INSTALLATION GUIDE SPECIFICATION

ALDOCOAT Silicone Elastomeric Coating and Spray Polyurethane Foam over Sloped Metal Roofs

PART 1 — GENERAL

1.01 SUMMARY

A. The ALDOCOAT Roof System is a seamless insulating and waterproofing system designed for recover installations over sloped metal roofs. The system employs spray-applied polyurethane foam and a multiple-layer silicone elastomeric coating system, with optional granules, to insulate, waterproof and provide a reflective surface.

B. The ALDOCOAT Roof System is designed to provide a UL Class A system. The choice of this system for any given situation is the responsibility of the Contractor, Specifier, or Building Owner. It is the responsibility of the Contractor, Specifier, or Building Owner to (1) evaluate the load bearing capacity of the metal roof to insure safe weight limits are not exceeded; and (2) evaluate the wind uplift resistance of the existing metal roof to insure it complies with local building codes.

C. Metal Panel Configuration: The ALDOCOAT Roof System is suitable for application to many metal roof profiles including R Panel, Butler, and most corrugated panels. Roof panels which have vertical or sharp angled bends or corrugations may not be suitable for SPF application. Check with ALDO Products for specific recommendations.

D. Fixed Points and Expansion/Contraction: Metal panels will expand and contract with changes in temperature. Panels are installed fixed at one point and permitted to expand/contract at the "free" end(s). Most metal panel roofs are installed with the fixed point at the roof ridge and the panel permitted to move down slope at the eave; these roofs are generally suitable for SPF application. However, some (usually larger) metal panel roof systems may have panels fixed in the middle with movement permitted both upslope and down slope; such roofs may be unsuitable for SPF application without special treatments to accommodate movement at the panel ends. Check with ALDO Products for specific recommendations.

E. Scope: Installation of a spray-applied polyurethane foam (SPF) roof system coated with a silicone elastomeric coating system with an optional topping of roofing granules.

1.02 DEFINITIONS

A. Slope: For the purposes of this specification, slope is defined as having a roof pitch equal to or greater than 1:12.

B. Ponding: That condition on a roof surface following 48 hours of conditions conducive to drying after a rain event which results in any of, or a combination of the following:

1. ½-inch or greater depth of water in a one square foot area;

2. ¼-inch or greater depth of water in a 100 square foot area.

1.03 SUBMITTALS

A. Product Data: Technical Data Sheets and MSDSs for all products used on project.

B. Shop Drawings: Drawings indicating scope of work and roofing details.

C. Samples: Cured SPF and coating samples.

1.04 QUALITY ASSURANCE

A. Manufacturer: Coating products will be obtained from ALDO Products Company, Inc., Kannapolis, NC. SPF products will be approved in advance by ALDO Products Company, Inc.

B. SPF Applicator/Contractor: The SPF applicator and/or contractor shall be approved in advance by ALDO Products Company, Inc.

C. Building Codes: SPF Applicator/Contractor will conform to all local building codes, obtain required licenses and permits, and verify that the roof deck and support structural capacity will accommodate the roof recovery.

D. Inspections: ALDO Products Company, Inc., at its option, shall conduct pre-job, construction, and post-job inspections as it deems appropriate to assure that these specifications were followed and the work has proceeded in a workmanlike manner. All defects noted as a result of these inspections will be corrected in a timely manner by the SPF Applicator/Contractor.

E. Environmental Conditions: In general, do not apply SPF or silicone coatings when ambient temperature and humidity is outside the recommended limits set by ALDO Products Company, Inc.

1. The SPF and silicone coating shall not be applied during periods of inclement weather (rain, snow, fog, mist).
2. Do not apply the SPF when substrate or ambient air temperatures are below 50°F (5°C) unless specifically approved in writing by ALDO Products Company, Inc.
3. Do not apply silicone coatings when ambient or substrate temperature is below 40°F (5°C).
4. When wind speeds exceed 10 mph or adversely affects the SPF application, windscreens shall be used during the application of the polyurethane foam and coatings to prevent overspray onto surfaces not intended to receive foam and coating. In any event, do not apply SPF or coatings when wind speeds exceed 15 mph.

1.05 DELIVERY, STORAGE AND PROTECTION OF MATERIALS

A. Delivery: All products shall be clearly labeled and delivered to the project site in original, undamaged and unopened containers.

B. Handling and Storage: Store SPF components between 50-80EF. Store silicone coating between 55-90EF. Keep all products out of direct sunlight and protected from freezing temperatures.

1.06 Warranty

A. Provide ten-year manufacturer's warranty.

B. Warranty does not cover roof areas where ponding water is evident on the SPF and silicone coated roof system.

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C. Commencement of any work site implies acceptance of all information contained on technical data sheets, material safety data sheets and this design specification and that project site conditions meet the conditions to insure satisfactory application and outcome of work.

PART 2 — PRODUCTS

2.01 SPRAY-APPLIED POLYURETHANE FOAM

A. Manufacturer will be as recommended by ALDO Products Company, Inc.

B. Physical Properties shall be as indicated in the table below.

Property	Value	Test Method
Density	2.7-2.9 lb/ft^3	ASTM D 1622
Compressive Strength	40-50 lb/in^2	ASTM D 1621
Tensile Strength	> 40 lb/in^2	ASTM D 1623
Closed Cell Content	> 90 %	ASTM D 6226
R-value (aged)	> 5.8	ASTM C 518
Dimensional Stability	< 15 % total change	ASTM D 2126
Surface Burning Characteristics	≤ 75 flame-spread index*	ASTM E 84
*This flame-spread index is not intended to reflect hazards presented by this or any other material under actual fire conditions. These ratings are used solely to measure and describe the product's response to heat and flame under controlled laboratory conditions.		

C. SPF System Speed: Use the SPF system speed appropriate to the ambient conditions and consistent with the manufacturer's recommendations.

2.02 SILICONE ELASTOMERIC COATING

A. Base Coat: ALDOCOAT 395 Silicone, ALDO Products Company, Inc., Kannapolis, NC

B. Refer to the ALDOCOAT 395 Technical Data Sheets for physical property information.

2.03 Granules: Number 11, ceramic roofing granules as manufactured by 3M or equal.

2.04 Primer: ALDOPRIME 624 Acrylic Primer

2.05 ACCESSORY MATERIALS

A. ALDOSEAL 750 Acrylic Seam Seal, ALDO Products Company, Inc., Kannapolis, NC

B. ALDOSEAL 1602 Seam Tape, ALDO Products Company, Inc., Kannapolis, NC

C. Caulk/Sealant: Dow Corning 795 Silicone Building Sealant or equal.

D. MDP Strips: Moisture Detection Paper strips, NCFI Polyurethanes, Mount Airy, NC

PART 3 — EXECUTION

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3.01 SURFACE PREPARATION

A. Remove loose debris and non-functional equipment from the roof surface.

B. Pressure wash the existing roof surface with water to remove all dirt, dust, flaking coatings, oils, greases, roof mastics, solvents and other contaminants that would adversely affect the adhesion of the SPF.

C. Mechanically remove (for example: wire brushing, scraping, etc.) any areas of contaminants that remain following pressure washing.

D. Prime all areas of surface rust with ALDOPRIME 624.

E. Lightning rods shall be masked prior to foaming. Lightning rod cables shall not be embedded in the polyurethane foam and should be removed prior to foaming. Electrical and mechanical conduits should be relocated or raised above the finished roof surface. Lightning protection equipment and electrical work must be performed by qualified personnel.

3.02 POLYURETHANE FOAM APPLICATION

A. Inspection

1. Prior to application of the foam, the surface shall be inspected to insure that conditions required by Section 3.01 have been met.

2. The polyurethane foam application shall not proceed during periods of inclement weather. The applicator shall not apply the polyurethane foam outside the temperature and humidity limits recommended by the manufacturer for ambient air and substrate. Wind barriers may be used if wind conditions could affect the quality of installation as recommended in Section 1.04.

B. Application

1. The spray polyurethane foam shall be applied in accordance with the manufacture's specification and instructions.

2. The spray polyurethane foam must be applied in a minimal pass thickness of 1/2 inch.

3. Spray polyurethane foam thickness shall be a minimum of 1.5 inch. The polyurethane foam shall be applied uniformly over the entire surface with a tolerance of plus 1/4 inch per inch of thickness minus 0 inch, except where variations are required to insure proper drainage or to complete a flashing edge.

4. The spray polyurethane foam shall be uniformly terminated a minimum of six (6) inches or as required by the local building code above the roofline at all penetrations (except drains, parapet walls, or building junctions). Foamed in place cants shall be smooth and uniform to allow positive drainage.

5. **When detailing skylights or high walls, it is particularly important not to cover weep holes or weep edges with SPF or coating.**

6. **The full thickness of polyurethane foam in any area shall be completed and base coated prior to the end of each day.**

7. Do not apply new SPF to an SPF surface which has been applied the previous calendar day or earlier without first preparing the surface: grind the surface skin off the existing SPF and prime the exposed surface. This procedure is to be followed for day to day tie-ins.

C. Surface Finish

1. The final sprayed polyurethane foam surface shall be “smooth, orange peel, or coarse orange peel.” Polyurethane foam surfaces termed “verge of popcorn,” “popcorn” or “tree bark” are not acceptable. These areas shall be removed, primed and refoamed to an acceptable surface. (See SPFA surface texture photos.)

2. Any damage or defects to the polyurethane foam surface shall be repaired prior to the protective coating application.

3. The polyurethane foam surface shall be free of moisture, frost, dust, debris, oils, tars, grease or other materials that will impair adhesion of the protective coating.

3.03 PROTECTIVE COATING APPLICATION

A. The silicone elastomeric coating shall be applied in a minimum of two coats. The base coat and top coat will be of contrasting colors and achieve a total dry film thickness of 25 mils average, 20 mils minimum. Additional applications of top coat may be applied to achieve the required total dry film thickness. An optional final (third) coat will match the color of the top coat and will be applied at a rate of 5-10 wet mils as a “tack coat” to secure the roofing granules in place.

Approximately 3 gallons per 100 square feet will be required to yield 25 mils dry film thickness. This application rate will vary depending on SPF surface texture and miscellaneous losses. In any event, to satisfy the requirements of this specification, dry film thickness will govern.

B. Inspection: Prior to the application of the protective coating the polyurethane foam shall be inspected for suitability of base coat application as per Section 3.02. The polyurethane foam shall be clean, dry, and sound.

C. Application

1. Base Coat

1) The base coat shall be applied the same day as the polyurethane foam application. In no case shall less than two hours elapse between application of the polyurethane foam and application of the base coat.

2) The polyurethane foam shall be free of dust, dirt, contaminants and moisture before application of the base coat.

3) The base coat shall be applied at a uniform thickness with the rate of application being governed by the polyurethane foam surface texture. Coatings shall be applied at such a rate as to give the minimum dry film thickness specified by the protective coating manufacturer.

4) The coating shall be allowed to cure and be inspected for pinholes, thinly coated areas, uncured areas or other defects. Any defects should be repaired prior to subsequent applications. The base coat shall be free of dirt, dust, water, or other contaminants before application of the topcoat.

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5) The coating application shall not proceed during periods of inclement weather. The applicator shall not apply the protective coating below the temperature and/or above the humidity specified by ALDO Products Company for ambient air and substrate. Wind barriers may be used if wind conditions could affect the quality of installation.

2. Top Coat and/or Subsequent Coats

1) Application: Top and/or subsequent coat(s) should be applied in a timely manner to insure proper adhesion between coats. Surface texture of polyurethane foam will affect dry film thickness—additional material may be required in areas of coarse foam profile.

2) Inspection: The cured dry film thickness of the finished multiple coat application shall be checked by taking slit samples and examining with an optical comparator. Areas that are found to have less than the thickness specified shall require additional coating.

3.04 GRANULE APPLICATION (OPTIONAL)

A. Granules are to be embedded in the "tack coat." Apply granules into the final layer of the coating while it is still wet. Granules shall be applied at a rate of 35 lb/100 ft^2.

3.05 WALKWAYS AND WORK AREAS

A. Install traffic mats in heavy traffic areas and around frequently serviced roof top units. Secure traffic mats in place with silicone caulk following traffic mat manufacturer's recommendations.

3.06 SAFETY REQUIREMENTS

A. See CPI Bulletin AX- 205, "Working with MDI and Polymeric MDI: What You Should Know" *and* CPI Bulletin AX-230, "Fire Safety Guidelines for Use of Rigid Polyurethane and Polyisocyanurate Foam Insulation in Building Construction."

B. Refer to appropriate Materials Safety Data Sheets (MSDS) for additional safety information.

C. Before starting to apply spray polyurethane foam or coating, any potential sources of air entry into the building must be sealed off. These units and any other potential sources of air entry into the building must be sealed.

3.07 CLEANUP

A. Keep all work areas clean, clear and free of debris at all times.

B. Do not allow trash, waste or debris to accumulate on the roof. Remove these items from the roof on a daily basis.

C. Collect and properly store all tools and unused materials at the end of each workday.

D. Dispose of or recycle all trash and excess material in a manner conforming to current EPA regulations and local laws.

E. Properly clean the finished roof surface after completion and make sure the drains and gutters are not clogged.

F. Clean and restore all damaged surfaces to their original condition.

3.08 FIELD QUALITY CONTROL (Warranted projects)

A. Daily Roofing Checklists: For each day in which SPF, coating or granules are applied, submit a Daily Roofing Checklist to ALDO Products Company, Inc.

B. Inspections: Projects are subject to initial, progress and final inspections consistent with ALDO Products Company, Inc. procedures.

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