2025 SPRAYFOAM Convention & Expo
Daytona Beach, FL February 9-12

Coatings for Spray Polyurethane Foam (SPF) – Thermal / Ignition Barrier, Vapor Retarder & Air Barriers

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"Our policy is to comply with all federal, state and local laws, including the antitrust laws. It is expected that all company member representatives involved in SPFA activities and SPFA staff will be sensitive to the unique legal issues involving trade associations and, accordingly, will take all measures necessary to comply with U.S. antitrust laws and similar foreign competition laws."

It is a per se violation of the federal antitrust laws for competitors to agree on prices, limitation of supplies, allocation of customers or territory, or boycotts. "Per se" means that no legal defense can be used to mitigate this automatic violation.

Even an agreement by competitors that is for the good of society and our industry may be a violation of the antitrust laws if it could affect competition.

If a topic of antitrust concern is raised at any time during a meeting, note your objection for the record. If the topic continues to be discussed, you should leave the room immediately and contact SPFA's general counsel and your company's attorney for further guidance.

Ensure that every SPFA meeting, where members are present, has an agenda, the agenda is followed, and minutes are kept by SPFA staff of the proceedings.

Understanding and acting on the requirements of U.S. and foreign antitrust and competition laws sometimes can be difficult. If you have a question about the propriety of activities or discussions in SPFA, you are encouraged immediately to contact your company's legal counsel and SPFA management.

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What is a Thermal or Ignition Barrier??

- Codes require that foams be separated from the occupied space of a building by a material that delays ignition of spray foam, allowing occupants of a structure time to escape in the event of a fire

- Some foams will not sustain combustion on their own, but when a nearby, constant source for fire contacts the foam, the foam will continuously burn

- There are many benefits to SPF, however under fire conditions, SPF burns very hot and releases many chemicals, such as carbon monoxide, isocyanates, hydrogen cyanide, amines, and other toxic chemicals, as byproducts of combustion

IBC / IRC – Thermal Barrier

IBC 2603.4 Thermal Barrier (also IRC 316.4)

Except as provided for in Sections 2603.4.1 and 2603.9, foam plastic shall be separated from the interior of a building by an approved thermal barrier of $^{1}/_{2}$-inch (12.7 mm) gypsum wallboard, heavy timber in accordance with Section 602.4 or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275. Combustible concealed spaces shall comply with Section 718

IBC 2603.9 Special Approval (also IRC 316.6)

Foam plastic shall not be required to comply with the requirements of Section 2603.4 or those of Section 2603.6 where specifically approved based on large-scale tests such as, but not limited to, NFPA 286 (with the acceptance criteria of Section 803.1.1.1), FM 4880, UL 1040 or UL 1715. Such testing shall be related to the actual end-use configuration and be performed on the finished manufactured foam plastic assembly in the maximum thickness intended for use. Foam plastics that are used as interior finish on the basis of special tests shall conform to the flame spread and smoke-developed requirements of Chapter 8. Assemblies tested shall include seams, joints and other typical details used in the installation of the assembly and shall be tested in the manner intended for use.

IBC – Ignition Barrier

IBC 2603.4.1.6 Attics and Crawl Spaces

Within an attic or crawl space where entry is made only for service of utilities, foam plastic insulation shall be protected against ignition by $1^1/_2$-inch-thick (38 mm) mineral fiber insulation; $^1/_4$-inch-thick (6.4 mm) wood structural panel, particleboard or hardboard; $^3/_8$-inch (9.5 mm) gypsum wallboard, corrosion-resistant steel having a base metal thickness of 0.016 inch (0.4 mm); $1^1/_2$-inch-thick (38 mm) self-supported spray-applied cellulose insulation in attic spaces only or other approved material installed in such a manner that the foam plastic insulation is not exposed. The protective covering shall be consistent with the requirements for the type of construction.

IRC – Ignition Barrier (continued)

R316.5.3 Attics

The thermal barrier specified in Section R316.4 is not required where all of the following apply:

Attic access is required by Section R807.1.

The space is entered only for purposes of repairs or maintenance.

The foam plastic insulation has been tested in accordance with Section R316.6 or the foam plastic insulation is protected against ignition using one of the following ignition barrier materials:

- $1\frac{1}{2}$-inch-thick (38 mm) mineral fiber insulation.
- $\frac{1}{4}$-inch-thick (6.4 mm) wood structural panels.
- $\frac{3}{8}$-inch (9.5 mm) particleboard.
- $\frac{1}{4}$-inch (6.4 mm) hardboard.
- $\frac{3}{8}$-inch (9.5 mm) gypsum board.
- Corrosion-resistant steel having a base metal thickness of 0.016 inch (0.406 mm).
- $1\frac{1}{2}$-inch-thick (38 mm) cellulose insulation.
- $\frac{1}{4}$-inch (6.4 mm) fiber-cement panel, soffit or backer board.

  The ignition barrier is not required where the foam plastic insulation has been tested in accordance with Section R316.6.

IRC – Ignition Barrier (continued)

R316.5.4 Crawl Spaces

The thermal barrier specified in Section R316.4 is not required where all of the following apply:

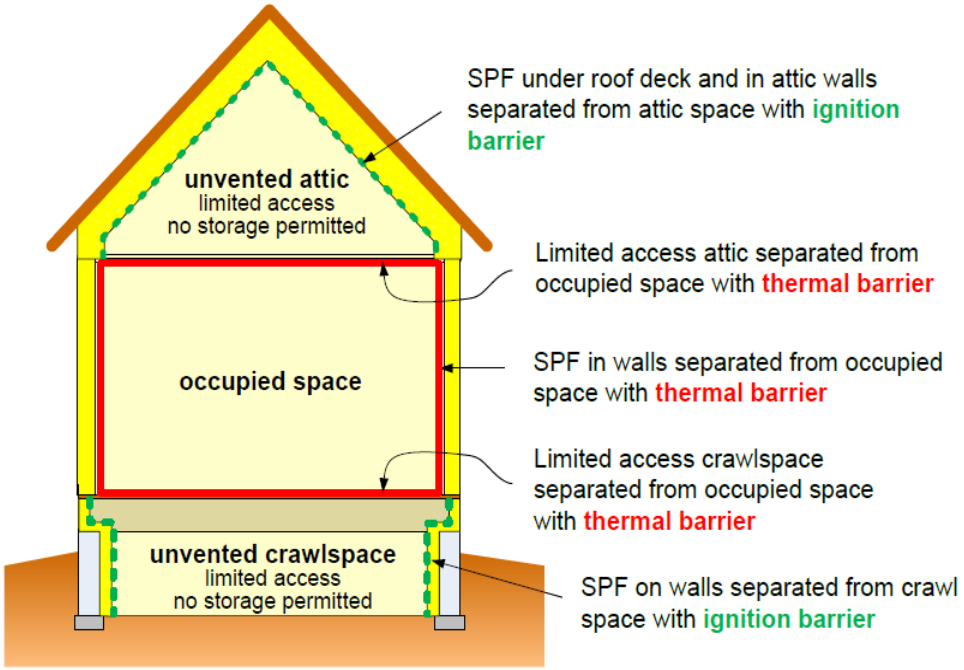
Crawl space access is required by Section R408.4.

Entry is made only for purposes of repairs or maintenance.

The foam plastic insulation has been tested in accordance with Section R316.6 or the foam plastic insulation is protected against ignition using one of the following ignition barrier materials:

- $1\frac{1}{2}$-inch-thick (38 mm) mineral fiber insulation.
- $\frac{1}{4}$-inch-thick (6.4 mm) wood structural panels.
- $\frac{3}{8}$-inch (9.5 mm) particleboard.
- $\frac{1}{4}$-inch (6.4 mm) hardboard.
- $\frac{3}{8}$-inch (9.5 mm) gypsum board.
- Corrosion-resistant steel having a base metal thickness of 0.016 inch (0.406 mm).
- $\frac{1}{4}$-inch (6.4 mm) fiber-cement panel, soffit or backer board.

Residential Applications



Source: SPFA-126 Thermal Barriers and Ignition Barriers for the Spray Polyurethane Foam Industry

Thermal Barrier

Occupied attics or attics used for storage.

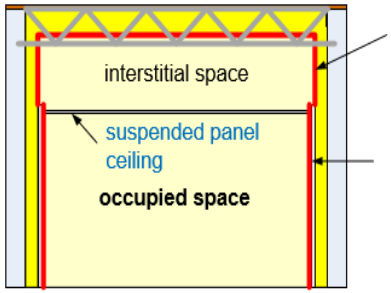
Unfinished basements, mechanical rooms and closets with SPF on walls.

Ignition Barrier

Attics and crawlspaces not used for storage or occupancy.

Jurisdictions requiring Ignition Barrier Coating.

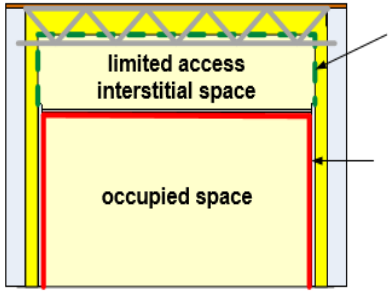
Commercial Applications



SPF under roof deck and on walls separated from interstitial space with **thermal barrier**

SPF on walls separated from occupied space with **thermal barrier**

FIGURE C6 – Thermal barrier requirements for interstitial space with suspended panel ceilings which are not thermal barriers



SPF under roof deck and on walls separated from interstitial space with **ignition barrier**

SPF on walls and in interstitial space separated from occupied space with **thermal barrier**

FIGURE C7 – Thermal and ignition barrier requirements for interstitial space with ½" gypsum board ceiling or other thermal barrier

Source: SPFA-126 Thermal Barriers and Ignition Barriers for the Spray Polyurethane Foam Industry

Thermal Barrier

Attics used as plenums or for storage.

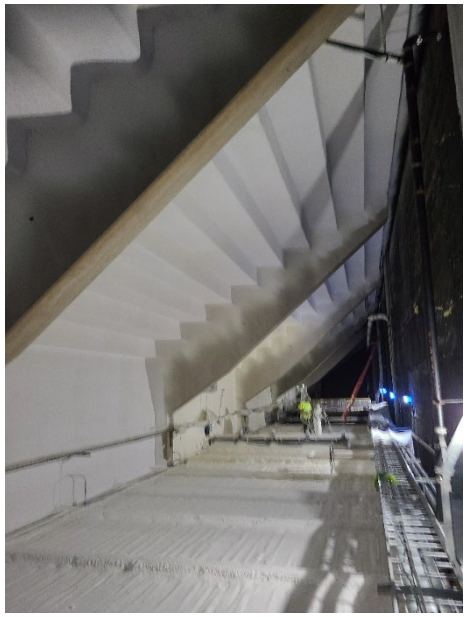
Unfinished basements, mechanical rooms and closets with SPF on walls.

Walls and ceilings in industrial, agricultural, warehouses, garages hangers, etc.

Ignition Barrier

Attics and crawlspaces not used for storage or occupancy in jurisdictions requiring Ignition Barrier Coatings.

Plenums – the "25/50 Rule"

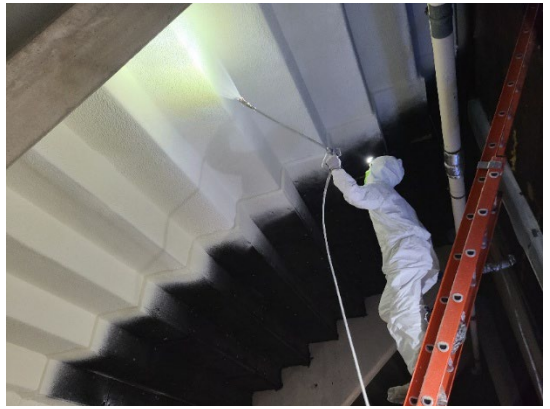


2603.7 Foam Plastic Insulation in Plenums as Interior Finish or Interior Trim

Foam plastic insulation in plenums used as interior wall or ceiling finish, or interior trim, shall exhibit a flame spread index of 25 or less and a smoke-developed index of 50 or less when tested in accordance with ASTM E84 or UL 723 at the maximum thickness and density intended for use, and shall be tested in accordance with NFPA 286 and meet the acceptance criteria of Section 803.1.2.

IMC 602.2.1 Materials Within Plenums

Except as required by Sections 602.2.1.1 through 602.2.1.8, materials within plenums shall be noncombustible or shall be listed and labeled as having a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E84 or UL 723.



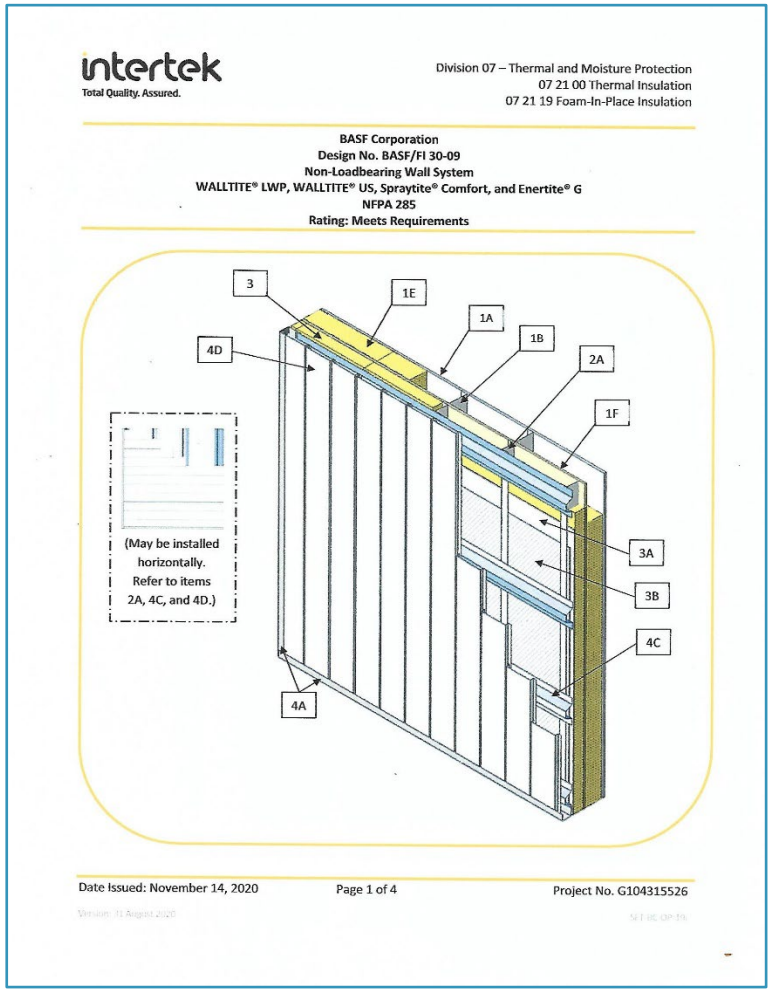
SPFA
SPRAY POLYURETHANE FOAM ALLIANCE

NFPA 285 Tested Assemblies

2603.5 Exterior walls of buildings of any height.

Exterior walls of buildings of Type I, II, III or IV construction of any height shall comply with Sections 2603.5.1 through 2603.5.7.

- The *exterior wall* assembly shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.
- NFPA 285 is a system test determining compliance based on combined components: i.e. interior sheathing, wall cavity depth, studs, insulation, intumescent coating, exterior sheathing, resistive weather barriers, cladding, air gaps, opening details, and attachment systems.
- The protection provided by intumescent coatings creates countless configurations or allowable options for architects and designers to create client driven designs that perform to code.


intertek
Total Quality. Assured.

Division 07 – Thermal and Moisture Protection
07 21 00 Thermal Insulation
07 21 19 Foam-In-Place Insulation

BASF Corporation
Design No. BASF/FI 30-09
Non-Loadbearing Wall System
WALLTITE® LWP, WALLTITE® US, Spraytite® Comfort, and Enertite® G
NFPA 285
Rating: Meets Requirements

Date Issued: November 14, 2020 Page 1 of 4 Project No. G104315526

Thermal or Ignition Barrier NOT required

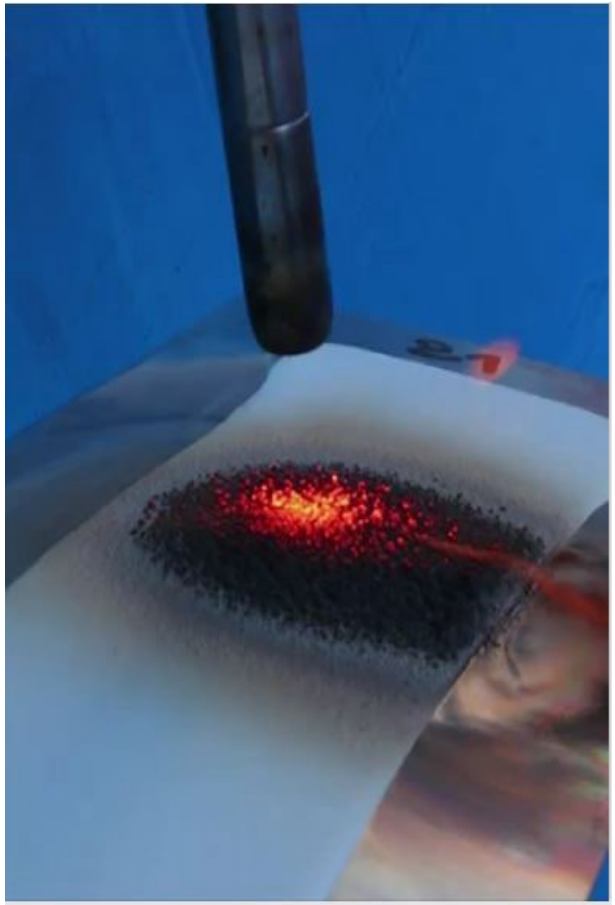
- Some foams are formulated to meet the *IGNITION BARRIER* requirements without any additional protection – AC377 "Appendix X" foams. However, these foams do not meet THERMAL BARRIER requirements and will still require protection if the installation is exposed to an occupiable space of the building.

R316.5.11 Sill Plates and Headers

Foam plastic be spray applied to sill plates and headers or installed in the perimeter joist space without the thermal barrier specified in Section R316.4 shall comply with all of the following:

1. The thickness of the foam plastic shall be not more than $3^1/_4$ inches (83 mm).
2. The density of the foam plastic shall be in the range of 0.5 to 2.0 pounds per cubic foot (8 to 32 kg/m^3).
3. The foam plastic shall have a flame spread index of 25 or less and an accompanying smoke-developed index of 450 or less when tested in accordance with ASTM E84 or UL 723.

What is an Intumescent Coating??



An Intumescent Coating provides passive fire protection to materials to which they are applied.

In the presence of fire, the Intumescent Coating swells or “intumesces” to many times its original thickness, providing a physical, heat resistant barrier between the fire and the substrate.

The amount of protection provided is largely determined by the Intumescent Coating thickness (measured in wet mils).

Benefits of a coating vs. other code prescribed thermal barriers

- Lightweight.
- Simple, one step installation using common paint spraying equipment.
- No additional finishing or attachment required.
- Cost effective.
- Delays ignition by keeping spray foam at temperatures below that where combustion/charring occurs as fire is building.

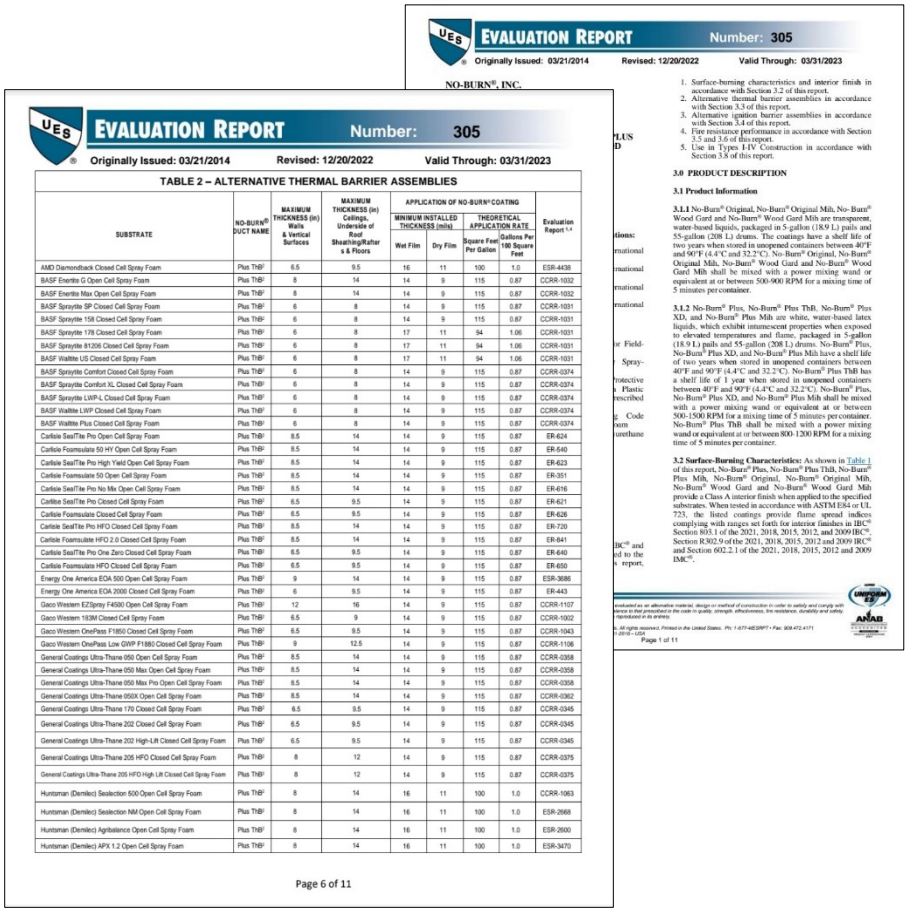
Thermal / Ignition Barrier Coating Approvals

System approval:

- Maximum thickness of Spray Foam
- Minimum thickness of Intumescent Coating

Listing can be found in two documents:

- ER of Spray Foam Manufacturer
- ER of Intumescent Coating Manufacturer



EVALUATION REPORT Number: 305

Originally Issued: 03/21/2014 Revised: 12/20/2022 Valid Through: 03/31/2023

NO-BURN®, INC.

1. Surface-burning characteristics and interior finish in accordance with Section 3.2 of this report.
2. Alternative thermal barrier assemblies in accordance with Section 3.3 of this report.
3. Alternative ignition barrier assemblies in accordance with Section 3.4 of this report.
4. Fire resistance performance in accordance with Section 3.5 and 3.6 of this report.
5. Use in Types I-IV Construction in accordance with Section 3.8 of this report.

3.0 PRODUCT DESCRIPTION

3.1 Product Information

3.1.1 No-Burn® Original, No-Burn® Original Mih, No- Burn® Wood Gard and No-Burn® Wood Gard Mih are transparent, water-based liquids, packaged in 5-gallon (18.9 L) pails and 55-gallon (208 L) drums. The coatings have a shelf life of two years when stored in unopened containers between 40°F and 90°F (4.4°C and 32.2°C). No-Burn® Original, No-Burn® Original Mih, No-Burn® Wood Gard and No-Burn® Wood Gard Mih shall be mixed with a power mixing wand or equivalent at or between 500-900 RPM for a mixing time of 5 minutes per container.

3.1.2 No-Burn® Plus, No-Burn® Plus ThB, No-Burn® Plus XD, and No-Burn® Plus Mih are white, water-based latex liquids, which exhibit intumescent properties when exposed to elevated temperatures and flame, packaged in 5-gallon (18.9 L) pails and 55-gallon (208 L) drums. No-Burn® Plus, No-Burn® Plus XD, and No-Burn® Plus Mih have a shelf life of two years when stored in unopened containers between 40°F and 90°F (4.4°C and 32.2°C). No-Burn® Plus ThB has a shelf life of 1 year when stored in unopened containers between 40°F and 90°F (4.4°C and 32.2°C). No-Burn® Plus, No-Burn® Plus XD, and No-Burn® Plus Mih shall be mixed with a power mixing wand or equivalent at or between 500-1500 RPM for a mixing time of 5 minutes per container. No-Burn® Plus ThB shall be mixed with a power mixing wand or equivalent at or between 800-1200 RPM for a mixing time of 5 minutes per container.

3.2 Surface-Burning Characteristics: As shown in Table 1 of this report, No-Burn® Plus, No-Burn® Plus ThB, No-Burn® Plus Mih, No-Burn® Original, No-Burn® Original Mih, No-Burn® Wood Gard and No-Burn® Wood Gard Mih provide a Class A interior finish when applied to the specified substrates. When tested in accordance with ASTM E84 or UL 723, the listed coatings provide flame spread indices complying with ranges set forth for interior finishes in IBC® Section 803.1 of the 2021, 2018, 2015, 2012, and 2009 IBC®, Section R302.9 of the 2021, 2018, 2015, 2012 and 2009 IRC® and Section 602.2.1 of the 2021, 2018, 2015, 2012 and 2009 IMC®.

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TABLE 2 – ALTERNATIVE THERMAL BARRIER ASSEMBLIES

SUBSTRATE	NO-BURN® DUCT NAME	MAXIMUM THICKNESS (in) Walls & Vertical Surfaces	MAXIMUM THICKNESS (in) Ceilings, Underside of Roof Sheathing/Rafters & Floors	APPLICATION OF NO-BURN® COATING				Evaluation Report[1,4]
				MINIMUM INSTALLED THICKNESS (mils)		THEORETICAL APPLICATION RATE		
				Wet Film	Dry Film	Square Feet Per Gallon	Gallons Per 100 Square Feet	
AMD Diamondback Closed Cell Spray Foam	Plus ThB[2]	6.5	9.5	16	11	100	1.0	ESR-4438
BASF Enerlite G Open Cell Spray Foam	Plus ThB[2]	8	14	14	9	115	0.87	CCRR-1032
BASF Enerlite Max Open Cell Spray Foam	Plus ThB[2]	8	14	14	9	115	0.87	CCRR-1032
BASF Spraylite SP Closed Cell Spray Foam	Plus ThB[2]	6	8	14	9	115	0.87	CCRR-1031
BASF Spraylite 158 Closed Cell Spray Foam	Plus ThB[2]	6	8	14	9	115	0.87	CCRR-1031
BASF Spraylite 178 Closed Cell Spray Foam	Plus ThB[2]	6	8	17	11	94	1.06	CCRR-1031
BASF Spraylite 81206 Closed Cell Spray Foam	Plus ThB[2]	6	8	17	11	94	1.06	CCRR-1031
BASF Walltite US Closed Cell Spray Foam	Plus ThB[2]	6	8	17	11	94	1.06	CCRR-1031
BASF Spraylite Comfort Closed Cell Spray Foam	Plus ThB[2]	6	8	14	9	115	0.87	CCRR-0374
BASF Spraylite Comfort XL Closed Cell Spray Foam	Plus ThB[2]	6	8	14	9	115	0.87	CCRR-0374
BASF Spraylite LWP-L Closed Cell Spray Foam	Plus ThB[2]	6	8	14	9	115	0.87	CCRR-0374
BASF Walltite LWP Closed Cell Spray Foam	Plus ThB[2]	6	8	14	9	115	0.87	CCRR-0374
BASF Walltite Plus Closed Cell Spray Foam	Plus ThB[2]	6	8	14	9	115	0.87	CCRR-0374
Carlisle SealTite Pro Open Cell Spray Foam	Plus ThB[2]	8.5	14	14	9	115	0.87	ER-624
Carlisle Foamsulate 50 HY Open Cell Spray Foam	Plus ThB[2]	8.5	14	14	9	115	0.87	ER-640
Carlisle SealTite Pro High Yield Open Cell Spray Foam	Plus ThB[2]	8.5	14	14	9	115	0.87	ER-623
Carlisle Foamsulate 50 Open Cell Spray Foam	Plus ThB[2]	8.5	14	14	9	115	0.87	ER-351
Carlisle SealTite Pro No Mix Open Cell Spray Foam	Plus ThB[2]	8.5	14	14	9	115	0.87	ER-616
Carlitse SealTite Pro Closed Cell Spray Foam	Plus ThB[2]	6.5	9.5	14	9	115	0.87	ER-621
Carlisle Foamsulate Closed Cell Spray Foam	Plus ThB[2]	6.5	9.5	14	9	115	0.87	ER-626
Carlisle SealTite Pro HFO Closed Cell Spray Foam	Plus ThB[2]	8.5	14	14	9	115	0.87	ER-720
Carlisle Foamsulate HFO 2.0 Closed Cell Spray Foam	Plus ThB[2]	8.5	14	14	9	115	0.87	ER-641
Carlisle SealTite Pro One Zero Closed Cell Spray Foam	Plus ThB[2]	6.5	9.5	14	9	115	0.87	ER-640
Carlisle Foamsulate HFO Closed Cell Spray Foam	Plus ThB[2]	6.5	9.5	14	9	115	0.87	ER-650
Energy One America EOA 500 Open Cell Spray Foam	Plus ThB[2]	9	14	14	9	115	0.87	ESR-3686
Energy One America EOA 2000 Closed Cell Spray Foam	Plus ThB[2]	6	9.5	14	9	115	0.87	ER-443
Gaco Western EZSpray F4580 Open Cell Spray Foam	Plus ThB[2]	12	16	14	9	115	0.87	CCRR-1107
Gaco Western 183M Closed Cell Spray Foam	Plus ThB[2]	6.5	9	14	9	115	0.87	CCRR-1002
Gaco Western OnePass F1850 Closed Cell Spray Foam	Plus ThB[2]	6.5	9.5	14	9	115	0.87	CCRR-1043
Gaco Western OnePass Low GWP F1880 Closed Cell Spray Foam	Plus ThB[2]	9	12.5	14	9	115	0.87	CCRR-1106
General Coatings Ultra-Thane 050 Open Cell Spray Foam	Plus ThB[2]	8.5	14	14	9	115	0.87	CCRR-0358
General Coatings Ultra-Thane 050 Max Open Cell Spray Foam	Plus ThB[2]	8.5	14	14	9	115	0.87	CCRR-0358
General Coatings Ultra-Thane 050 Max Pro Open Cell Spray Foam	Plus ThB[2]	8.5	14	14	9	115	0.87	CCRR-0358
General Coatings Ultra-Thane 050X Open Cell Spray Foam	Plus ThB[2]	8.5	14	14	9	115	0.87	CCRR-0362
General Coatings Ultra-Thane 170 Closed Cell Spray Foam	Plus ThB[2]	6.5	9.5	14	9	115	0.87	CCRR-0345
General Coatings Ultra-Thane 202 Closed Cell Spray Foam	Plus ThB[2]	6.5	9.5	14	9	115	0.87	CCRR-0345
General Coatings Ultra-Thane 202 High-Lift Closed Cell Spray Foam	Plus ThB[2]	6.5	9.5	14	9	115	0.87	CCRR-0345
General Coatings Ultra-Thane 205 HFO Closed Cell Spray Foam	Plus ThB[2]	8	12	14	9	115	0.87	CCRR-0375
General Coatings Ultra-Thane 205 HFO High Lift Closed Cell Spray Foam	Plus ThB[2]	8	12	14	9	115	0.87	CCRR-0375
Huntsman (Demilec) Sealection 500 Open Cell Spray Foam	Plus ThB[2]	8	14	16	11	100	1.0	CCRR-1063
Huntsman (Demilec) Sealection NM Open Cell Spray Foam	Plus ThB[2]	8	14	16	11	100	1.0	ESR-2668
Huntsman (Demilec) Agribalance Open Cell Spray Foam	Plus ThB[2]	8	14	16	11	100	1.0	ESR-2600
Huntsman (Demilec) APX 1.2 Open Cell Spray Foam	Plus ThB[2]	8	14	16	11	100	1.0	ESR-3470

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SPFA SPRAY POLYURETHANE FOAM ALLIANCE

Not every coating manufacturer has tested over every foam by every SPF manufacturer. Always check for compliance with the IBC/IRC. Also, required wet film thicknesses can vary from one manufacturers to another, which affects overall project cost.

Below, the differences between coating manufacturers is seen over a sampling of spray foams in the market.

		Coating # 1		Coating # 2		Coating # 3	
Huntsman Building Solutions (Demilec)	Sealection NM Open Cell	16 wet mils	100 sq.ft./gal	18 wet mils	89 sq.ft./gal	Not Tested	
	Agribalance Open Cell	16 wet mils	100 sq.ft./gal	18 wet mils	89 sq.ft./gal	23 wet mils	70 sq.ft./gal
	APX 1.2 Open Cell	16 wet mils	100 sq.ft./gal	20 wet mils	80 sq.ft./gal	17 wet mils	94 sq.ft./gal
	Heatlok HFO High Lift Closed Cell	16 wet mils	100 sq.ft./gal	14 wet mils	115 sq.ft./gal	18 wet mils	89 sq.ft./gal
	Heatlok HFO Pro Closed Cell	16 wet mils	100 sq.ft./gal	18 wet mils	89 sq.ft./gal	18 wet mils	89 sq.ft./gal
	Heatlok HFO EZ Closed Cell	16 wet mils	100 sq.ft./gal	18 wet mils	89 sq.ft./gal	18 wet mils	89 sq.ft./gal
	Heatlok XT-s Closed Cell	16 wet mils	100 sq.ft./gal	14 wet mils	115 sq.ft./gal	18 wet mils	89 sq.ft./gal
	Heatlok XT-w Closed Cell	16 wet mils	100 sq.ft./gal	14 wet mils	115 sq.ft./gal	18 wet mils	89 sq.ft./gal
	Heatlok ECO Closed Cell	16 wet mils	100 sq.ft./gal	22 wet mils	73 sq.ft./gal	Not Tested	

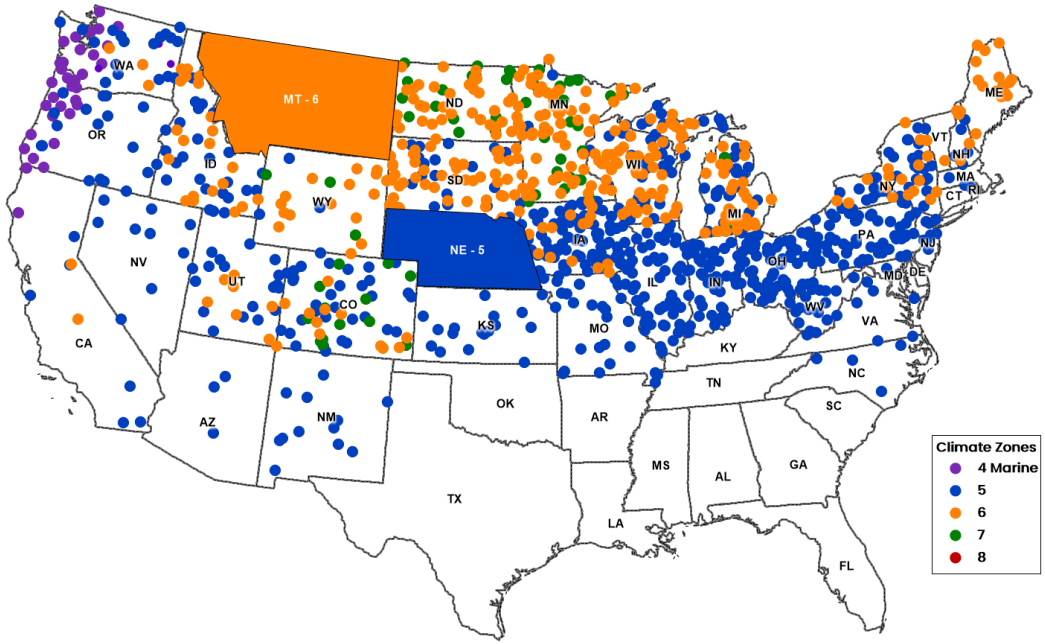
Vapor Retarders for open cell SPF

Newer R value requirements in building codes are making it more and more difficult to achieve the needed values with traditional insulation methods. To achieve this, SPF insulation is becoming more popular for builders and homeowners alike.

There are two distinct types of spray foam insulation: open cell and closed cell. Closed cell spray foam cures into a hard, rigid state whereas open cell cures with a spongy, softer feel to it. In terms of R-values, closed cell spray foam is close to R-7 per inch and open cell around R-4 per inch. Also, closed cell becomes an air barrier at only 1" of application, while it takes on average 3" of open cell foam to achieve an air barrier. Open cell also has soundproofing qualities that can help in dampening outside noise. Open cell typically is less expensive than making it a more popular option in certain circumstances.

One of the biggest differences in the two is that open cell is water permeable and closed cell is not. Because of this…

Vapor Retarders for open cell SPF (continued)



IBC 1202.3 / IRC 806.5 requires that insulation in Climate Zones 5, 6, 7 and 8, any air-impermeable insulation shall be a Class II vapor retarder, or shall have a Class II vapor retarder coating or covering in direct contact with the underside of the insulation.

The IBC/IRC defines class I and II vapor retarders as:

Class I or II vapor retarders shall be provided on the interior side of frame walls in Zones 5, 6, 7, 8 and Marine 4.

- Some exceptions apply.

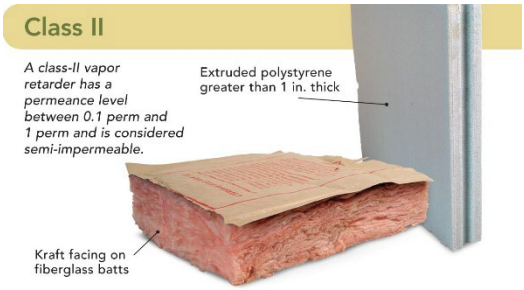
Vapor Retarders for open cell SPF (continued)

The IBC/IRC gives the following definitions and examples for vapor retarder classes.

VAPOR RETARDER CLASS	ACCEPTABLE MATERIALS
I	Sheet polyethylene, nonperforated aluminum foil, or other approved materials with a perm rating of less than or equal to 0.1
II	Kraft-faced fiberglass batts or vapor retarder paint or other approved materials, applied in accordance with the manufacturer's instructions for a perm rating greater than 0.1 and less than or equal to 1.0
III	Latex paint, enamel paint, or other approved materials, applied in accordance with the manufacturer's instructions for a perm rating of greater than 1.0 and less than or equal to 10

Vapor Retarders for open cell SPF (continued)

Solutions for achieving a class II vapor retarder:



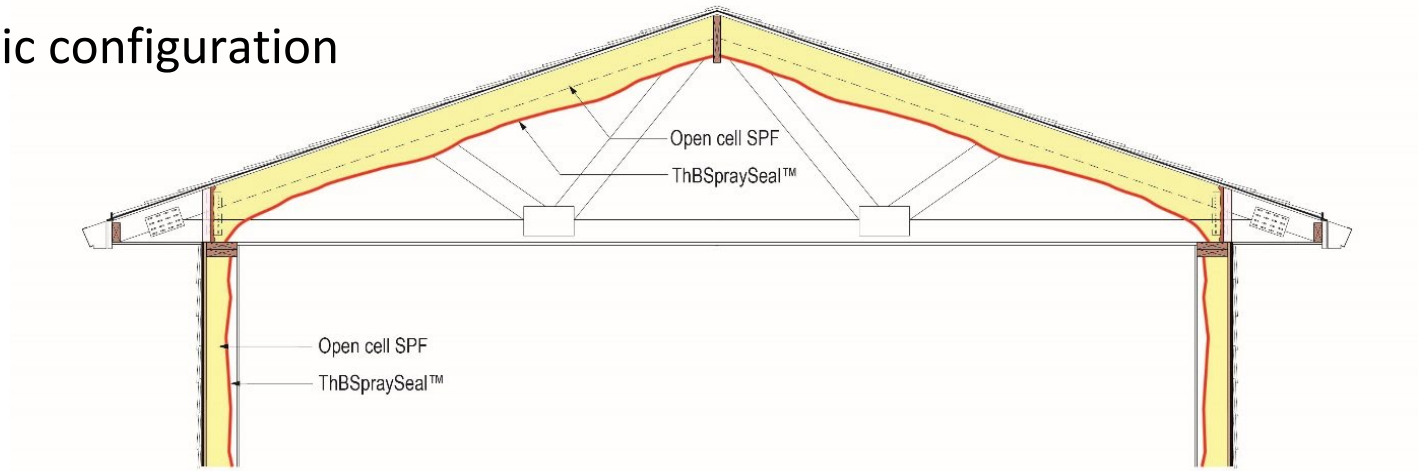
- Unfaced expanded or extruded polystyrene
- 30 pound asphalt coated paper
- Bitumen coated kraft paper

All are adequate options but can be costly due to material and labor costs for installation

- Vapor retarder paints / coatings are easier to install than options above and less expensive, but do not satisfy requirements in attics for thermal or ignition barrier

Vapor Retarders for open cell SPF (continued)

Attic configuration



Unvented conditioned attics can be constructed by installing low density open cell or high density closed cell spray foam directly to the underside of the roof deck. Both foam types work in all climates.

In IECC Climate Zones 5 and higher low density open cell spray foam can be utilized with an interior vapor retarder (Class II) to control condensation. This interior vapor retarder should be a spray applied vapor retarder. Note that in many jurisdictions a thermal and ignition barrier coating may also be required.

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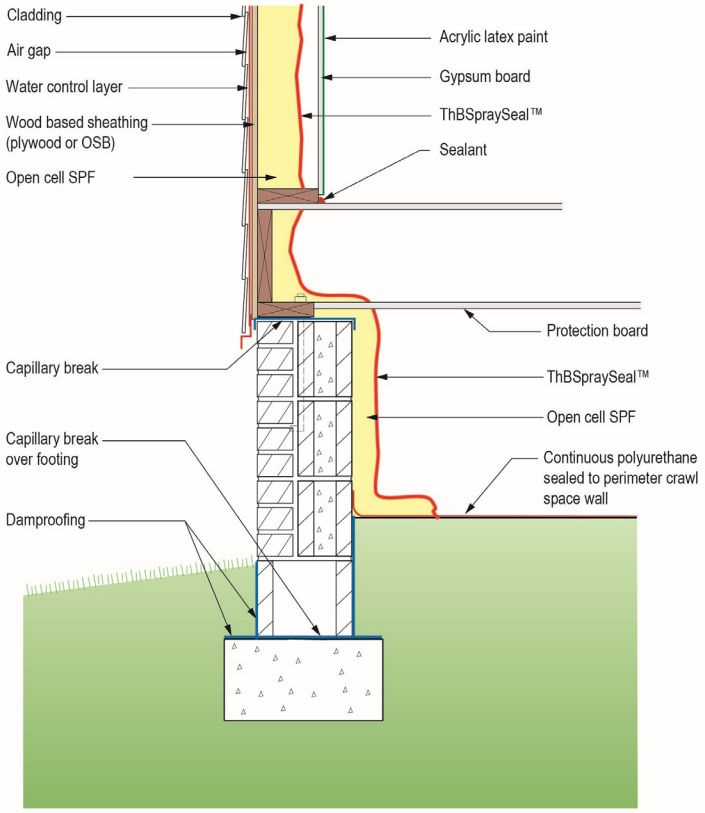
Vapor Retarders for open cell SPF (continued)

Solutions for achieving a class II vapor retarder

- Recently, products have been introduced into the industry that provide thermal or ignition barrier AND a class II vapor retarder in one easy to install product, thereby reducing labor and product costs on a particular project.

Vapor Retarders for open cell SPF (continued)

Crawlspaces



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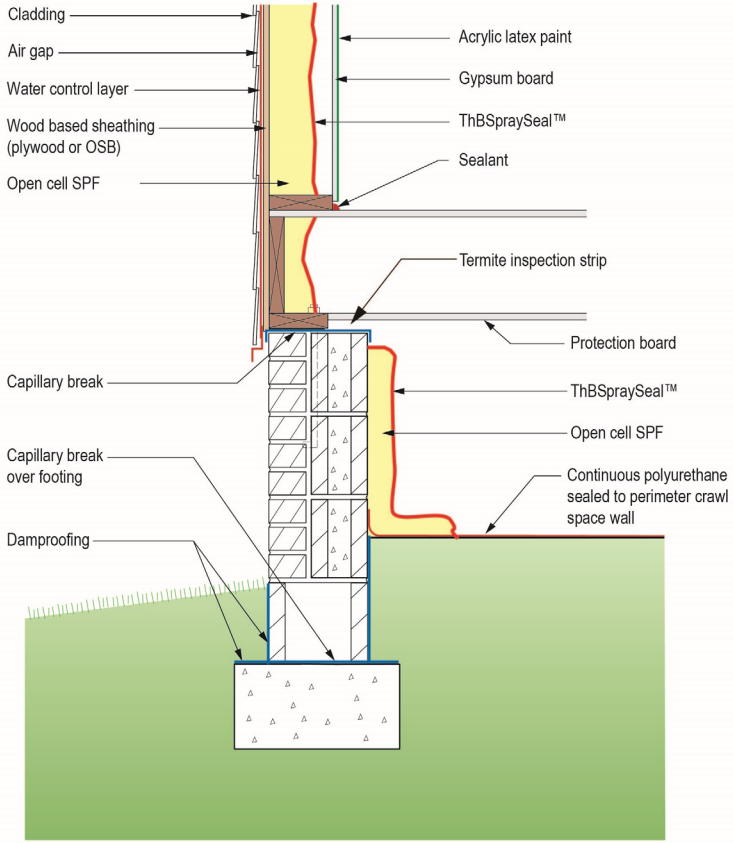

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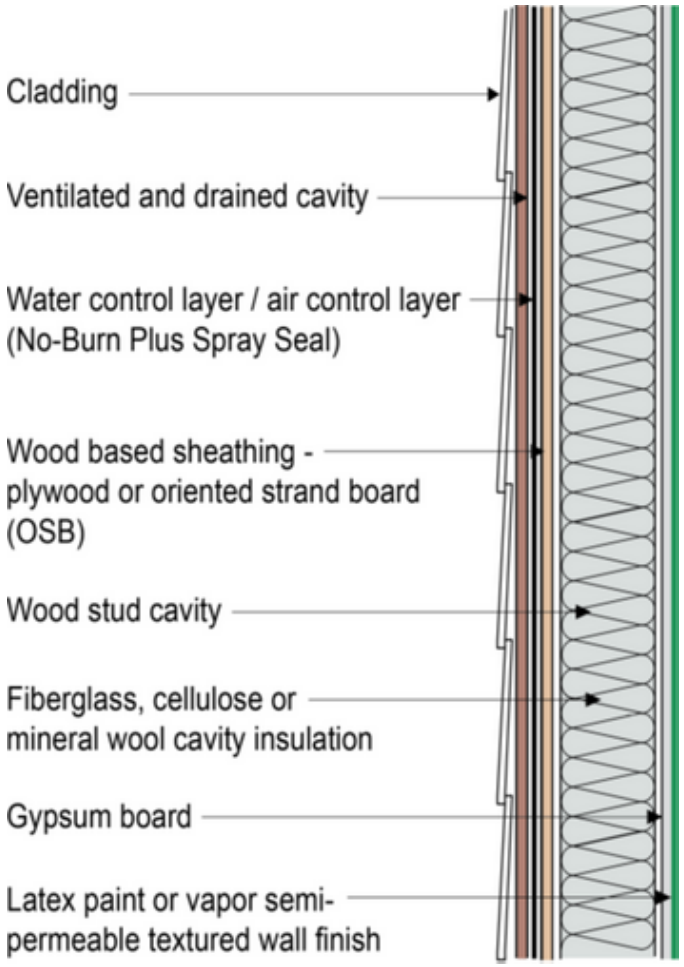
SPFA
SPRAY POLYURETHANE FOAM ALLIANCE

Air & Weather Barrier Intumescent Coatings

- Class A FRT equivalent fire protection along with air and weather barrier performance in one easy to apply, single coat application
- Perm rating of 5 vs 28-56 for traditional building wrap
- Tighter envelope with controlled air & vapor movement. 1.6 ACH with basic air seal package
- Remains breathable allowing moisture to escape

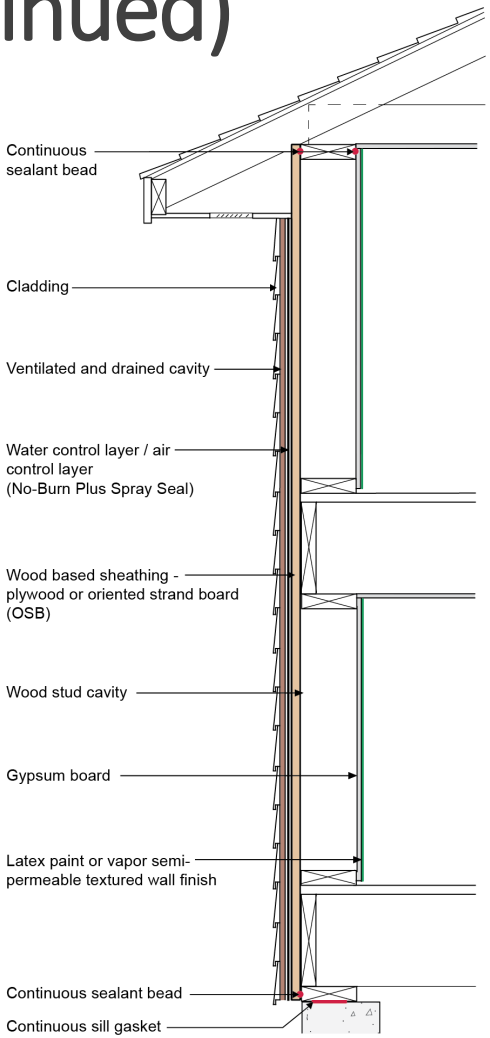
Air & Weather Barrier Intumescent Coatings (Continued)

- Only joints not backed by framing need to be taped
- Spray applied to the exterior face of sheathing. Can be left exposed to direct UV and direct weather for up to 6 months before installation of exterior cladding
- Provides air & weather protection in addition to fire protection which traditional methods such as building wrap & factory coated sheathing can not provide
- Excellent profit source for your insulation & weatherization business



SPFA
SPRAY POLYURETHANE FOAM ALLIANCE

Air & Weather Barrier Intumescent Coatings (Continued)



Controlling Water

The most common residential wall is a wood frame wall with wood based sheathing. The wood based sheathing has a water control layer installed on its exterior surface. A cladding is installed over this water control layer. An air gap is provided between the cladding and the water control layer to provide drainage of rainwater that penetrates the cladding. The water control layer is typically a building paper or housewrap or a sheet water resistive barrier. Replacing the water control layer with a spray applied coating turns the wood based sheathing into the water control layer.

Controlling Air

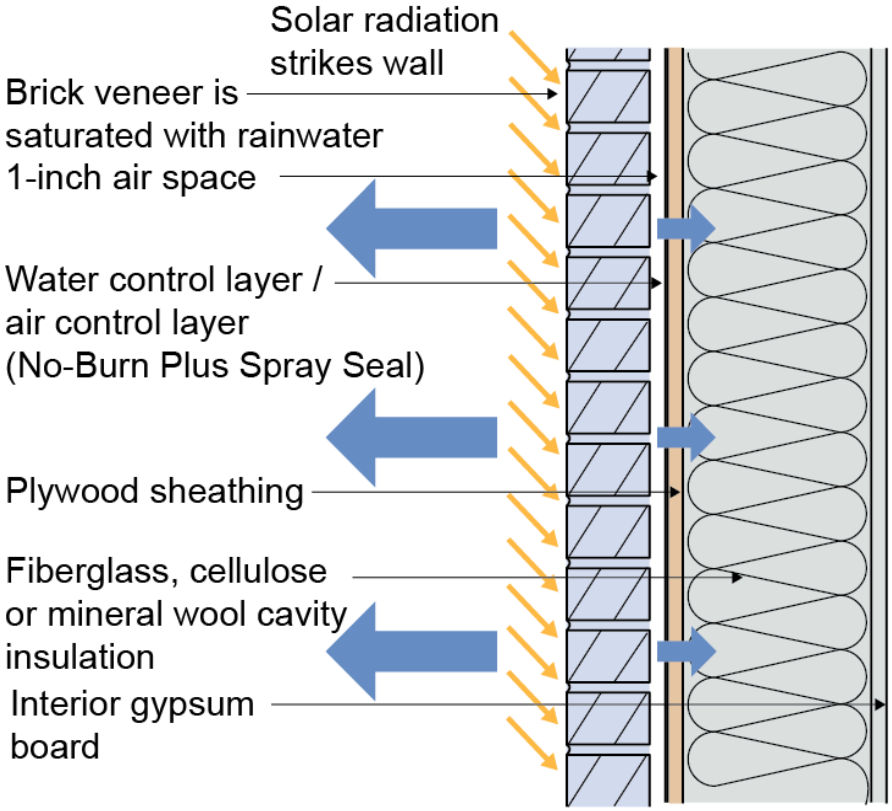
Air control layers (“air barriers”) are systems of materials designed and constructed to control airflow between a conditioned space and an unconditioned space. The air barrier system is the primary air enclosure boundary that separates indoor (conditioned) air and outdoor (unconditioned) air. Air control layers (“air barriers”) also typically define the location of the pressure boundary of the building enclosure. Air control layers (“air barriers”) should be:

- Impermeable to air flow
- Continuous over the entire building enclosure
- Able to withstand the forces that may act on them during and after construction
- Durable over the expected lifetime of the building

Air & Weather Barrier Intumescent Coatings (Continued)

Controlling Vapor Flow

Where reservoir claddings – claddings that absorb and store rainwater such as brick veneers, stone veneers and stucco – are installed over vapor permeable water control layers and plywood which is vapor permeable – inward vapor drive can be an issue (Figure 4). Coating can act as a "vapor throttle" to reduce inward vapor flow. Note that the coatings are not a "vapor barrier" and as such still allows outward vapor drying in a controlled manner (Figure 5). Coatings are vapor semi-impermeable, and they reduces vapor flow in both directions without completely stopping vapor flow.



Coating acts as a "vapor throttle" to reduce inward vapor flow.

SPRAY POLYURETHANE FOAM ALLIANCE

Intumescent Coating Installation

Need to measure Intumescent Coating thickness during the installation.

DO NOT just install it "by eye"!!!!

Options:

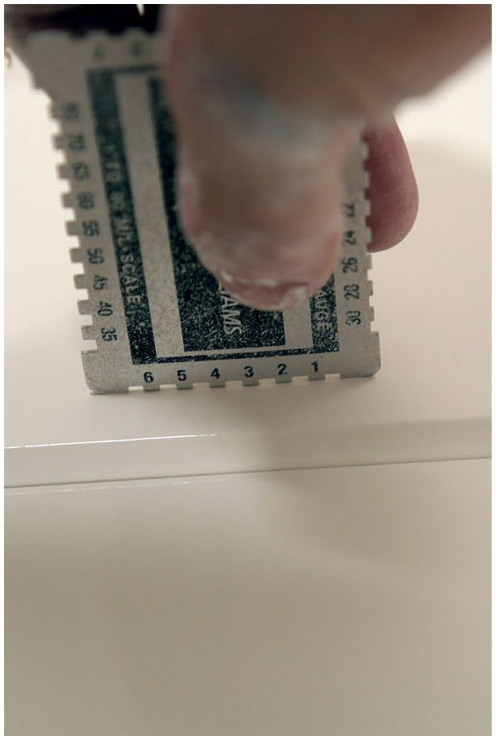
Measure on Surface of Spray Foam:

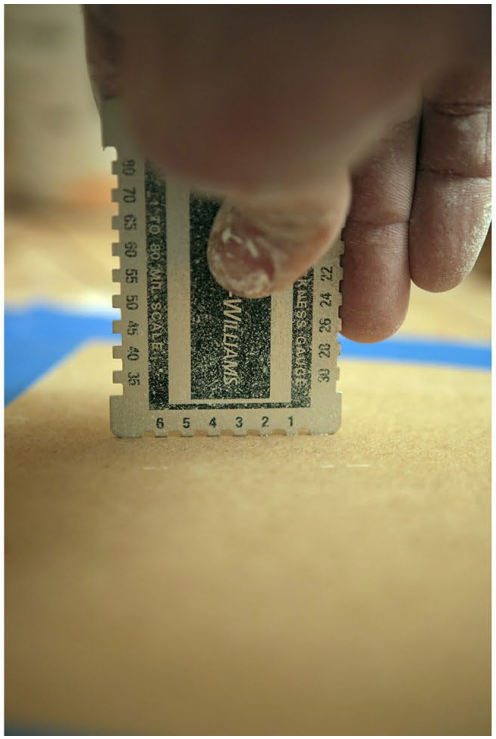
- Difficult to find flat surfaces for a consistent measurement.
- Some spray foams absorb Intumescent Coating so a "wet film" measurement may be misleading.
- No permanent record of application to take off site.

Measure on Metal Targets or Flat Adjacent Elements (i.e. framing):

- Can measure more easily because surface is flat.
- Does not disturb Intumescent Coating on Spray Foam and Intumescent Coating is not absorbed so measurement is more accurate.
- Targets may be collected and kept on file for Intumescent Coating thickness.

Using a wet film painter's gauge in the field



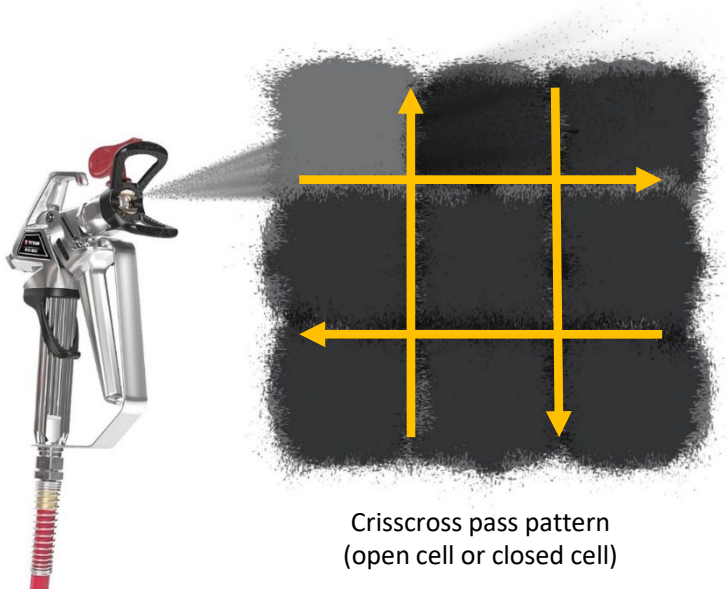


Equipment Requirements

PPE per manufacturer's specifications

- ❖Proper Mixing Wand (mixing lid helps keep splash to a minimum while ensuring a quality mix)
- ❖Paint sprayer with adequate power per manufacturer's specifications (ex. 3000 psi minimum)
- ❖Proper tip sizes for spray guns
- ❖Proper hose diameters for hose length used
- ❖Remove filters from the gun and pressure side of the paint sprayer. Do NOT remove the screen from the pickup tube

Installation of Intumescent Coatings



Crisscross pass pattern
(open cell or closed cell)

- Viscosity of Intumescent Coating varies from manufacturer to manufacturer
- Installer controls wet film thickness by manual hand speed, airless spray rig pressure and airless spray handgun tip size.
- Intumescent Coating recommendations for airless spray rig model(s), airless spray rig pressure and airless spray handgun tip size may be found on technical data sheets.
- Crisscross pass pattern prevents missed areas (downsloping)
- Before beginning your first project with Intumescent Coating, communicate with Intumescent Coating Manufacturer for site checklists, installed product management support, installation guide verifications, etc., as desired.

Installation of Intumescent Coatings

Over coating Intumescent Coatings

Most coatings on the market can be over coated. Follow manufacturer's specifications for approved products to over coat with.

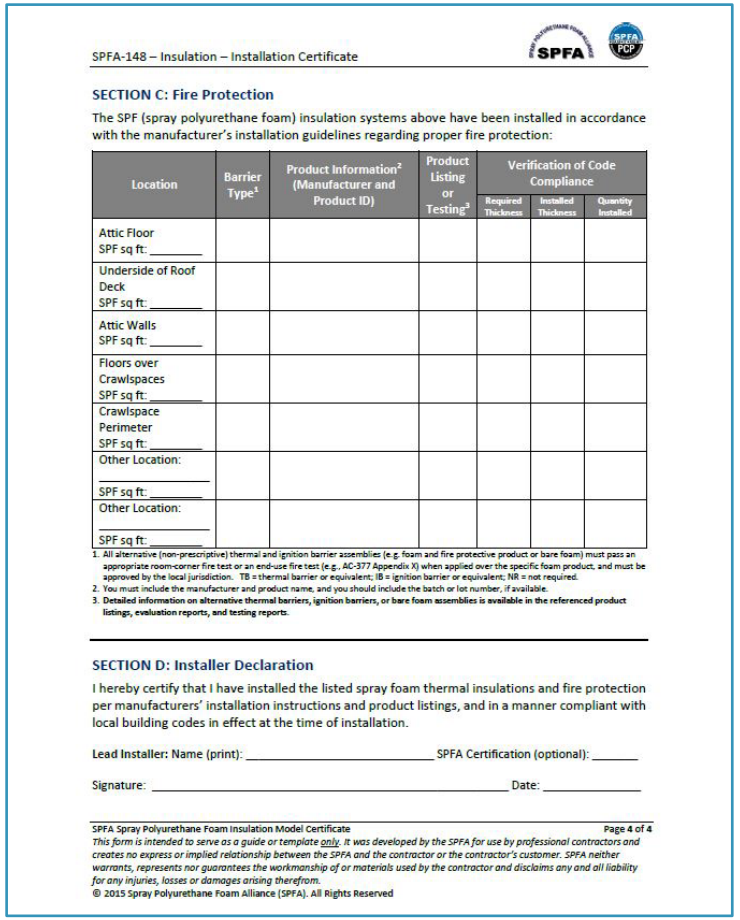
Situations requiring an over coat:

- Area of high humidity / moisture
- Need for a vapor retarder unless a product that can provide both is specified (also cost effective this way!)
- Custom color (aesthetics)

Documenting the Job

SPFA-148- Insulation – Installation Certificate:

- Barrier Type: Thermal or Ignition Barrier.
- Manufacturer and Product ID (Batch Number, Lot Number).
- Testing approval – Evaluation Report Number, Listing, etc.
- Verification of Code Compliance – Required Thickness, Installed Thickness & Quantity Installed.
- Some coating manufacturers may have their own installation certificate based on the fields found in the SPFA-148 document



SPFA-148 – Insulation – Installation Certificate

SECTION C: Fire Protection

The SPF (spray polyurethane foam) insulation systems above have been installed in accordance with the manufacturer's installation guidelines regarding proper fire protection:

Location	Barrier Type[1]	Product Information[2] (Manufacturer and Product ID)	Product Listing or Testing[3]	Verification of Code Compliance		
				Required Thickness	Installed Thickness	Quantity Installed
Attic Floor SPF sq ft: _____						
Underside of Roof Deck SPF sq ft: _____						
Attic Walls SPF sq ft: _____						
Floors over Crawlspaces SPF sq ft: _____						
Crawlspace Perimeter SPF sq ft: _____						
Other Location: _____ SPF sq ft: _____						
Other Location: _____ SPF sq ft: _____						

1. All alternative (non-prescriptive) thermal and ignition barrier assemblies (e.g. foam and fire protective product or bare foam) must pass an appropriate room-corner fire test or an end-use fire test (e.g., AC-377 Appendix X) when applied over the specific foam product, and must be approved by the local jurisdiction. TB = thermal barrier or equivalent; IB = ignition barrier or equivalent; NR = not required.
2. You must include the manufacturer and product name, and you should include the batch or lot number, if available.
3. Detailed information on alternative thermal barriers, ignition barriers, or bare foam assemblies is available in the referenced product listings, evaluation reports, and testing reports.

SECTION D: Installer Declaration

I hereby certify that I have installed the listed spray foam thermal insulations and fire protection per manufacturers' installation instructions and product listings, and in a manner compliant with local building codes in effect at the time of installation.

Lead Installer: Name (print): _____ SPFA Certification (optional): _____

Signature: _____ Date: _____

SPFA Spray Polyurethane Foam Insulation Model Certificate Page 4 of 4

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Storage and Handling

- Most Intumescent Coatings on the market are water based, which means easy cleanup and ease of installation, but…..

…DO NOT LET THEM FREEZE!!

- Keep pails of coating in a safe, dry and warm environment until installation

- Follow manufacturer's specifications for ambient air / substrate temperature for installation and for adequate ventilation post installation to allow for coating to completely cure/harden

Impacts of the Use of Coatings On Your Business

1. A thermal / ignition barrier may be required by Code! ***Do not open your company / firm up to liability for not specifying a thermal or ignition barrier if the code requires the protection.***

2. Depending on the climate zones, a vapor retarder is also code required when a vapor permeable spray foam (open cell SPF) is being used. This must also be specified.

3. Proper installation and proper materials help reduce callbacks, which result in increased labor costs for a specific job.

4. Installation of a thermal / ignition barrier, or vapor retarder, is needed to sell/be awarded some spray foam jobs.

Questions???