



**A Guideline for Securing
Roofing Components with
SPF Adhesives**

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SECTION I – DESCRIPTION AND FEATURES

SPF Adhesive can be used to adhere a variety of roof construction materials to many roof substrates in both new and re-roof applications. SPF adhesive may also be used to adhere board stock to board stock. SPF adhesive features may include:

- Elimination of thermal shorts caused by fasteners
- Rapid application
- No pre-drilling in difficult substrates such as concrete and cementitious wood fiber plank
- Controlled cure rate
- Excellent wind uplift resistance
- Potential air seal

SECTION II – ADHESIVE CLASSIFICATIONS AND DEFINITIONS

Two Component SPF Adhesive: For the purpose of this document a "Two Component SPF Adhesive" is defined as follows:

- Consists of two components: A (isocyanate) and B (polyol blend)
- Components are dispensed through hose which may be heated or unheated
- Components are mixed at a gun
- Components are dispensed by pressurized containers or pumps and applied in liquid form
- Curing takes place through a chemical reaction between the two components
- Tack free time is typically less than 20 minutes

Packaging of Two Component SPF Adhesive: A and B components are typically packaged in liquid volumes ranging between 5 and 250 gallon containers.

Single Component SPF Adhesive: For the purpose of this document a "Single Component SPF Adhesive" is defined as follows:

- Consists of a single component
- Single component may be dispensed by pressurized containers or poured from non pressurized containers
- Curing takes place through a reaction

with moisture in the air – typically more than 30 minutes depending on ambient conditions

- Tack free time is typically less than 30 minutes

Packaging of Single Component SPF Adhesive: Cans or cylinders in volumes ranging between 1 and 5 gallons.



Figure 1: Two-component SPF Adhesive in pressurized cylinders.



Figure 2: Single-component SPF Adhesive in pressurized cylinder.

SECTION III—RECOMMENDED APPLICATIONS

Two Component SPF Adhesive is applied to the substrate in ribbons or full coverage. After being applied, Two Component SPF Adhesives will typically rise between 3 mm (1/8 inch) and 25mm (1 inch). Board stock is placed in the adhesive before it becomes tacky. Working time will range between 30 seconds and 15 minutes depending on ambient conditions and other variables. Maximum adhesion normally takes 24 hours.



Figure 3: SPF Adhesive full coverage application.



Figure 4: SPF Adhesive ribbon application.



Figure 5: SPF Adhesive patty application.

Single Component SPF Adhesive is applied to the substrate in ribbons, patties, or spots. After being applied, the adhesive can rise between 13mm (1/2 inch) and 25mm (1 inch). Board stock is placed in the adhesive before it becomes tacky and normally requires ballasting of the boards. Working time and maximum adhesion are dependant on ambient conditions and other variables.

1. **Compatible Roof Decks and Substrates:**

The following list includes those substrates typically used with SPF Adhesive. Always consult the adhesive manufacturer for specific recommendations.

- Poured-in-place structural concrete
- Pre-cast concrete
- Plywood —16mm (5/8") min thickness)
- Existing Built Up Roofs and Modified Bitumen
- Steel – 22 gauge minimum
- Existing spray polyurethane foam
- Cementitious wood fiber plank
- Base sheets

2. **Compatible Roofing Components:** The following list of components includes those that may be adhered with SPF Adhesive.

NOTE: SPF Adhesives may not adhere well to some boardstock facers. Always consult the adhesive manufacturer for specific approvals regarding components and questions regarding adhesion to facers.

- Polyisocyanurate
- High Density Wood Fiber
- Dens-Deck®
- Expanded Polystyrene
- Extruded Polystyrene
- Tile
- Membranes

3. **Limitations:** Consult the adhesive manufacturer for specific limitations. SPF Adhesive is not recommended for application:

- When ambient or substrate temperatures are below 2°C (35°F)
- During inclement weather
- Upon wet surfaces
- To any roof deck that shows signs of deterioration or loss of structural integrity

- Over large gravel, excessively dirty, or grease laden surfaces

SECTION IV—APPLICATION

This section contains basic guidelines for applying SPF Adhesive.

1. Safety:

- See API Bulletin AX-119 “MDI-Based Polyurethane Foam Systems: Guidelines for Safe Handling and Disposal.”
- Refer to appropriate Material Safety Data Sheets (MSDS) for additional safety information.
- Before starting to apply SPF Adhesive, 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.

2. Handling of SPF Adhesive:

Containers should be kept closed and stored in a dry, well ventilated area between 20 °C (70°F) and 35 °C (95 °F). Do not store containers in direct sunlight.

3. Surface Preparation:

- Priming may be required on some surfaces. Contact adhesive manufacturer for additional requirements.
- Structural Concrete and Wood – These surfaces must be free of any debris, dirt, oil, grease and moisture before applying SPF Adhesive.
- Built Up Roofing (BUR) and Modified Bitumens – Non-graveled surfaces should be free of any debris, dirt, oil, grease, moisture and standing water. Graveled surfaces must be free of loose gravel, dirt and debris. Contact adhesive manufacturer for additional requirements.
- Steel – Surface should be free of any processing oil. The bonding surface must be free of any cleaner before application. Contact adhesive manufacturer for additional requirements.
- Insulation – Review the roofing insulation plan. Multiple layers of boards should have joints staggered.
- Existing Spray Polyurethane Foam – The

surface should be removed by scarifying (minimum of 6mm [$\frac{1}{4}$ "]). The surface should be blown clean before applying SPF Adhesive per manufacturer recommendations.

4. Two Component SPF Adhesive Installation:

- Verify all materials are in sound condition and free of irregularities.
- The resin component (B-Side) may require mixing before using (check with the manufacturer).
- The application rate will vary depending on the surface roughness.
- Spray polyurethane foam may be applied to extremely irregular surfaces before applying SPF Adhesive.

5. Single Component SPF Adhesive Installation:

- Verify all materials are in sound condition and free of irregularities.
- Mix the material container as recommended by the manufacturer.
- Attach dispensing hose and nozzle as recommended by the manufacturer.
- Apply the adhesive in a continuous bead or ribbon with a bead diameter of 20 to 25 mm ($\frac{3}{4}$ to 1 inch). Spacing between beads or ribbons may be varied to achieve desired adhesion or wind uplift characteristics.

5. Reaction Time:

- TWO COMPONENT SPF ADHESIVE is designed to react much slower than spray polyurethane foam (typically 5 to 10 minutes). It is important to choose a reaction speed based on both substrate and ambient temperature.
- SINGLE COMPONENT SPF ADHESIVE reacts with moisture in the air; the speed will vary significantly depending on temperature and humidity.

NOTE: Components to be adhered must be placed into the SPF Adhesive while it is still wet and prior to tack-free time.

SECTION V - QUALITY CONTROL

- Manufacturer's Responsibility:** It is the manufacturer's responsibility to provide a

product that conforms to its claims relative to basic product description and uses, physical properties, and in-place performance. In order to assure that the end-user receives a product comparable to the manufacturer's claims, manufacturer should provide the following:

- a. Literature: Published product literature may include the following information: Product description, basic uses, wet properties, cured physical properties, performance characteristics, approvals, building code and insurance acceptance, application instructions and techniques, limitations, and precautions.
- b. Applicator Training and Approval: Most manufacturers will help the contractor train personnel to handle and apply their products. This training can be undertaken in formal seminar-type programs or as an in-field exercise, depending on the complexity of the product and/or the equipment necessary for its application.

2. Contractor's Responsibility: The contractor should assume responsibility for proper product use, handling, and application.

a. Knowledge of Product:

- 1) Contractors and their crews should be fully aware of all the parameters

regarding a particular product, including uses, packaging, mixing, storage, and all application requirements.

- 2) Field personnel should be provided with the proper training and knowledge by the contractor to successfully apply the particular system.

b. Equipment

- 1) Applicators must have a complete understanding of their equipment and its use with the particular material being applied. Of particular importance are mix ratios, pressures, output, filters, spray tip size, and operating temperatures.
- 2) Proper maintenance, repair and clean-up of equipment will also provide for minimum downtime, increased production, and better crew and product performance.

c. Job Inspection:

- 1) Spot checks per manufacturer's recommendations of product ratios, output, and cured properties are good measures for quality control.
- 2) Monitoring specific output measured in gallons and areas covered will provide material yields and more uniform coverage.