Application Guideline

COATED SPRAY POLYURETHANE FOAM RECOAT FOR ALL SYSTEMS

To ensure warranty eligibility, each job must be approved by American WeatherStar before it begins.

PART 1 - GENERAL

1.01 DESCRIPTION

A. The intention of this guideline is to outline the procedures for the application of American WeatherStar Spray Polyurethane Foam (SPF) and reflective roof coating system for Recoating **SPRAY POLYURETHANE FOAM ROOF SURFACES.** These suggested guidelines describe materials, methods, and conditions necessary for the proper application of the American WeatherStar roof coating system. Actual application requirements may vary and are the responsibility of the contractor.

B. This guideline may not outline all procedures for preparation and finishing of penetrations, drains, flashings, etc. This work should be outlined separately by the contractor before the work commences and shall be performed observing good trade practices.

C. In order for an SPF recoat to qualify for a Labor and Material Warranty an infrared scan must be performed on the roof. All wet SPF must be removed and replaced.

1.02 APPROVED APPLICATOR

All American WeatherStar products shall be applied by a single, experienced, and competent contractor approved by American WeatherStar.

PART 2 - PRODUCTS

2.01 CLOSED CELL POLYURETHANE FOAM

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:

PROPERTIES	ASTM TEST	VALUE	UNITS
Density	D1622	2.8 – 3.0	lbs./ft3
Compressive Strength	D1621	40 psi, minimum	lbs./in2
Open Cell Content	D2856	90%, minimum	% value
K-Value	C177, C518, C1363	0.16 – 0.18	BTU per ft2/hr. Degree F per inch
Flammability	E84**	<75	

*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.

2.02 COATINGS AND RELATED MATERIALS

All materials used shall be manufactured by and or approved by American WeatherStar and shall meet the following specifications:

2.03 ELASTOMERIC COATING SYSTEM

ACRYLIC 211
Type: Solar reflective coating
Viscosity: 4,500 ± 500 cps
Elongation: 233 ± 20%
Tensile strength: 273 ± 20 psi
Volume solids: 55% ± 2%
Color: White, gray, and tan

HIGH-TENSILE ACRYLIC 211
Type: High-solids elastomeric
Viscosity: 4,500 ± 500 cps
Elongation: 600 ± 50%
Tensile strength: 500 ± 50 psi
Volume solids: 55% ± 2%
Color: White, gray, tan, custom

SILICONE 410
Type: UV resistant elastomeric
Viscosity: 6000 ± 1000 cps
Elongation: 318%
Tensile strength: 500 psi
Volume solids: 69% ± 2%
Color: White, gray, and tan

HIGH SOLIDS SILICONE 412
Type: UV resistant elastomeric
Elongation: 170% ± 25%
Tensile strength: 450 psi ± 50 psi
Volume solids: 92% ± 2%
Color: White, gray, and tan

ECOCLEANER 925
Type: Surface Cleaner
VOC: 0 grams/liter
Color: Clear

ALIPHATIC URETHANE 510
Type: Single-component moisture cure urethane
Viscosity: 3,000 ± 1000 cps
Elongation: 350% ± 50%
Tensile strength: 1100 ± 25 psi
Volume solids: 74% ± 2%
Color: Bright white

AROMATIC URETHANE 512-CA
Type: Single-component moisture cure urethane
Viscosity: 6000 cps
Elongation: 375%
Tensile strength: 1000 psi
Volume solids: 77%
Color: Dark Grey

AROMATIC URETHANE 520
Type: Single-component moisture cure urethane
Viscosity: 2,000 cps
Elongation: 350% ± 50%
Tensile strength: 975 ± 25 psi
Volume solids: 70% ± 2%
Color: Silver

URETHANE BRUSH-GRADE 522
Type: Single-component moisture cure urethane
Viscosity: 30,000-40,000 cps
Elongation: 350% ± 50%
Tensile strength: 975 ± 25 psi
Volume solids: 69% ± 2%
Color: Silver

URETHANE BRUSH-GRADE 524-CA
Type: Single component urethane flashing material
Viscosity: 100 KU
Elongation: 230%
Tensile strength: 2300 psi
Volume solids: 77%
Color: White

TERMINATOR 622
Type: Siliconized urethane sealant
Volume solids: 100%
Color: White, gray

ACRYLIC BONDING PRIMER 905
Type: Primer/surface conditioner
Viscosity: 600-800 cps
Elongation: N/A
Tensile strength: N/A
Volume solids: 38% ± 2%
Color: Black

POLYESTER FABRIC
Type: Spun-bound polyester
Viscosity: N/A
Tensile strength: 35 psi

2.04 DELIVERY AND STORAGE

A. Materials shall be delivered in their original tightly-sealed containers or unopened packages, all clearly labeled with the manufacturer's name, file number, and batch numbers. Where materials are covered by a referenced specification, the labels shall bear the specifications number, type and class, as applicable. All materials must be the same product number and name as those submitted.

B. Materials shall be stored out of the weather in their original tightly-sealed containers or unopened containers as recommended by the manufacturer.

C. All materials shall be stored in compliance with local fire and safety requirements.

2.05 WARRANTY

A. American WeatherStar warrants that the material supplied will meet or exceed physical properties as published. The contractor guarantees that workmanship will be free of defects in coating application. Since performance of existing roof substrate or previously applied coatings are beyond the control of American WeatherStar or the contractor, requests for additional warranty coverage shall be subject to prior approval by American WeatherStar.

B. Comply with manufacturer's warranty application procedures. A Pre-Project Inspection Report should be submitted and approved prior to job commencement.

2.06 ENVIRONMENTAL CONDITIONS

A. The polyurethane foam applications shall not proceed during periods of inclement weather. Do not apply the polyurethane foam below the temperature and/or above the humidity specified by the manufacturer for ambient air and substrate.

B. Do not apply protective coatings when there is ice, frost, surface moisture, or visible dampness present on the surface to be coated. Apply protective coatings in accordance with the coatings manufacturer's application instructions for environmental conditions.

C. Wind barriers may be used if wind conditions could affect the quality of the polyurethane foam or protective coating installation.

2.07 SAFETY REQUIREMENTS

A. See API Bulletin AX-119, “MDI-Based Polyurethane Foam Systems: Guidelines for Safe Handling and Disposal.”

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

C. Before applying spray polyurethane foam 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.

PART 3 - INSTALLATION

3.01 SURFACE PREPARATION

A. Preparation shall include all requirements specified by American WeatherStar to ensure proper adhesion of the American WeatherStar products to the substrate. (An adhesion test may be necessary.)

B. Preparation shall include, but not be limited to the following:

1. All unnecessary and non-functional equipment and debris shall be removed from the roof.
2. Substrate must be pressure-washed. A minimum working pressure of 2,000 psi shall be used to remove all dirt, dust, previous paints and coatings which are delaminating as well as waste products (oil, oil-based roof cements, solvents, grease, animal fats, etc). Use **ECOCLEANER 925** if necessary to remove all contaminates. Contact American WeatherStar for additional information.

NOTE: Too much pressure when washing SPF may damage existing foam substrate.

3. HVAC condensate drains shall be properly routed to roof drains or plumbed off of the roof.
4. Wet roof insulation and damaged membranes are to be removed and replaced as necessary to match existing specified material.
5. All roof penetrations, curbs, vent stacks and related roof penetrations are to be flashed in accordance with SPF manufacturer’s specifications.
6. All laps and wall flashings are to be repaired in accordance with roof manufacturer’s specifications.
7. Contractor shall make every effort to mechanically eliminate all ponding water areas on the roof surface prior to application of any roof coating product.

C. Remove and replace blistered polyurethane foam, using the following guidelines:

1. Take test cuts (core or slit samples) in areas of blistered foam to determine the cause and extent of the problem.
2. It may be necessary to remove foam beyond the actual area of an individual blister in order to prevent reoccurrence.
3. The surface area adjacent to the cut should be prepared and cleaned.
4. If a number of blisters are found clustered in one area, it is recommended that you remove the top pass or top two passes in the entire area rather than attempting to repair individual blisters.

D. The sprayed polyurethane foam replacement shall be installed so as to have the originally specified density and compressive strength. Many commercial “froth packs” and pour foams may not give satisfactory results. Consult with American WeatherStar representative for acceptable repair kits.

E. After opening a blister or removing a foam layer, the lower layer should be inspected for degradation or moisture. No repair procedure should be attempted to a degraded or moist surface. Dry the surface and remove degraded area before proceeding to repair.

F. Remove unacceptable coating.

G. Small (less than 3" in diameter) blisters, cracks, breaks in the foam or coating, bird pecks, or hail damage can be repaired with using **TERMINATOR 622.**

1. Ensure the area to be repaired is clean, dry, and the edges beveled to assure proper adhesion.
2. Install **TERMINATOR 622** so that the final surface is higher than the surrounding area and water will not remain on the repair area.

H. If weathering has caused the surface of the coating and the foam to degrade (pitting), such surface may be ground off or scarified to expose clean, dry polyurethane foam.

1. If scarified polyurethane foam will be left exposed for more than 2 hours, apply one coat of **ACRYLIC BONDING PRIMER 905** or another suitable American WeatherStar primer at a rate of one gallon per one hundred square feet. Contact American WeatherStar for more details.

I. The polyurethane foam should be replaced with a minimum of 1” spray polyurethane foam up to the thickness removed to give a uniformed transition from old to new surfaces.

1. If new polyurethane foam will be exposed for more than 2 hours, apply one coat of **ACRYLIC BONDING PRIMER 905** or another suitable American WeatherStar primer at a rate of one gallon per one hundred square feet. Contact American WeatherStar for more details.

J. Provide positive drainage by using one or more of the following procedures that are most suitable for the project:

1. Install additional roof drains or scuppers.
2. Build up low areas by applying polyurethane foam. (Follow manufacturers’ recommendation for surface preparation.)

K. Repair or replace deteriorated flashings, roof jacks, metal work, curbs, supports, penetrations, drains, etc.

3.02 PRIMER APPLICATION

A. Examine substrate to receive roof coating. Do not proceed with installation of the American WeatherStar roof coating until all problem areas have been corrected in a manner acceptable to the manufacturer.

B. Prime entire surface with appropriate American WeatherStar primer at a rate of 1 gallon per 200 square feet. An adhesion test should be conducted to ensure proper adhesion to the existing coating. Adhesion to the existing roof substrate depends on the condition of any existing coating.

3.03 PREPARATION FOR COATING

A. Repair any areas where the substrate has been damaged.

1. Areas where polyurethane foam has an abraded or ground surface, apply a primer coat of **ACRYLIC BONDING PRIMER 905** by brush or spray at an approximate rate of 1 gallon per 200 sq. ft.
2. In areas where loose coating has been removed, apply a base coat of **ACRYLIC BONDING PRIMER 905** by brush or spray at an approximate rate of 1 gallon per 200 sq. ft.

B. The texture of the foam will influence the amount of coating material required. Coatings shall be applied at a uniform rate as to obtain the minimum dry film thickness specified by American WeatherStar.

C. The coating shall be allowed to cure and be inspected for pinholes, inadequate mil thickness, uncured areas, or other defects. And defects should be repaired prior to subsequent applications. The coating shall be allowed to cure and be inspected for pinholes, inadequate mil thickness, uncured areas, or other defects. And defects should be repaired prior to subsequent applications.

D. The base coat shall be free of dirt, dust, water, or other contaminants before application of the top coat. Subsequent coating, if required, should be applied in a timely manner to ensure proper adhesion between coats. The base coat shall be free of dirt, dust, water, or other contaminants before application of the top coat. Subsequent coating, if required, should be applied in a timely manner to ensure proper adhesion between coats.

3.04 APPLICATION RATES

A. **10 Year System Requirement (30 mil Acrylic System)**

1. **Base Coat:** Apply base coat of **ACRYLIC 211** or **HIGH TENSILE ACRYLIC 211** roof coating at a rate of 1.25 gallons per 100 square feet.
2. **Intermediate Coat:** Apply base coat of **ACRYLIC 211** or **HIGH TENSILE ACRYLIC 211** roof coating at a rate of 1.25 gallons per 100 square feet.
3. **Top Coat:** Apply a top coat of **ACRYLIC 211** or **HIGH TENSILE ACRYLIC 211** roof coating at a rate of 1.25 gallons per 100 square feet.
4. **Granules:** Immediately broadcast roofing granules into finish coat at the rate of 30 lbs. per 100 sq. ft. (MANDATORY FOR AMERICAN WEATHERSTAR LABOR AND MATERIAL WARRANTY)

B. **10 Year System Requirement (20 mil Silicone System)**

1. **Base Coat:** Apply base coat of **SILICONE 410** roof coating at a rate of 1 gallon per 100 square feet.
2. **Top Coat:** Apply a top coat of **SILICONE 410** roof coating at a rate of 1 gallon per 100 square feet.
3. **Granules:** Immediately broadcast roofing granules into finish coat at the rate of 30 lbs. per 100 sq. ft. (MANDATORY FOR AMERICAN WEATHERSTAR LABOR AND MATERIAL WARRANTY)

C. **15 Year System Requirement (30 mil Silicone System)**

1. **Base Coat:** Apply base coat of **SILICONE 410** roof coating at a rate of 1.5 gallons per 100 square feet.
2. **Top Coat:** Apply a top coat of **SILICONE 410** roof coating at a rate of 1.5 gallons per 100 square feet.
3. **Granules:** Immediately broadcast roofing granules into finish coat at the rate of 30 lbs. per 100 sq. ft. (MANDATORY FOR AMERICAN WEATHERSTAR LABOR AND MATERIAL WARRANTY)

D. **10 Year System Requirement (20 mil Envir-O-Sil System)**

1. **Base Coat:** Apply base coat of **HIGH SOLIDS SILICONE 412** roof coating at a rate of .75 gallon per 100 square feet.
2. **Top Coat:** Apply a top coat of **HIGH SOLIDS SILICONE 412** roof coating at a rate of .75 gallon per 100 square feet.

3. **Granules:** Immediately broadcast roofing granules into finish coat at the rate of 30 lbs. per 100 sq. ft. (MANDATORY FOR AMERICAN WEATHERSTAR LABOR AND MATERIAL WARRANTY)

E. **15 Year System Requirement (30 mil Envir-O-Sil System)**

1. **Base Coat:** Apply base coat of **HIGH SOLIDS SILICONE 412** roof coating at a rate of 1.1 gallons per 100 square feet.
2. **Top Coat:** Apply a top coat of **HIGH SOLIDS SILICONE 412** roof coating at a rate of 1.1 gallons per 100 square feet.
3. **Granules:** Immediately broadcast roofing granules into finish coat at the rate of 30 lbs. per 100 sq. ft. (MANDATORY FOR AMERICAN WEATHERSTAR LABOR AND MATERIAL WARRANTY)

F. **12 Year System Requirement (25 mil Ure-A-Sil System)**

1. **Base Coat:** Apply base coat of **AROMATIC URETHANE 520** roof coating at a rate of 1 gallon per 100 square feet.
2. **Top Coat:**
   - **Standard Option:** Apply a top coat of **SILICONE 410** at a rate of 1.5 gallons per 100 square feet.
   - **High Solids Option:** Apply a top coat of **HIGH SOLIDS SILICONE 412** at a rate of 1.1 gallons per 100 square feet.
3. **Granules:** Immediately broadcast roofing granules into finish coat at the rate of 30 lbs. per 100 square feet. (MANDATORY FOR AMERICAN WEATHERSTAR LABOR AND MATERIAL WARRANTY)

G. **15 Year System Requirement (30 mil Ure-A-Sil System)**

1. **Base Coat:** Apply base coat of **AROMATIC URETHANE 520** roof coating at a rate of 1.5 gallons per 100 square feet.
2. **Top Coat:**
   - **Standard Option:** Apply a top coat of **SILICONE 410** at a rate of 1.5 gallons per 100 square feet.
   - **High Solids Option:** Apply a top coat of **HIGH SOLIDS SILICONE 412** at a rate of 1.1 gallons per 100 square feet.
3. **Granules:** Immediately broadcast roofing granules into finish coat at the rate of 30 lbs. per 100 square feet. (MANDATORY FOR AMERICAN WEATHERSTAR LABOR AND MATERIAL WARRANTY)

H. **12 Year System Requirement (25 mil Ure-A-Sil CA System)**

1. **Base Coat:** Apply base coat of **AROMATIC URETHANE 512-CA** roof coating at a rate of 1 gallon per 100 square feet.
2. **Top Coat:** Apply a top coat of **HIGH SOLIDS SILICONE 412** at a rate of 1.1 gallons per 100 square feet.
3. **Granules:** Immediately broadcast roofing granules into finish coat at the rate of 30 lbs. per 100 square feet. (MANDATORY FOR AMERICAN WEATHERSTAR LABOR AND MATERIAL WARRANTY)

I. **15 Year System Requirement (30 mil Ure-A-Sil CA System)**

1. **Base Coat:** Apply base coat of **AROMATIC URETHANE 512-CA** roof coating at a rate of 1.5 gallons per 100 square feet.
2. **Top Coat:** Apply a top coat of **HIGH SOLIDS SILICONE 412** at a rate of 1.1 gallons per 100 square feet.
3. **Granules:** Immediately broadcast roofing granules into finish coat at the rate of 30 lbs. per 100 square feet. (MANDATORY FOR AMERICAN WEATHERSTAR LABOR AND MATERIAL WARRANTY)

J. **10 Year System Requirement (30 mil Urethane System)**

1. **Base Coat:** Apply base coat of **AROMATIC URETHANE 520** roof coating at a rate of 1.5 gallons per 100 square feet.
2. **Top Coat:** Apply a top coat of **AROMATIC URETHANE 520** roof coating at a rate of 1.5 gallons per 100 square feet.
3. **Granules:** Immediately broadcast roofing granules into finish coat at the rate of 30 lbs. per 100 square feet. (MANDATORY FOR AMERICAN WEATHERSTAR LABOR AND MATERIAL WARRANTY)

K. **10 Year System Requirement (30 mil Hybrid Urethane System)**

1. **Base Coat:** Apply base coat of **AROMATIC URETHANE 520** roof coating at a rate of 1.5 gallons per 100 square feet.
2. **Top Coat:** Apply a top coat of **ALIPHATIC URETHANE 510** roof coating at a rate of 1.5 gallons per 100 square feet.
3. **Granules:** Immediately broadcast roofing granules into finish coat at the rate of 30 lbs. per 100 square feet. (MANDATORY FOR AMERICAN WEATHERSTAR LABOR AND MATERIAL WARRANTY)

L. **15 Year System Requirement (40 mil Hybrid Urethane System)**

1. **Base Coat:** Apply base coat of **AROMATIC URETHANE 520** roof coating at a rate of 1.5 gallons per 100 square feet.
2. **Intermediate Coat:** Apply base coat of **AROMATIC URETHANE 520** roof coating at a rate of 1 gallon per 100 square feet.
3. **Top Coat:** Apply a top coat of **ALIPHATIC URETHANE 510** roof coating at a rate of 1.5 gallons per 100 square feet.
4. **Granules:** Immediately broadcast roofing granules into finish coat at the rate of 30 lbs. per 100 square feet. (MANDATORY FOR AMERICAN WEATHERSTAR LABOR AND MATERIAL WARRANTY)

M. Each coat must be allowed to dry for 24-48 hours depending on humidity and temperature. The roof is to be inspected for defects, flaws or holidays and repaired if necessary.

N. Each contactor should estimate coating requirements based on actual experience and needs to figure in losses due to applicator experience, surface texture, wind, waste, and other factors that can affect actual gallons required.

O. It is the applicator's responsibility to verify wet and dry mil thickness during the application process to ensure proper dry mil thickness of the total roofing system.

3.05 PONDING

A. Known ponding water areas are to be repaired using commonly acceptable roofing practices so as to allow proper drainage of roof area.

B. Ponding water areas are a sign of possible mechanical failure in the roof. Water is to be intentionally diverted from ponding areas using accepted roofing practices. Ponded areas which evaporate within 7 days (under 1/2" deep) can be top coated with an approved American WeatherStar coating at the application rate listed below:

1. Acrylic System: Apply **SILICONE 410** at a rate of 2 gallons per 100 square feet to increase water resistance.
2. Urethane Systems: (3.04 J) Apply **AROMATIC URETHANE 520** or (3.04 K) **ALIPHATIC URETHANE 510** at a rate of 1.5 gallons per 100 square feet to increase water resistance.

C. The appropriate coating is to be extended 2 feet beyond the ponded area.

3.06 RESTRICTIONS/LIMITATIONS

This system is to be used only in conjunction with commonly accepted roofing standards but not limited to the following:

A. No application of materials shall commence during inclement weather or when precipitation is imminent.

B. No materials are to be applied to wet, dirty, or frozen surfaces.

C. In conjunction with the final inspection, all debris, containers, materials and equipment are to be properly removed from the job site. Grounds are to be cleaned, undamaged, and acceptable to the owner.

D. Reflectivity of coatings may be reduced if roof surface is not cleaned on a regularly scheduled basis.

Caution: Do not apply within two hours of sunset, rain, fog or freezing temperatures. The American WeatherStar roof coating system must be completely dry before exposing to water or foot traffic. Keep American WeatherStar containers covered when not in use. Dispose of all containers in accordance with state and local environmental regulations. Keep away from children. If ingested, DO NOT induce vomiting. Call physician immediately.