

## Installation Guide Specification SPF and Coating

### I. GENERAL

#### 1.01 SUMMARY

- A. Provide labor, materials, equipment, and supervision necessary to install NCFI Polyurethanes' Spray-Applied Polyurethane Foam (SPF) and spray-applied elastomeric, acrylic coating system as outlined in this specification to create a seamless waterproof roofing system.
- B. NCFI's application instructions for each product used are to be considered part of these specifications and should be followed at all times.

#### 1.02 SUBMITTALS

- A. Submit product data sheets and literature verifying fire ratings and physical properties of materials.
- B. Submit material safety data sheets.

#### 1.03 QUALITY ASSURANCE

- A. Supplier Qualifications: The ENDURATECH Premier Roofing System, as supplied by NCFI Polyurethanes, is approved for use on the project.
- B. Applicator Qualifications: The applicator shall be approved by NCFI Polyurethanes to apply the system. Manufacturer's written verification of Tier One applicator approval is required.

#### 1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Containers and Packaging: Deliver materials in original sealed containers, clearly marked with manufacturer's logo, full product name, and lot number(s).
- B. Storage: Store materials between 40°F and 100°F with careful handling to prevent damage to products. If conditions exceed these ranges, special consideration in storage must be taken. Do not store at high temperatures in direct sunlight.
- C. Protection: Protect all materials from freezing and other damage during transit, handling, storage, and installation.

#### 1.05 PROJECT CONDITIONS

- A. For application details of polyurethane foam, consult the foam manufacturer for recommendations on the proper system to use on project substrate and at expected substrate and ambient temperatures. Do not apply polyurethane foam when wind velocity is above 15 mph unless a wind screen is used.
- B. Do not proceed with application of coating materials when surface or ambient temperature is less than 45°F.

- C. Do not apply materials unless surface to receive polyurethane foam and/or acrylic coating is clean and dry.
- D. Install all material in strict accordance with all published safety, weather, or applicable regulations of the manufacturer and/or local, state, and/or federal agencies which have jurisdiction.

#### 1.06 DETAIL WORK

- A. This specification does not extensively outline procedures for preparation and finishing of drains, vents, ducts, flashings, parapet walls, etc. This work should be outlined by the contractor before work commences, and shall be performed observing good trade practices. In most cases, the self- flashing attributes of the SPF will be utilized without the need for additional flashing materials. In any case, the SPF should never be applied in a manner that traps moisture or forces moisture to migrate underneath the system. Any needed sheet metal work shall be in accordance with the latest editions of SMACNA and/or NRCA details.

## II. PRODUCTS

#### 2.01 POLYURETHANE FOAM

- A. The foam shall be NCFI Polyurethanes system 10-001.
- B. Physical Properties of Cured Foam:
  - 1. Polyurethane foam shall contain EPA-approved 245fa blowing agent and meet U.S. non-ozone-depleting requirements of the U.S. EPA mandate and International Montreal Protocol. No polyurethane foam with phased-out HCFC 141b blowing agent is acceptable.
  - 2. Minimum in-place density: 2.7 lb/cu. ft.
  - 3. Closed cell content: Minimum 93%
  - 4. Compressive strength, parallel to rise: Minimum 40 psi.
  - 5. The foam shall have a flame spread rating of less than 75 when tested according to the procedures outlined in ASTM E-84.

#### 2.02 SPRAY-APPLIED ELASTOMERIC, ACRYLIC COATING SYSTEM

- A. The coating shall be the spray applied ENDURATECH elastomeric acrylic coating system, manufactured to NCFI Polyurethanes specifications.
- B. Physical Properties of Cured Coating System:
  - 1. The coating system shall have good resistance to ponding water.
  - 2. The coating system shall contain no plasticizers.
  - 3. The coating system shall contain no migrating fire retardants.
  - 4. The coating system shall have a Class A fire rating over foam on a noncombustible deck when tested according to the procedures outlined in ASTM E-108.

5. The protective coating system shall also meet the following physical property requirements:

| Property                            | ASTM Method | Results         |
|-------------------------------------|-------------|-----------------|
| Tensile Strength, psi (Max @ 73°F)  | D6083       | Minimum 250     |
| % Elongation @ Break (73°F)         | D6083       | Minimum 250     |
| Wet adhesion to Specified Substrate | D6083       | Minimum 3.0 pli |
| Permeance, perms                    | D6083       | Maximum 20      |
| Volume Solids %<br>Weight Solids %  | D6083       | > 50<br>> 65    |

### 2.03 RELATED MATERIALS

- A. Flashing, adhesives, thinners, elastomeric caulking compounds, primers, and similar materials shall be approved by NCFI Polyurethanes. All materials used shall be applied in accordance with its manufacturer's recommendations.

## III. EXECUTION

### 3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins and product guide specification instructions.

### 3.02 EXAMINATION

- A. Inspect surfaces, which will receive SPF to make sure they are clean, smooth, sound, properly prepared, and free of moisture, dirt, debris, or other contamination.
- B. Verify that all roof penetrations, mechanical equipment, cants, edge metal, and other on-roof items are in place and secure.
- C. Verify that all critical areas around the immediate vicinity of the spray area are suitably protected.
- D. Verify all roof drains are clean and in working order.
- E. Verify that all air conditioning and air intake vents are suitably protected or closed.

### 3.03 PREPARATION

- A. Prior to SPF application, all existing non-embedded gravel surfacing material shall be removed by means of a stiff bristle street broom, powered mechanical sweeper, or vacuuming. All loose dirt and dust remaining after gravel removal must be broomed and/or vacuumed from the roof. All blisters, ridges and other imperfections must be secured so that the surface will be clean and dry and a secure base for SPF application.

- B. Existing low areas where water ponds and areas with obviously poor drainage to roof scuppers, drains, or roof edges should be corrected by filling and/or tapering the sprayed foam or by adding drains. To prevent the ponding of water, the entire system must be well sloped into drains. Install additional drains as necessary.
- C. Priming may be required on some substrates. Consult NCFI Polyurethanes for specific recommendations.
- D. Other types of Surfaces: Preparation of surfaces and use of materials may vary substantially with different types of new or existing roofs. Contact NCFI for specific recommendations over other types of surfaces.

### 3.04 APPLICATION

#### A. Sprayed Polyurethane Foam:

1. Fill all low areas with SPF as required to achieve proper water drainage. The SPF should be applied in a manner to compliment existing drainage and to eliminate the accumulation of water. Minimum foam pass thickness of ½ inch.
2. To all properly prepared surfaces, apply the SPF in minimum ½ inch lifts to reach the required thickness of at least 1 inch minimum thickness with a tolerance of+ ¼ inch-0 inch. Flash passes of less than ½ inch are not acceptable.
3. Extend foam up walls, around pipes, and other projections a minimum of 4 inches. The top edge of the foam shall extend all the way up the parapet wall.
4. In areas where obstacles do not permit normal spray techniques and the application tolerance specified above cannot be met, the contractor shall still apply the specified minimum thickness of foam required by a method that he shall select and is approved by the manufacturer. However, the completed application of foam shall be monolithic with adjacent areas of normal application.
5. Apply foam so that the finished surface is smooth and free of voids, pinholes, and crevices with a maximum allowable roughness defined as “coarse orange peel”, “Treebark”, or “popcorn” surfaces are not acceptable.

#### B. ENDURATECH Acrylic Coating System:

1. Before the base coat of the ENDURATECH system is applied, the installed foam insulation must cure a minimum of 2 hours.
2. The base coat of the ENDURATECH system shall be applied the same day as the SPF application. In no case shall the coating be applied over UV degraded foam.
3. The ENDURATECH coating system shall be sprayed or roller applied in a cross hatch technique without causing runs or puddles.
4. The ENDURATECH coating system shall be evenly applied in at least 3 separate coats to achieve a **specified dry film thickness of 35 mils and not less than 30 mils**. Allow thorough dry time between coats.
5. These minimum recommendations for material usage are for ideal conditions. The number of gallons per 100 square feet may need to increase due to uneven application, rough surface texture, wind conditions while spraying, or other variables

6. Coating shall terminate at least 2 inches above or beyond the edge of applied foam in a neat and uniform manner.
7. No coating shall be applied if weather will not allow it to cure prior to exposure to precipitation or freezing temperatures.

### 3.05 FIELD QUALITY REQUIREMENTS

- A. Manufacturer's Field Services for NCFI Polyurethanes warranted projects: Inspection by NCFI Polyurethanes' representative shall be made to verify the proper installation of the system. Any areas that do not meet the minimum standards for application as specified herein shall be corrected at the contractor's expense. Manufacturer's inspection or verification shall not constitute acceptance of responsibility for any improper application of material.

### 3.06 CLEANING

- A. Surfaces not intended to receive SPF and/or elastomeric coating materials shall be protected during the application of the system. Should this protection not be effective, or not be provided, the respective surfaces shall be restored to their proper conditions by cleaning, repairing or replacing. All debris from completion of work shall be completely removed from the project site.

## IV. MATERIALS

The following materials listed in these recommendations are available from NCFI Polyurethanes:

1. ENDURATECH, 100% acrylic, high performance elastomeric roof coating.
2. ENDURATECH XP, acrylic modified primer.
3. NCFI Polyurethanes 10-001 approved premium quality, high density spray polyurethane foam.