


FIRE

Fire - IBC Commercial Buildings

- What are Types I-V construction? ([IBC Section 602](#))
 - Type I-II construction:
 - Exterior and interior building elements must be noncombustible materials
 - Type III construction
 - Exterior must be noncombustible
 - Interior may be any permitted by code
 - Type IV construction (Heavy Timber)
 - Exterior must be noncombustible
 - Interior must be solid or laminated wood without concealed spaces
 - Type V construction
 - Exterior and interior building elements may be any permitted by code

Fire Requirements - IBC

- Fire safety requirements for foam sheathing
 - IBC Chapter 26 
 - [2603.5.1](#) – Fire resistance rated walls (e.g. hourly rated walls)
 - ASTM E119 or UL 263 - Standard Test Methods for Fire Tests of Building Construction and Materials
 - [2603.5.2](#) – Thermal barrier (e.g. 15 minute barrier)
 - Foam needs to be covered by a thermal barrier unless tested in accordance with NFPA 286 (Exception: one story buildings)
 - [2603.5.3](#) – Potential heat
 - NFPA 259 - Standard Test Method for Potential Heat of Building Materials.

Fire Requirements - IBC

- Fire safety requirements for foam sheathing
 - IBC Chapter 26
 - [2603.5.4](#) - Flame spread index, smoke developed index
 - ASTM E84 or UL 723 - Standard Test Method for Surface Burning Characteristics of Building Materials
 - [2603.5.5](#) – Vertical and lateral fire propagation.
 - NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components



Fire Requirements - IBC

- Fire safety requirements for foam sheathing
 - IBC Chapter 26
 - [2603.5.6](#) – Label required
 - Must be labeled by an approved agency
 - [2603.5.7](#) – Ignition
 - NFPA 268 - Standard Test Method for Determining Ignitability of Exterior Wall Assemblies Using a Radiant Heat Energy Source



Exterior Flame Spread

- NFPA 285 assembly testing is required for Type I-IV construction ([IBC 2603.5](#))
- Not required for Type V construction (IBC) and some cases of 1-story construction of other types ([IBC 2603.4.1.4](#))
- Not required for IRC (dwelling) construction.



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NFPA 285 Assembly Listing

- Refer to [TER No. 1202-01](#) for information on a variety of foam sheathing manufacturers with code-compliant NFPA 285 tested assemblies.
 - Various foam sheathing manufacturers have multiple assemblies that meet this requirement

Fire Requirements - IRC

- Fire safety requirements for foam sheathing
 - IRC Section R316
 - [R316.3](#) – Surface burning characteristics
 - ASTM E84 or UL 723 - Standard Test Method for Surface Burning Characteristics of Building Materials
 - [R316.4](#) – Thermal barrier
 - Foam needs to be covered by ½” gypsum or other approved material
 - [R316.6](#) – Special approval
 - NFPA 286, FM 4880, UL 1040, UL 1715, or other fire tests related to end use configurations

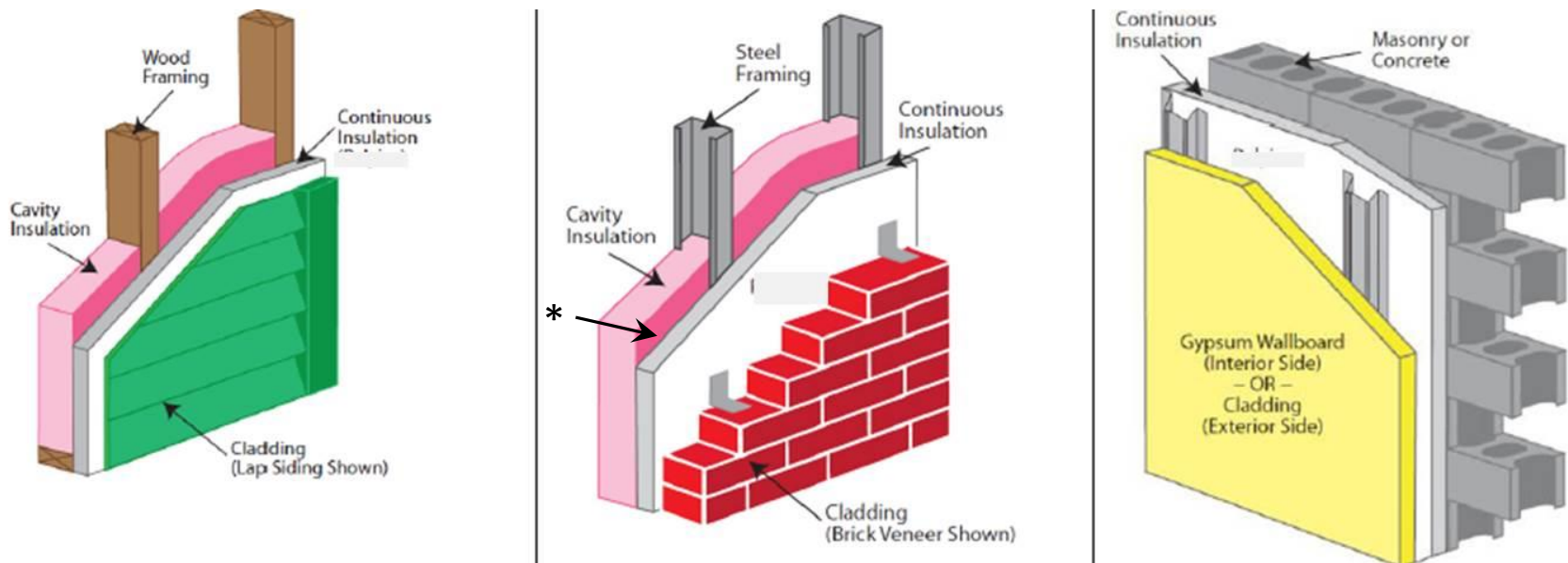


Comparison of Two Common Types of Combustible Sheathing

General Characteristics	Foam Plastic Insulating Sheathing	Wood Structural Panel (WSP) Sheathing
<p>Surface Burning / Flame Spread Index (ASTM E84)¹</p> <p>Smoke Developed Index (ASTM E84)</p>	<p>Generally, a Flame Spread Index of 75 or less (lower index number indicates less flame spread).</p> <p>In multi-story commercial structures of types I, II, III or IV, a flame spread index of 25 or less.</p> <p>Smoke Developed Index of 450 or less (lower rating number indicates less smoke developed)</p>	<p>No code limits even though the reported flame spread index range is 74-172² for ½" oriented strand board (OSB) wood structural panels</p> <p>No specific code limits, although WSPs are generally classified as a Class C sheathing requiring a smoke developed rating of 450 or less³.</p>
<p>Thermal Barrier (typically ½" gypsum) required to separate the sheathing from the interior of the building.</p> <p>Ignition Temperature</p>	<p>Yes – except in specific cases such as attics and crawlspaces, or unless a full-scale fire test is performed</p> <p>Greater than 600 F⁴</p>	<p>No <i>IBC</i> or <i>IRC</i> thermal barrier required.</p> <p>400 F – 500 F⁵</p>

Table 1: Comparison of *IBC* and *IRC* Fire-Related Code Requirements for Foam Plastic Insulating Sheathing and Wood Structural Panel (WSP) Sheathing

Gypsum board typically added to provide interior and exterior fire rating



* Gypsum board typically added between wood or steel stud and FPIS where exterior fire resistance properties are needed (usually for building sites with short fire separation distances between buildings)

Fire Resources for FPIS

- [TER No. 1202-04](#) Type I-IV Construction
- [TER No. 1202-03](#) Type V Construction
- [TER No. 1202-01](#) NFPA 285 Tested Assemblies