire service vehicle access.

Building, high-rise: Any building with an occupied floor located more than 75 ft (23 m) above the lowest level of fire service vehicle access with the following exceptions:

- Airport traffic control towers
- Open parking garages
- Amusement park structures
- Bleachers
- Grandstands
- Stadiums
- Special industrial buildings (i.e., BLRB)
- Buildings with high-hazard occupancies

Cavity: The portion of a cavity wall assembly between the interior surface of the exterior façade and the outer surface of the inner structure of a cavity wall assembly. A cavity includes an air space and may include connections for the wall assembly, insulation, air retarders, and other components of the wall assembly.

Cavity wall assembly: Exterior wall constructions typically consisting of two layers of wall surfacing or sheathing separated by a cavity. Components that may be present inside the cavity include, but are not limited to, insulation, thermal barriers, WRB, and air and moisture retarders

Rainscreen assemblies are sometimes considered a type of cavity wall system (depending on the source) where the exterior facade is vented or ventilated allowing for drainage and evaporation (ventilated) inside the cavity.

Composite metal hybrid sub-framing system: A hybrid support system used in the exterior façade to hold a rain screen in place. This hybrid system is a combination of fiberglass reinforced plastic with metal supports. The goal of this system is to eliminate thermal bridging.

Double-skin façade: A multi-layered building enclosure with an outer glass layer and an inner glass layer (usually allows a person to see through the component to the outside), along with a ventilated air cavity in between. The air cavity space between the glass is generally 8 inches to 79 inches (20 cm to 2 m) and can use a mechanical, natural or hybrid approach to ventilating the cavity space. This cavity space acts as a buffer to improve thermal insulation, reduce noise, and control solar gain. Glass used in double skin facades can be photovoltaic, electro chromatic, thermochromic, transparent solar panels or tempered glass. (Note: This definition is provided to clearly distinguish wall-mounted BIPV façades or high-performance building envelopes from a double skin façade).

FM Approved: Products and services that have satisfied the criteria for FM Approval. Refer to the *Approval Guide*, an online resource of FM Approvals, for a complete listing of products and services that are FM Approved.

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High-performance building envelopes: The exterior of the building from the sheathing outward. These envelopes are designed to separate the exterior and interior elements with the intent to stop air leaks, drafts and moisture infiltration. Most high-performance building envelopes contain an air gap, insulation (exterior and interior) and a WRB.

High pressure laminate (HPL): A composite material made of multiple layers of paper or wood fibers (approximately 70%) bonded together by a fire-resistant thermoset resin (approximately 30%) under high heat and pressure. Some fire-resistant versions of HPL can include an intumescent coating.

Limited combustible: Refer to FM Property Loss Prevention Data Sheet 1-4.

Metal composite material (MCM) wall assembly: wall assemblies that contain a metal composite panel, air gap, continuous insulation and WRB (s).

Noncombustible material: Refer to FM Property Loss Prevention Data Sheet 1-4.

Structural insulated panels (SIPs): A composite building product consisting of insulation sandwiched between structural panels. One common example consists of polystyrene insulation sandwiched between layers of OSB.

APPENDIX B DOCUMENT REVISION HISTORY

The purpose of this appendix is to capture the changes that were made to this document each time it was published. Please note that section numbers refer specifically to those in the version published on the date shown (i.e., the section numbers are not always the same from version to version).

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