



## SPFA-134

# Spray Polyurethane Foam Insulation for Metal Buildings

Spray Polyurethane Foam Alliance

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## ABOUT SPRAY POLYURETHANE FOAM ALLIANCE (SPFA)

Founded in 1987, the Spray Polyurethane Foam Alliance (SPFA) is the voice, and educational and technical resource, for the spray polyurethane foam industry. A 501(c)6 trade association, the alliance is composed of contractors, manufacturers, and distributors of polyurethane foam, related equipment, and protective coatings; and who provide inspections, surface preparations, and other services. The organization supports the best practices and the growth of the industry through a number of core initiatives, which include educational programs and events, the SPFA Professional Installer Certification Program, technical literature and guidelines, legislative advocacy, research, and networking opportunities. For more information, please use the contact information and links provided in this document.

## DISCLAIMER

**This document was developed to aid building construction and design professionals in choosing spray-applied polyurethane foam systems. The information provided herein, based on current customs and practices of the trade, is offered in good faith and believed to be true to the best of SPFA’s knowledge and belief.**

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## DOCUMENT HISTORY

Date	Sections Modified	Description of Changes
August 2015	All	Administrative changes



## BUILDING ENVELOPE COMMITTEE

### MISSION STATEMENT

The mission of the Building Envelope Committee is to:

1. To identify, explore, develop, and communicate an understanding of technical issues, including building codes and other standards, for the SPF industry.
2. Provide a wide range of technical information for members and building design professionals to properly specify and install spray foam insulation.
3. Maintain current and develop new SPFA TechDocs and TechTips applicable to application of spray foam insulation.

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## Design Consideration

### GENERAL CONSIDERATIONS

Spray polyurethane foam (SPF) can provide an excellent insulating and weatherproofing augmentation to metal buildings. Polyurethane foam forms an integral bond with the metal building surface conforming to irregular surface profiles and providing an effective air seal. SPF (spray polyurethane foam) may be applied to metal building exteriors or interiors. When applied to exterior surfaces, the SPF must be covered with an elastomeric coating for weather protection. When applied to interior surfaces, the SPF must be covered with a 15-minute thermal barrier for fire protection. Vapor retarders may be required depending on the particulars of the project.

The performance of a spray-applied polyurethane foam insulation system depends on the performance of all the component parts as well as ambient conditions within and without the building. Therefore, specifiers should consult with the respective material suppliers and the contractor to receive written confirmation of their agreement to all facets of the insulation system. This should include, but not be limited to, material selection, expansion joints, load design, vapor retarders, thermal barriers, and flashing details.

Spray polyurethane foam can successfully be applied to most metal building surfaces and components. However, the following general practices must be observed.

### DETERMINING INSULATION THICKNESS

The following method should be considered when determining insulation thickness:

- (1) Building and Energy Codes: Most code agencies require certain buildings to meet the energy conservation standards prescribed by the International Codes Council (ICC) Model Energy Code.
- (2) Condensation Control: Condensation can occur inside a building when interior surface temperature is lower than the dew point of the inside air. Insulation thickness to control this condensation must be based on the design dew point and the design exterior ambient temperature.
- (3) Economic Thickness: Greater insulation thickness decreases heat and cooling costs, and the cost of HVAC equipment. However, there is a diminishing return to adding thickness, where the time-weighted cost of additional insulation exceeds the expected energy savings. The economic thickness calculation determines the added incremental insulation thickness, which meets a specified return on investment from energy cost savings.
- (4) Minimum Practical Thickness: Spray polyurethane foam applications must be sprayed to a minimum thickness to conform to the substrate and to achieve proper foam cure. For most relatively smooth substrates, the minimum practical thickness is 1 inch, but corrugated or unusual substrate configurations may require greater thickness to achieve a suitable finished foam surface.

The best method to determine insulation thickness would be to determine the minimums for each of the situations described above, and to choose the method that prescribes the greatest insulation thickness.

## **SURFACE PREPARATION**

The surface or substrate should be prepared as follows:

- (1) Metal building components must be secured against movement prior to the application of the SPF system.
- (2) Prior to application of primer, vapor retarder, or SPF, the surface must be dry and free of loose dirt or any contaminants that may interfere with adhesion of any of the respective components.
- (3) Contaminants may be removed by use of pressure washing, steam cleaning, vacuum equipment, a hand power broom, chemical solvents, grit blasting, manual scraping, etc.

## **SELECTION OF PRIMER**

If a primer is required, select it based on the type of substrate to be sprayed, the building's intended use, and the recommendations of the SPF and primer manufacturers.

## **SELECTION OF A VAPOR RETARDER**

The need for and the location of a vapor retarder are based on the following factors:

- (1) Direction and degree of the vapor drive:
  - a. Interior design temperature
  - b. Interior design humidity
  - c. Exterior design temperature
  - d. Exterior design humidity
- (2) Location of the intended SPF application:
  - a. Interior wall/ceiling surface
  - b. Exterior wall/roof surface

For example, if a metal building's intended use is as a cooler, a vapor retarder will likely be required if the SPF is applied to the building's exterior surface (the warm side of the building). Conversely, if the building site is in a cool climate and the building will be heated, a vapor retarder will likely be required if SPF is applied to the building's interior surface.

See SPFA Publication *Moisture Vapor Transmission*, Stock Number SPFA-118.

If a vapor retarder is required, its selection should be based on the following criteria:

- (1) Perm rating required (based on moisture vapor drive and perm ratings of other components)
- (2) Compatibility with adjoining materials
- (3) Manufacturer's recommendation

## **SELECTION OF THE SPRAY POLYURETHANE FOAM SYSTEM**

Spray-applied polyurethane foam is the product of reaction of two chemical components. When SPF is sprayed on a substrate, a seamless layer forms. Thickness can be varied to meet insulation

requirements. The contractor, in the case of SPF applications, fabricates the product on site in accordance with the manufacturer's instructions.

A wide range of SPF systems is available in various densities, each exhibiting different temperature limitations, combustibility characteristics, etc. The use of these systems, in combination with each other or with other insulation products, offers a wide range of economical installations. Consult with the contractor and the polyurethane foam manufacturer to determine which system best suits the project.

From a fire safety standpoint, SPF can be used safely. It is important, however, that all persons associated with the design, fabrication, storage, and installation understand the materials and environments involved.

**Polyurethane foam insulation is combustible and should be treated as such. Flame spread ratings provided for polyurethane products using small scale tests are not intended to reflect the hazards presented by this or any other materials under actual fire conditions. Care must be taken to ensure that the foam is not exposed to temperatures in excess of 200 °F.**

**Prohibit open flames, cutting and welding torches, electric heaters, high intensity lamps, and smoking materials from foam storage and installation areas. If hot work must be done near exposed polyurethane foam, shield the foam from heat and sparks by a temporary thermal barrier such as sheet rock, and post a fire watch. Do not weld or cut metal that is in contact with polyurethane foam.**

### **SELECTION OF A PROTECTIVE COATING SYSTEM**

When SPF is applied to the exterior of a metal building, the foam must be covered with a protective elastomeric coating system. The coating system protects the foam from deterioration due to the sun's ultra-violet rays and other weather-related phenomena. The coating must bond to the foam to become an integral part of the insulation system.

Coating systems designed for use over foam cure to form a water-resistant protective membrane. The DFT (dry film thickness of the protective coating shall be in compliance with the coating manufacturer's specifications.

Consider the following items in the selection of the coating system:

- (1) Physical Characteristics
  - a. Chemical resistance
  - b. Water vapor permanence
  - c. Tensile and elongation properties
  - d. Retention of physical properties upon aging
  - e. UV resistance
- (2) Performance Characteristics
  - a. Environment in which it is to be used (abrasion and impact)
  - b. Life expectancy

- c. Ease of maintenance
- d. History of similar applications or laboratory data relating to the application in question
- e. Adhesion to the polyurethane foam.
- f. Combustibility characteristics, individually and in combination with the selected polyurethane foam systems
- g. Aesthetic qualities

For additional information on protective coating systems, see SPFA Publication *A Guide for Selection of Protective Coatings Over Sprayed Polyurethane Foam*, Stock Number SPFA-102.

### **SELECTION OF A THERMAL BARRIER**

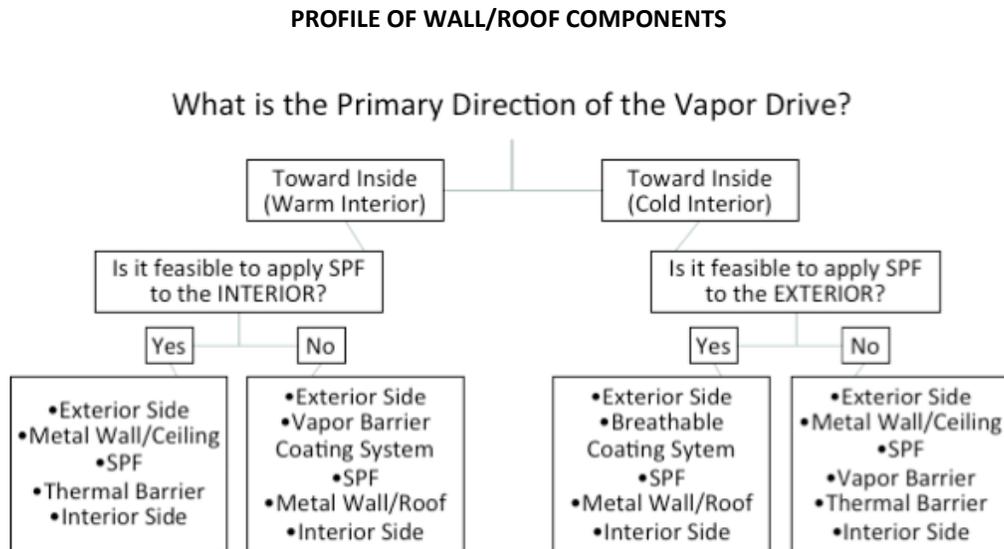
When polyurethane foam is spray applied to interior surfaces, it must be protected by a 15-minute thermal barrier. Various types of thermal barriers are available, which may be sprayed, troweled, or mechanically fastened to the foam. For additional information on thermal barriers, see SPFA Publication *Thermal Barriers for the Spray Polyurethane Foam Industry*, Stock Number SPFA-126.

Consider the following in the selection of a thermal barrier:

- (1) Building code requirements
- (2) Adhesion to the SPF
- (3) Environment in which it is to be used
- (4) Aesthetic qualities
- (5) Ease of maintenance

**METAL BUILDING DECISION FLOW CHART**

Figure 1 provides a decision flow chart to determine under what circumstances protective coatings, vapor retarders, or thermal barriers are likely to be required.



**Figure 1:** Metal Building Decision Flow Chart. Use this chart as a guide to determine when protective coating systems, vapor retarders, and thermal barriers are likely to be required. The last row in the flowchart above lists the order of the building components (outside to inside) for typical metal building assemblies.



## RECOMMENDED GUIDE SPECIFICATION FOR INSULATING METAL BUILDINGS

### Part 1 – General

This guide discusses the application of seamless SPF (spray polyurethane foam) for use as a metal building insulation system. Your contractor, selected systems manufacturer, and local code agencies can assist you, as each project must be assessed individually.

#### 1.01 SCOPE OF WORK

Furnish all labor, materials, tools, and equipment necessary for the application of an SPF metal building insulation system, including accessory items, subject to the general provisions of the contract.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE

(1) Rough Carpentry	Section 06100
(2) Insulation, Other	Section 07200
(3) Thermal Barrier	Section 07220
(4) Vapor Retarder	Section 06100
(5) Mechanical	Division 15
(6) Electrical	Division 16

#### 1.03 QUALITY ASSURANCE

Contractor Qualifications: The contractor should provide information concerning projects similar in nature to the one proposed, including location and person to be contacted. Some manufacturers of SPF systems have approval programs or licensing methods that could be required.

#### 1.04 SUBMITTALS

- (1) Manufacturers' published data sheets or letters of certification that their products comply with the materials specified (this is to include SPF and, if required, coatings, primers, thermal barriers, and vapor retarders)
- (2) Shop drawings on sheet metal, accessories, or other fabricated items, if required
- (3) Manufacturers' application or installation instructions
- (4) Contractor/applicator certification from the SPF supplier or coating and thermal barrier manufacturers and references (see Section 1.03)
- (5) Approval and information guides for applicable local or national building codes
- (6) Safety and handling instructions for storage, handling, and use of the materials, including MSDS (Material Safety Data Sheets)
- (7) Field quality control procedures to be utilized by the contractor/applicator to ensure proper preparation and installation of SPF, coating, and thermal barriers, detail work, and follow-up inspection

### 1.05 MATERIALS, DELIVERY, AND STORAGE

- (1) Materials shall be delivered in the manufacturer's original, tightly sealed containers or unopened packages, all clearly labeled with the manufacturer's name, product identification, safety information, and batch or lot numbers where appropriate. Where materials are covered by a referenced specification, the labels shall bear the specification number, type, and class, as applicable.
- (2) Containers shall be stored out of the weather and direct sun, where the temperatures are within the limits specified by the manufacturer.
- (3) All materials shall be stored in compliance with local fire and safety requirements.

### 1.06 ENVIRONMENTAL CONDITIONS

- (1) Do not apply the SPF below the temperature or above the humidity specified by the manufacturer for ambient air or substrate. If foam is being applied to the metal building's exterior, do not apply the foam during inclement weather.
- (2) Do not apply protective coatings when there is ice, frost, surface moisture, or dampness present on the surface to be coated. Prior to applying the coatings, check the polyurethane foam to ensure that the surface is dry. Apply protective coatings in accordance with the coating manufacturer's application instructions.
- (3) If they are required, apply thermal barriers and vapor retarders in accordance with the manufacturer's application instructions.

### 1.07 SEQUENCE AND SCHEDULING

In new construction projects, the SPF is installed when the preparation of the metal building assembly is complete. SPF installation should be coordinated with the general contractor and other building trades.

### 1.08 SAFETY REQUIREMENTS

- (1) See CPI Bulletin *MDI-Based Polyurethane Foam Systems: Guidelines for Safe Handling and Disposal*, Stock Number AX-119.
- (2) Refer to appropriate MSDS for additional safety information.
- (3) Before starting to apply SPF or coating, all HVAC equipment on the roof must be turned off. These units and any other potential sources of air entry into the building must be sealed.
- (4) Proper disposal of waste materials and containers must be done in compliance with the manufacturer's guidelines or federal, state, and local regulatory agencies.
- (5) For protection against exposure to higher levels of pMDI (polymeric methylene diisocyanate) (greater than 1 ppm) or for entry into confined spaces, workers must wear either a self-contained breathing apparatus, with a full face piece, operated in a pressure-demand or other positive-pressure mode; or a combination respirator, including a Type C air-supplied respirator, with a full face piece, operated in a pressure-demand or other positive-pressure mode; and an auxiliary self-contained breathing apparatus, operated in a pressure-demand or other positive-pressure mode. See CPI Bulletin *MDI-Based Polyurethane Foam Systems: Guidelines for Safe Handling and Disposal*, Stock Number AX-119.



- (6) Personal protective clothing should be worn. This includes wearing the appropriate protective clothing, including eye protection (face shield or chemical worker’s goggles), gloves, and coveralls. This is essential to preventing skin exposure, and is strongly recommended for most individuals who work with pMDI.

## PART 2 – PRODUCTS

### 2.01 POLYURETHANE FOAM

- (1) The polyurethane foam to be applied shall be a two-component system made by combining an isocyanate (A-component) with a polyol (B-component), and shall possess the following physical characteristics (use the appropriate table):

#### INTERIOR POLYURETHANE FOAM: CLOSED-CELL TYPE

Properties	ASTM Test	Value/Units
Density (sprayed-in-place)	D-1622	1.5–3.0 lb/ft <sup>3</sup> (24–48 kg/m <sup>3</sup> )
Compressive Strength	D-1621	Minimum 15 lb/in. <sup>2</sup> (100 kPa)
R-Value		6.2 °F•ft <sup>2</sup> •hr/Btu (1.1 K•m <sup>2</sup> /W) aged
Closed-Cell Content	D-2856	Minimum 90% Value
Flammability *	E-84	<75
Smoke *	E-84	<450

#### INTERIOR POLYURETHANE FOAM: OPEN-CELL TYPE

Properties	ASTM Test	Value/Units
Density (sprayed-in-place)	D-1622	0.4–0.6 lb/ft <sup>3</sup> (6–10 kg/m <sup>3</sup> )
R-Value		3.4 °F•ft <sup>2</sup> •hr/Btu (0.60 K•m <sup>2</sup> /W) aged
Flammability *	E-84	<75
Smoke *	E-84	<450

**EXTERIOR POLYURETHANE FOAM**

Properties	ASTM Test	Value/Units
Density (sprayed-in-place)	D-1622	2.5–3.0 lb/ft <sup>3</sup> (40–50 kg/m <sup>3</sup> )
Compressive Strength	D-1621	Minimum 40 lb/in <sup>2</sup> (280 kPa)
Closed-Cell content	D-2856	Minimum 90% Value
R-Value		6.2 °F•ft <sup>2</sup> •hr/Btu (1.1 K•m <sup>2</sup> /W) aged
Flammability *	E-84	<75
Smoke *	E-84	<450

\*This standard is used solely to measure and describe properties of products in response to heat and flame under controlled laboratory conditions. This numerical flame spread rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

- (2) Polyurethane Foam Primers: Primers used shall be as recommended by the manufacturer of the SPF materials specified.
- (3) Fire Safety Requirements: See CPI Publication MDI-Based Polyurethane Foam Systems: Guidelines for Safe Handling and Disposal, Stock Number Center for the Polyurethanes Industry (CPI)-119.

**2.02 PROTECTIVE COATING SYSTEM**

- (1) The elastomeric coating system may be one or more of the following types:
  - a. Acrylic
  - b. Butyl rubber
  - c. Hypalon
  - d. Neoprene
  - e. Silicone
  - f. Polyurethane elastomer
  - g. Modified asphalt
- (2) Physical Properties: The elastomeric coating system shall possess the following physical characteristics (Note: Specifier shall list physical properties of selected elastomeric coating system):

Properties	ASTM Test	Value
Tensile Strength	D-412	
Elongation	D-412	
Hardness Shore A	D-2240	
Tear Resistance	D-624	
Light Exposure and Weathering	G-151/154	
Moisture Vapor Transmission	E-96 Procedure E	
Chemical Resistance	D-1308	

- (3) General: It is recommended that the coating system be elastomeric in nature (at least 100% elongation). Within these generic-coating types are both vapor retardant and breathable systems.

### 2.03 RELATED PRODUCTS

- (1) 15-Minute Rated Thermal Barriers:
- Sprayed-in-place cementitious
  - Sprayed-in-place fiber
  - Minimum 1/2 inch (13 mm) gypsum board
  - Other
- (2) Vapor Retarder (that which is rated at or less than 3 ng/m<sup>2</sup>·s·Pa (0.05 perm) ASTM E-96, Method E):
- Modified asphalt
  - Butyl rubber
  - Polyethylene film
  - Other
- (3) Substrate Primers (if required): The primer to be applied must be specifically selected for the given substrate to be primed and must be compatible with the SPF.

## PART 3 – EXECUTION

### 3.01 APPLICATION OF PRODUCTS

The products intended for use in metal building insulation systems must be applied within the manufacturer's guidelines for temperature, humidity, and other atmospheric conditions. In addition, they must be sequenced so as to take into consideration substrate preparation, proper cure times, and inter-coat adhesion.

### 3.02 SUBSTRATE CONSIDERATION AND PREPARATION

Surface preparation for metal buildings is as follows:

- (1) Primed: If the primed metal surface is free of loose scale, rust, and weathered or chalking paint, it can be cleaned using pressure washing, steam cleaning, solvent cleaning, vacuum equipment, and hand or power tools to remove loose dirt, grease, oil, or other contaminants.

- (2) Non-Ferrous Metals (including galvanized and stainless steel): When required, clean surfaces as recommended by the primer manufacturer.
- (3) Unpainted Steel: Clean as recommended by primer manufacturer in order to prepare the steel surface for the primer.

### 3.03 PRIMER APPLICATION

When required, the primer shall be applied to the properly prepared substrate and allowed to cure in accordance with the manufacturer's guidelines.

### 3.04 SPRAY POLYURETHANE FOAM APPLICATION

- (1) The SPF A- and B-components shall be processed in accordance with the manufacturer's instructions.
- (2) Polyurethane foam shall be sprayed within the manufacturer's guidelines for temperature, humidity, and other atmospheric conditions. Take precautions to protect surroundings from overspray.
- (3) Polyurethane foam shall be sprayed in minimum 1/2 inch (13 mm) thick passes (lifts) with the overall thickness to be a minimum of \_\_\_\_ inches ( \_\_\_\_ mm). The full thickness of SPF to be applied within any given area should be completed in one day.
- (4) The final sprayed polyurethane foam surface shall be "smooth, orange peel, coarse orange peel, or verge of popcorn." Polyurethane foam surfaces termed "popcorn" or "treebark" are not acceptable and should be corrected. See foam texture photographs in SPFA Publication Spray Polyurethane Foam Systems for New and Remedial Roofing, Stock Number SPFA-104.
- (5) Any damage or defects to the polyurethane foam shall be repaired prior to applying protective coatings, vapor retarders, or thermal barriers.
- (6) The polyurethane foam surface shall be free of contaminants that will impair adhesion of the protective coatings, vapor retarders, or thermal barriers.

### 3.05 PROTECTIVE COATING APPLICATION

- (1) Inspection
- (2) Prior to the application of the protective coatings, the polyurethane foam shall be inspected to ensure that conditions required by Section 3.04 have been met.
- (3) The coating application shall not proceed during inclement weather. The applicator shall apply the protective coating within the temperature and humidity ranges specified by the manufacturer for ambient air and substrate. Wind barriers should be used if wind conditions could affect the quality of the installation.
- (4) Application
  - a. Base Coat:
    - i. The base coat shall be applied the same day as the polyurethane foam when possible. If more than 24 hours elapse prior to the application of the base coat, the polyurethane foam shall be inspected for UV degradation, oxidation, and contaminants. The manufacturer's recommendations shall be followed to prepare the foam surface before coating applications.

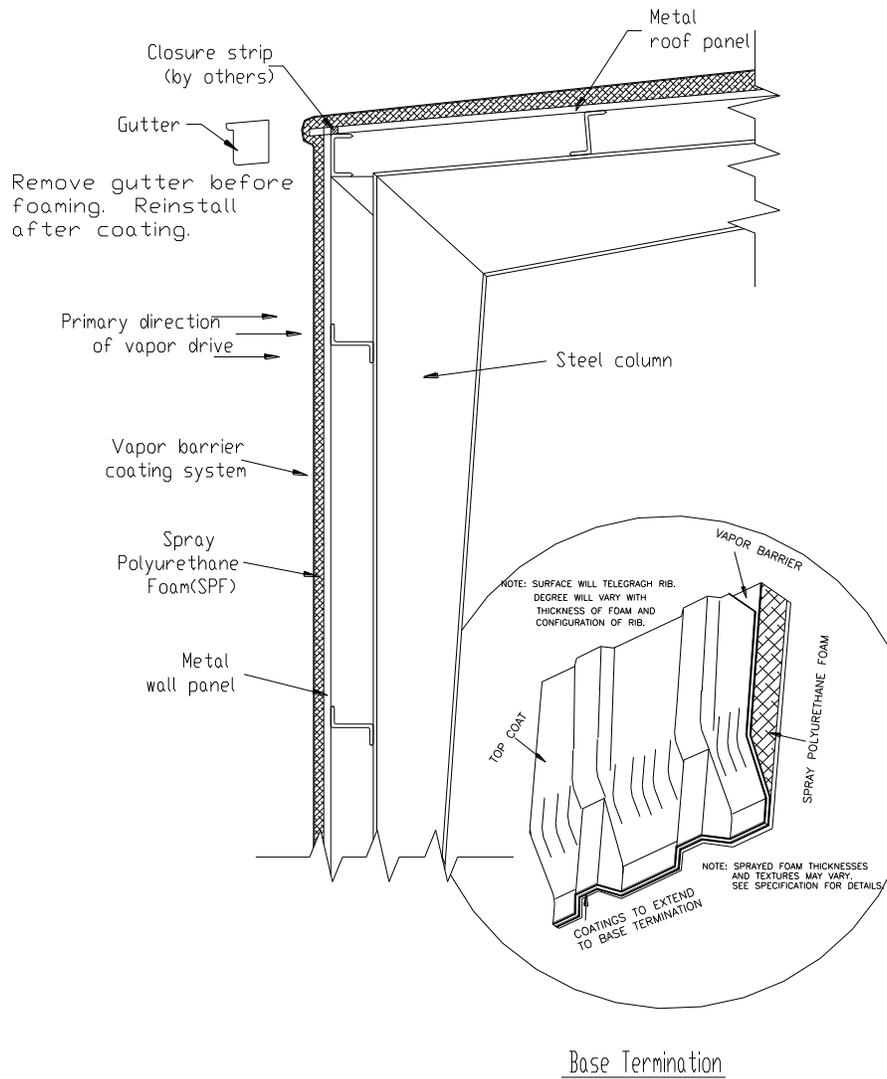
- ii. The base coat shall be applied at a uniform thickness with the rate of application governed by the polyurethane foam surface texture. Coatings shall be applied at a rate to achieve the minimum DFT specified by the protective coating manufacturer.
  - iii. The coating shall be allowed to cure and shall be inspected for pinholes, thinly coated areas, uncured areas, and other defects. Defects shall be corrected.
- b. Top Coat or Subsequent Coat:
- i. Inspect the base coating for defects and thin coating. Correct any defects.
  - ii. The subsequent coating should be applied in a timely manner to ensure proper adhesion between coats.
  - iii. The final coat shall be inspected for defects and thin coating. Correct defects in accordance with the manufacturer's recommendations.
- (5) The coating will be reinforced in accordance with the manufacturer's instructions around protrusions, walkways, etc.

### 3.06 VAPOR RETARDER APPLICATION

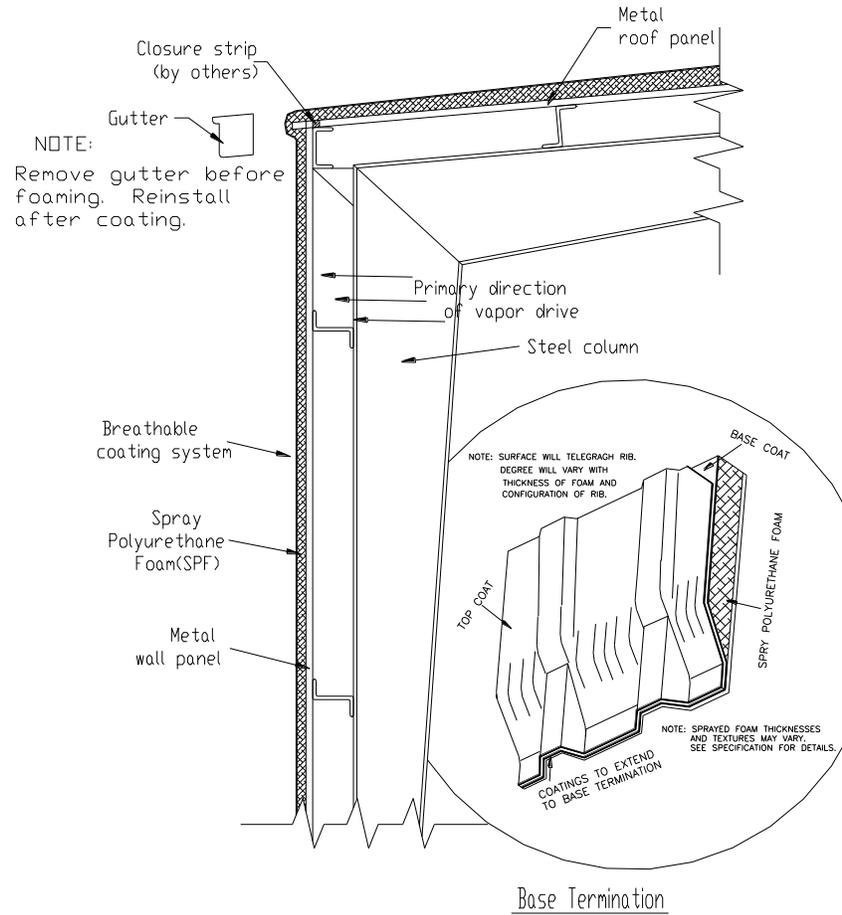
- (1) When required, a vapor retarder shall be applied to the substrate to be insulated or to the finished SPF insulation. The predominant direction of the vapor drive and the placement of the spray foam insulation (interior or exterior) determine whether or not a vapor retarder is required over the SPF. (Refer to Figure 1.)
- (2) The vapor retarder shall be applied in accordance with manufacturer's specifications so as to achieve the desired perm rating per ASTM E-96, Method E.

### 3.07 THERMAL BARRIER APPLICATION

When the SPF is applied to the interior surface of a metal building, it must be covered with a 15-minute-rated thermal barrier. The thermal barrier must be applied in accordance with the manufacturer's guidelines.



**Figure 2:** Vapor Drive Toward Inside SPF Applied to Exterior



**Figure 3:** Vapor Drive Toward Exterior SPF Applied to Exterior

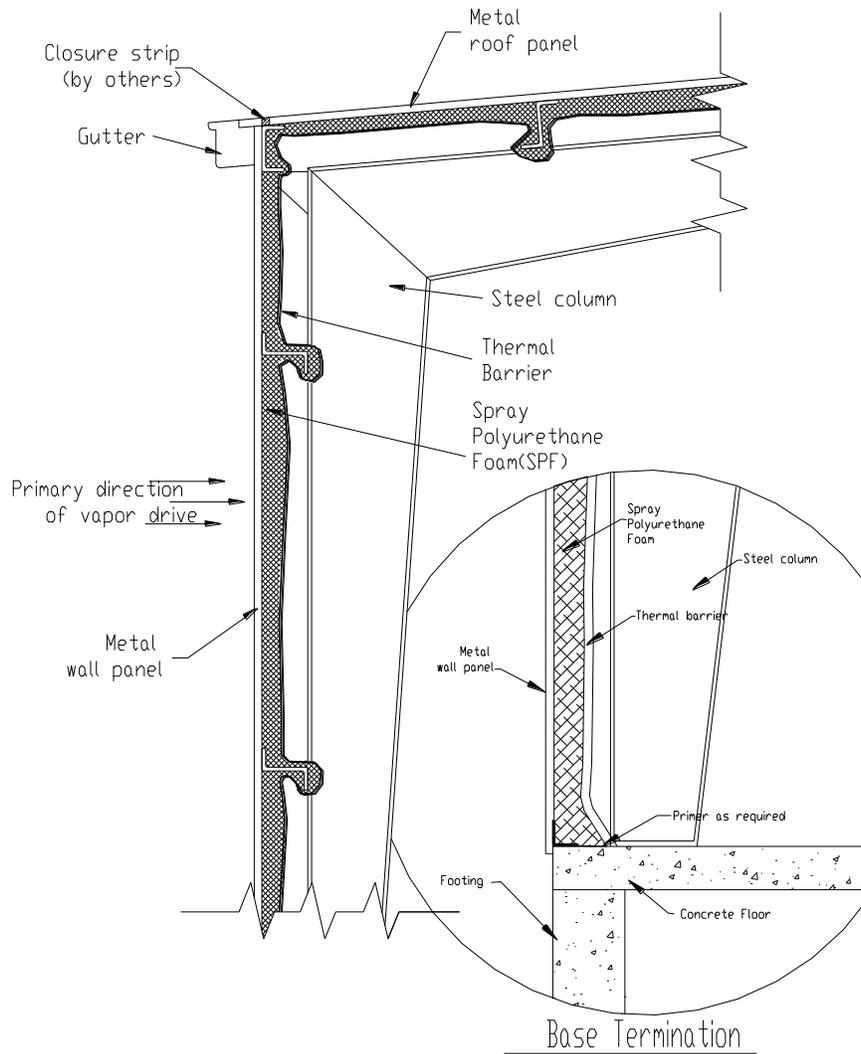


Figure 4: Vapor Drive Toward Inside SPF Applied on Interior

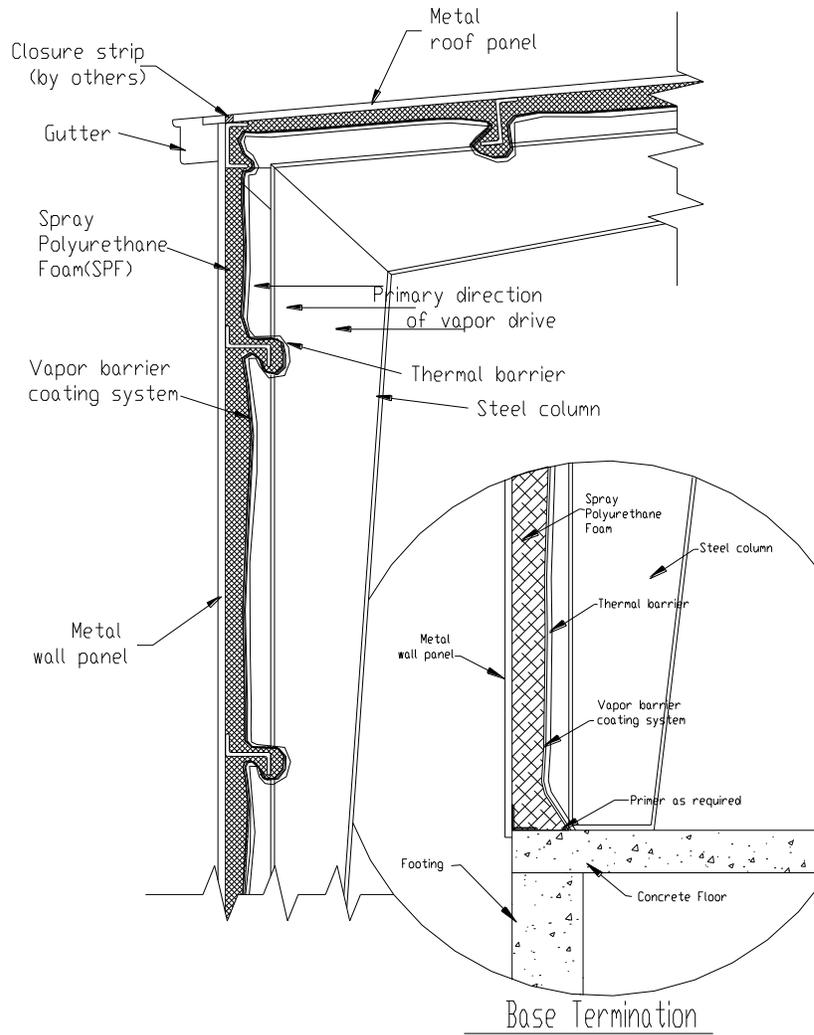


Figure 5: Vapor Drive Toward Outside SPF Applied on Interior



## OTHER PROGRAMS AND SERVICES OFFERED BY SPFA

### PROFESSIONAL TRAINING

The SPFA Professional Program offers individual certification and company accreditation in five areas: Contractor, Distributor, Elastomeric Coating Supplier, Foam Supplier, and Independent Inspector. The objectives of the program are to **PROVIDE** an established set of criteria, to **IDENTIFY** and **RECOGNIZE** individuals and companies, and to **ENCOURAGE** individual and company responsibility for the quality of work through self-education.

### TECHNICAL DOCUMENTS

SPFA-102	A Guide for Selection of Protective Coatings over Spray Polyurethane Foam Roofing Systems
SPFA-103	Spray Polyurethane Foam Insulation Systems for Metal Service Vessels Operating Between -30°F and 200°F
SPFA-104	Spray Polyurethane Foam Systems for New and Remedial Roofing
SPFA-107	Spray Polyurethane Foam Blisters – Their Causes, Types, Prevention and Repair
SPFA-110	Spray Polyurethane Foam Aggregate Systems for New and Remedial Roofing
SPFA-111	Spray Polyurethane Foam Systems for Cold Storage Facilities Operating Between -40°F and 50°F
SPFA-112	Spray Polyurethane Foam for Building Envelope Insulation and Air Seal
SPFA-113	Contractor/Applicator Handbook
SPFA-116	Spray-Applied Polyurethane Foam and Elastomeric Coating Systems (10 min. VHS Video)
SPFA-117	Spray-Applied Polyurethane Foam and Aggregate Roof Systems (10 min. VHS Video)
SPFA-118	Moisture Vapor Transmission
SPFA-119	Glossary of Terms Common to the Spray Polyurethane Foam Industry
SPFA-121	Spray Polyurethane Foam Estimating Reference Guide
SPFA-122	The Renewal of Spray Polyurethane Foam and Coating Roof Systems
SPFA-124	Wind Uplift Brochure
SPFA-125	P-Rating Brochure
SPFA-126	Thermal Barriers for the Spray Polyurethane Foam Industry
SPFA-127	Maintenance Manual for Spray Polyurethane Foam Roof Systems
SPFA-129	SPF Roofing “Seamless Roofing and Insulation” (8-page Color Brochure)
SPFA-130	SPF Roofing “Sustainable Roofing” (4-page Color Brochure)
SPFA-131	Whole Wall Rating/Label for Metal Stud Wall Systems with SPF; Steady State Thermal Analysis
SPFA-132	The SPF Roofing Systems (11.5 min. informative video offering a comprehensive pictorial review of this most extraordinary roofing concept)
SPFA-133	Maintenance Manual for Spray Polyurethane Foam Roof Systems (Spanish Version)
SPFA-134	Guideline for Insulating Metal Buildings with Spray Polyurethane Foam
AX-171	Course 101-R Chapter 1: Health, Safety and Environmental Aspects of Spray Polyurethane Foam and Coverings (Video and Text)

- The **SPFA website** is a direct communication to all member suppliers and contractors with web access. Up-to-date information is offered, and, as a member, you may link into the website: [www.sprayfoam.org](http://www.sprayfoam.org).
- A **“Support Line” 800-number** is available for your use to answer technical questions (800-523-6154). The SPFA sponsors research and development and product testing that allows for approval of generic types of spray foams, coverings, and related products.