

UNIFLEX ROOF COATING SYSTEM INSTALLATION GUIDE SPECIFICATION FOR SPF OVER –
ACRYLIC AND SILICONE TECHNOLOGIES

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Provide labor, materials, equipment, and supervision necessary to install NCFI Polyurethanes' Spray-Applied Polyurethane Foam (SPF) and spray-applied elastomeric 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.

1.2 SUBMITTALS

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

1.3 QUALITY ASSURANCE

- A. Supplier Qualifications: The Uniflex[®] Liquid Applied Roof Systems Coatings supplied by Uniflex, and Spray Polyurethane Foam as supplied by NCFI Polyurethanes, is approved for use on the project.
- B. Applicator Qualifications: The applicator shall be approved by Uniflex and NCFI Polyurethanes to apply the system. Manufacturer's written verification of applicator approval is required.

1.4 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.

1.5 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 for Uniflex Silicones and 50°F for Uniflex Acrylics.

- C. Do not apply materials unless surface to receive polyurethane foam and/or 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.

1.6 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.

PART 2 – PRODUCTS

2.1 GENERAL

- A. Products other than those described in Part 2 may be submitted for review and acceptance by Manufacturer. Manufacturer's review shall be for compatibility purposes only with Manufacturer's products. The specifications and application instructions for products not supplied by Manufacturer must be reviewed by the Owner and/or Owner's Representative for final approval and use on the project. Manufacturer will not provide any warranty coverage for products other than those supplied by the specified Manufacturer. There shall be no deviations made from the Specifications unless submitted in writing by the Contractor and approved in writing by the Specifier, Owner and Manufacturer.

2.2 ACCEPTABLE MANUFACTURERS

- A. Uniflex Fluid Applied Roofing Systems, 101 W. Prospect Avenue, Cleveland, Ohio 44115
- B. NFCI Polyurethanes, 1515 Carter Street, Mount Airy, NC 27030
- C. Contact the Uniflex Technical Department at uniflex.technical@sherwin.com with any questions and for a complete list of approved products.

2.3 COMPONENTS

- A. Spray Polyurethane Foam (SPF) 10-011
 - 1. NFCI **2.8#** HFO or HFC SPF [for Uniflex warranted systems]
- B. ROOF COATINGS (select one type)
 - Silicone:
 - 1. Uniflex® 44-600 WHITE SILICONE
 - 2. Uniflex® 44-320 GRAY SILICONE (Optional as a base coat for QC)
 - Acrylic:
 - 1. Uniflex® 41-300 PREMIUM WHITE ELASTOMERIC
 - 2. Uniflex® 41-320 PREMIUM GRAY BASE ELASTOMERIC (Optional as a base coat for QC)

C. Accessories:

1. Uniflex[®] Polyester Fabric for flashing reinforcement 20-3850, 20-385A, B, C

D. Sealants:

1. Uniflex Silicone Rubberized Roof and Flashing Sealant 44-900 White (44-900 not for use with acrylic coatings)
2. Uniflex One Flashing and Seam Sealer 51-920 Gray

E. Additional Materials:

1. Roof Brush (Required when embedding fabric):
 - a. 4" Hand Held Roof Brush 20-504
 - b. 10" Roof Brush Head 20-510
 - c. 60" Roof Brush Handle Threaded 50-560
2. Walkways: (optional)
 - a. #11 – C93 granules or like granules (.84 to 2.0 minimum in size)

3.1 INSPECTION AND TESTING – [EXISTING ROOF ASSEMBLIES]

A. EXISTING SPRAYED FOAM ROOFING:

- Existing SPF coated with Acrylic - Coatings needs to be scarified off.
- Existing SPF Coated with Silicone - Coating needs to be scarified off.

- B. All roof system areas shall be inspected for moisture in accordance within the guidelines of the Standard Practices for Moisture Surveying of Roofing and Waterproofing Systems by a person qualified and certified to provide proper interpretation of non-destructive moisture Survey data, requires knowledge of infrared theory, moisture migration, heat transfer, environmental effects, and roof construction as they apply to roof moisture analysis.
- C. Based on inspection and testing, a roof plan shall be made to show all areas of water intrusion, ponding water, wet insulation, and any deteriorated or damaged decking or other materials.
- D. Contractor shall verify a minimum roof slope of 1/4 inch per foot and that all roof drains are clean and in good working order.
- E. Prior to application of the coating system, Contractor shall perform adhesion testing over substrates including previously coated and non-coated roof membranes. Contractor shall follow industry approved method for field adhesion test methods. Contractor shall perform adhesion testing in areas of existing roofing membrane indicating worn substrates, any change in substrate, areas that show evidence of ponding water conditions or previously coated areas. All adhesion test results shall be recorded and maintained. Manufacturer reserves the right to request said results for additional evaluation.
- F. If any unusual, unexpected, or concealed conditions are discovered at any time prior to or during the work, the Contractor shall stop work immediately and notify the Owner, Owner's Representative and Manufacturer in writing as soon as possible.

3.2 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.

3.3 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 Uniflex and 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 Uniflex or NCFI for specific recommendations over other types of surfaces.
- E. Weather Conditions: Foam cannot be applied during periods of precipitation or when precipitation is imminent. The ambient temperature must be above 50°F. Ambient humidity must be monitored before and during the application of foam with a psychrometer. Wet bulb measurements must not exceed the maximums for a given dry bulb measurement as defined by NCFI[®]'s Applicator Bulletin on Wet Bulb/Dry Bulb Thermometer (see Table 2 below). Wind speeds should not exceed 15 mph. To avoid overspray, wind screens are recommended.

Table 2. Maximum Wet Bulb Readings for Given Dry Bulb Reading (°F)											
Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb
40	35	50	45½	60	55½	70	65½	80	73½	90	79½
41	36	51	46½	61	56½	71	66½	81	74½	91	80
42	37½	52	47½	62	57½	72	67½	82	75	92	80½
43	38½	53	48½	63	58½	73	68	83	75½	93	81
44	39½	54	49½	64	59½	74	69	84	76	94	81½
45	40½	55	50½	65	60½	75	70	85	77	95	82
46	41½	56	51½	66	61½	76	70½	86	77½	96	82
47	42½	57	52½	67	62½	77	71½	87	78	97	82½
48	43½	58	53½	68	63½	78	72	88	78½	98	82½
49	43½	59	54½	69	64½	79	73	89	79	99	83
										100	83

3.4 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 complement existing drainage* and to eliminate the accumulation of water.
2. To all properly prepared surfaces, apply the SPF in pass thicknesses between ½ and 1.5 inch per lift to reach the absolute minimum required thickness listed in Table 3. Total thicknesses may be greater, but not less than specified. Flash passes of less than ½ inch are not acceptable.
3. **SPRAYING FOAM ON COAL TAR ROOFS:** Coal tar used in roofing will soften substantially when heated, even on older roofs. When spraying foam onto coal tar roof surfaces, it's important that heat build-up due to the polyurethane foam reaction exotherm be minimized. Excessive heat build-up could result in delamination between the foam and the existing built-up roof surface or between the built-up roof plies. Therefore, when applying foam to coal tar roofs, *spray the first foam pass ½ inch to ¾ inch in thickness and allow the first pass to cool for 15 min.* before applying additional foam passes.

Spraying foam to ISO and EPS (Expanded Polystyrene) boards. When spraying to foam boards, make sure they are properly attached with fasteners or adhesive. If there is more than one layer of insulation board, make sure the joints are staggered to increase insulation efficiency and structural stability. Never spray to XPS (Extruded Polystyrene) board as spray foam will not adhere well to the substrate.

4. 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.
5. 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.
6. 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. Foam thickness should be checked throughout the duration of the project with a Pin-gauge or similar gauge designed to measure Foam thickness.
7. The foamed roofs drainage should be checked after a rain for ponding water (½ inch or more of water in a single 100 ft² area). Drainage channels can be cut using a rotary wire brush, or other suitable device, to eliminate standing water. Other sources of standing or steady water, such as air conditioning condensation or cooling tower drippage, must be eliminated from the roof surface by plumbing to drain or other suitable means.

Table 3. Foam Thickness Absolute Minimum Requirements			
Roof Type	Warranty Period		
	10 years	15 years	20 years
New Construction (minimum inches)	1.5	1.75	2.0
Recover Non-SPF roof assembly (minimum inches)	1.25	1.5	1.75
Recover SPF (minimum inches)	1	N/A	N/A

B. Uniflex® Coating System:

1. Before the base/initial coat of the Uniflex system is applied, the installed foam insulation must cure a minimum of 2 hours.
2. The base coat of the Uniflex coating 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 Uniflex coating system shall be sprayed, or roller applied in a cross-hatch technique without causing runs or puddles.

4. Uniflex Coating Thicknesses should be regularly for proper minimum WFT thickness to achieve the desired DFT in order to meet warranty eligibility.

4.1. **Material Only Warranty:** Table 4 lists and minimum DFT (dry film thickness) thicknesses required for the specified material only warranty period.
coating

Table 4. Material Only Coating Thickness Requirements	
Coating Type	Warranty Period 10 years
Acrylic (min DFT)	25
Coating Type	Warranty Period Limited Lifetime
Silicone (min DFT)	22

4.2. **System Warranty:** Table 5 lists minimum DFT coating thicknesses required for the specified system warranty period.

Table 5. System Warranty Coating Thickness Requirements			
Coating Type	Warranty Period		
	10 years	15 years	20 years
Acrylic (min DFT)	25	40	N/A
Silicone (min DFT)	22	30	37

4.3. **Estimated Application Rates:** Table 6 lists estimated application rates to achieve a specific DFT. These application rates are only estimates based on a “theoretical plus 10%” application rate. Actual application rates will vary depending on the uniformity of coating application, SPF surface texture, wind conditions, miscellaneous losses and other factors. Your usage rate will vary. Consult SPFA’s AY-121 Technical Document “Spray Polyurethane Foam Estimating and Reference Guide” for further information on estimating coating requirements.

Coatings must be applied in multiple passes to achieve full, uniform coverage over the SPF. Maximum per pass application rates for each coating type are listed in Table 6. Allow time to cure between passes. Consult TDS for each coating for specific information.



Table 6. Estimated Coating Application Rates to Achieve Specified DFT Over Foam (Total Gallons per 100 Ft ²)		
Mil Thickness Requirement	Acrylic	Silicone High Solids
22		1.5 gals.
25	3 gals.	
30		2 gals.
37		2.5 gals.
40	5 gals.	
Maximum Application Rate Per Coating Pass (gal/100ft²)	1.5	1.5

5. Optional: Granules shall be Number 11 in size, ceramic-coated roofing granules.
 - a. Prior to granular application allow for final Uniflex finish coating to cure for a minimum of 24hrs.
 - b. Apply additional embedment roof coating at a minimum of one (1) gallon per square; Sixteen (16) wet mils.
 - c. Apply #11 - C93 type granules or like granules (.84 to 2.0 minimum in size) roof granules uniformly into wet roof coating at a rate of 25 pounds per 100 square feet. (Note: if different granules are required, contact Uniflex Technical Department)
 - d. Do not allow traffic for a minimum of 24hrs-48hrs.
 - e. Remove loose particles to avoid clogging drains.
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.

3.5 FIELD QUALITY CONTROL

- A. Limit traffic on coated surfaces for a minimum of two (2) days.
- B. Final Observation and Verification:
 1. Contractor shall contact Uniflex for warranty issuance requirements and to schedule the final inspection.



2. Prior to demobilization from the site, a final inspection of the roof coating system shall be carried out by the Owner's Representative, Contractor, and Uniflex Field Technical Representative. Inspection by Uniflex is required for issuance of the final project warranty. Any inspection by Uniflex is for Uniflex warranty purposes only and shall not constitute acceptance of or responsibility for any improper workmanship by Contractor.
3. Any defects and non-compliance with the Specifications, Product Data Sheets or recommendations of Uniflex shall be itemized in a punch list. These items must be corrected by the Contractor to the satisfaction of the Owner and Uniflex prior to demobilization. Failure to satisfactorily complete punch list items will result in non-issuance of the project warranty.
4. Any areas of insufficient coating thickness will require recoating by Contractor.
5. The roof coating system must be fully adhered to the roof substrate. Any voids left under the system must be corrected. Blisters within SPF should be inspected for moisture contamination and repaired immediately.
6. All work for Uniflex warranty must be completed using Uniflex materials. Material invoices must be submitted to Uniflex to verify products installed.
7. To maintain warranty eligibility and coverage, Owner must follow all inspection and maintenance requirements described in the Uniflex Owner's Packet.

3.6 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.
- B. Remove masking and protection.
- C. Notify Owner that project is complete, so HVAC vents can be opened, and units restarted.
- D. Remove all roofing related trash and debris from jobsite and dispose of all such materials in accordance with all federal, state and local requirements for the proper handling and disposal of such materials.

Uniflex does not practice or provide any architecture or engineering services. If an Owner has a need for architectural or engineering services in relation to the project, the Owner should obtain the services of a competent and properly licensed architect or structural engineer. Neither Uniflex nor its employees offer any opinion or make any representation or warranty, and expressly disclaims any opinion, representation or warranty, on the strength or soundness of the structure, including the roof deck. Any inspections of the roofing system by Uniflex or its employees are for suitability of the substrate for roof coating application and for warranty issuance purposes only.

END OF SECTION