

**SECTION 07560**  
**FLUID APPLIED ROOFING**

**PART 1**      **GENERAL**

1.1 DESCRIPTION OF EXISTING SUBSTRATES

- A. This specification, in conjunction with the appropriate product technical data sheets, is intended to outline the requirements for application of **DIATHON®** coating on polyurethane foam insulation installed over approved roof substrates in acceptable condition.

1.2 DESCRIPTION OF LIQUID APPLIED ROOF COATING

- A. The liquid applied coating consists of a water-based elastomeric acrylic specifically designed to form a waterproof membrane for protecting sprayed polyurethane foam, as well as clean and properly prepared incidental surfaces such as metal, concrete, masonry, wood and asphalt. The coating is to be:
  - 1) Approved by FM Global RC (FM Approvals); 2) Classified and subjected to follow-up by UL (Underwriters Laboratories); 3) Accepted by Miami-Dade County; and 4) Manufactured in accordance with ISO 9001:2008 & 14001:2004 regulations. Additionally, it is to be listed with the California Fire Marshal, CRRC (Cool Roof Rating Council), EPA/ENERGY STAR®, and compliant with CA Title 24 requirements.

1.3 SECTION INCLUDES

- A. Fluid applied elastomeric acrylic waterproof coating for use over new or existing foam roofing. Work shall include preparation of the roof surface, flashing, detailing, application of the roof system, and cleanup.

1.4 RELATED WORK

- A. Contractor shall review all sections of the project specifications to determine items of work that will interface with the application of this foam and roof coating system. Compliance with applicable building codes shall be assured by the specifier or project engineer, while coordination and execution of related sections shall be the responsibility of the approved contractor.

1.5 REFERENCES

- A. NRCA Roofing and Waterproofing Manual
- B. Factory Mutual RoofNav Directory
- C. Underwriters Laboratories Building Materials Directory
- D. Miami-Dade County Product Control Section, Board and Code Administration
- E. ASTM D2240      Durometer Hardness
- F. ASTM D2370      Properties of Organic Coatings
- G. ASTM D4798      Accelerated Weathering with Xenon Arc
- H. Fed TTP-555B      Wind Driven Rain
- I. ASTM E108      Fire Test of Roof Coverings
- J. ASTM D1653      Water Vapor Transmission of Materials

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- L. ASTM D6083 Standard Specification for Liquid Applied Acrylic Coatings
- M. ASTM C1549 Solar Reflectance at Near Ambient Temperature Using a Portable Solar Reflectometer
- N. ASTM C1371 Emittance of Materials at Near Room Temperature Using Portable Emissometers
- O. FM 4470 Standard for Class 1 Spread of Flame, Windstorm Pressure, Windstorm Pull, Hail Damage, Resistance to Foot Traffic, and Susceptibility to Leakage

**1.6 SUBMITTALS REVIEW**

- A. Shop Drawings: Submit a scale drawing illustrating layout of joint reinforcing and all flashing details.
- B. Product Data: Provide manufacturer's published technical literature, MSDS, and warranty on products that make up the roof covering, including polyurethane foam insulation, elastomeric coatings, flashing materials, roof drains, fasteners, etc.
- C. Installation Instructions: Submit all data sheets available from the manufacturers on the installation of the roof covering materials applicable to the project.
- D. Submit manufacturer's Certificates of Compliance or Analysis that all products meet or exceed project requirements. Contractor to supply samples or mockup, if required.
- E. Applicator is responsible for submitting proof of QCP Preferred Contractor Status.
- F. Prior to bid, all project specifications, details, and submittals shall be reviewed by manufacturer for pre-approval and to comply with warranty requirements. Successful bidder should initiate warranty pre-inspection process before commencing work.

**1.7 QUALIFICATIONS**

- A. Applicator Qualifications: The applicator of the roofing material specified herein shall be an approved applicator designated by Quest Construction Products, LLC (QCP). Proof of qualification shall be by written certificate from the roofing system manufacturer. Applicator must meet the QCP Preferred Contractor Status Level required for the specified project and warranty requested. 20 year systems warranties are available only to QCP Certified Preferred or Platinum Preferred Contractors. Contact Quest Construction Products for applicator's proof of qualifications.
- B. Manufacturer: The coating and foam manufacturers shall have a proven 20-year track record in the production of quality elastomeric acrylic roofing or spray insulation materials, manufactured under an active ISO 9001:2008 & 14001:2004 auditing program.

**1.8 QUALITY CONTROL**

- A. Codes and Standards: The contractor shall become thoroughly familiar with all codes, regulations, and standards governing the specified work. Any contradiction between the manufacturers' requirements and these specifications shall be brought to the attention of the manufacturer(s) and the specifier/project engineer.

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- B. Deviations: There shall not be any deviations from these specifications unless the deviation is submitted in writing to the specifier/project engineer. Any request for deviation must be approved in writing from the roofing manufacturers' technical department(s) delineating the details of the deviation.
- C. At least one individual with current QCP "Preferred Contractor" status shall be on site during installation of any QCP products. A daily log of application activities and environmental conditions should be maintained and available on-site with copies of technical data/application instructions & MSDS.
- D. Manufacturers' Technical Representatives: Manufacturer's Technical Representative is available to make site visits as needed. System warranties will receive a final inspection and that final inspection report is available to the building owner upon request.

#### 1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to jobsite in manufacturers' unopened and undamaged containers bearing the following information:
  - 1. Name and address of manufacturer
  - 2. Identification of contents, with product code
  - 3. Net volume of contents
  - 4. Lot or batch number
  - 5. VOC content
  - 6. Storage temperature limits
  - 7. Shelf life expiration date
  - 8. Mixing instructions and proportions of contents
  - 9. Safety information and instructions
  - 10. Appropriate certification markings where applicable: UL, FM, Miami-Dade, & CRRC/ENERGY STAR®
- B. Store and protect materials from damage and weather in accordance with manufacturers' published instructions.
  - 1. Ambient temperatures should range between 50 and 90°F (10 to 32.2°C). Keep out of direct sunlight.
  - 2. Place stored material containers on pallets and cover with tarpaulin tied to bottom of pallets.

#### 1.10 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply if ambient temperatures are expected to fall below 40°F (4.5°C), or if rain or heavy dew is anticipated before liquid coating has cured.

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1.11 WARRANTY

- A. Upon completion of the roof coating system, the coating and foam manufacturer’s representatives, owner’s representative, architect and applicator shall make a final inspection to determine the final foam insulation characteristics and thickness, dry film thickness of the fluid-applied acrylic membrane, and to verify that the system meets the manufacturers’ requirements for warranty. The contractor shall notify all interested parties in advance of said inspection.
- B. Provide Material (Standard) or Labor & Material (System) warranty in accordance with project specs. Contractor shall follow written application process in accordance with manufacturers’ program(s). Refer to the following table for film thicknesses and other details.

**Table I – Warranty Term Length and DIATHON® minimum dry film thickness (DFT) values**

Roof Substrate	Minimum Dry Film Thickness (DFT)							
	Warranty Term Length							
	5-year		10-year		15-year		20-year	
	STD	SYSTEM	STD	SYSTEM	STD	SYSTEM	STD	SYSTEM
SPF (new)	22	28	28	34	34	40	40	46
SPF (existing)	22	28	28	34	34	40	40	46

**PART 2      PRODUCTS**

2.1 MANUFACTURER

Quest Construction Products, LLC  
 1465 Pipefitter Street  
 North Charleston, SC 29405

Toll Free: (855) 817-3082  
 Phone: (843) 745-9600  
 Fax: (843) 745-9602  
 Web: [www.quest-cp.com](http://www.quest-cp.com)

2.2 SYSTEM MATERIALS

- A. Sprayed Polyurethane Foam Requirements: **(Refer to selected SPF manufacturer’s technical data sheets for specific physical characteristics and performance properties, as well as proprietary application details for existing/recoat conditions or new installation.)**
- B. Waterproofing Coating: **DIATHON®** is a water-based, high-solids elastomeric acrylic coating that forms a seamless, weatherproof, fire-resistant coating over various properly prepared roof surfaces. **DIATHON®** was specifically developed for protecting sprayed polyurethane foam insulation from degradation caused by normal weathering, aging and ultraviolet exposure. **DIATHON®** is used for protecting foam on new roofs, existing roofs, and hot or ambient storage tanks. Total dry film thickness shall range from 22 mils to 46 mils, depending upon the surface coated and warranty duration required.

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## C. Cured Coating Characteristics, DIATHON®:

ASTM D-6083 Properties		
Property	Method	DIATHON®
Ultimate Tensile Strength	ASTM D2370	284 +/- 20 psi (1.96 MPa) @ 75°F (24°C)
Elongation @ Break	ASTM D2370	258% +/- 30 @75°F (24°C)
Elongation after 1000 hours weathering	ASTM D2370/D4798	216% +/-30 @75°F (24°C)
Permeance	ASTM D1653	22.5 Perms (3.76 metric perms) @ 20 mils
Water Swelling	ASTM D471	13.5%
Fungi Resistance	ASTM G21	0 rating
Tear Resistance	ASTM D624	93 lft/in
Low Temperature Flex	ASTM D522-B	Pass -15°F (-26°C)

Other Properties		
Property	Method	DIATHON®
Hardness	ASTM D2240	55-65 Shore Type A
Accelerated Weathering	ASTM D822/G23	Passed 5000 hours exposure
High Temp Stability	ASTM D794	No age hardening to 250°F (121°C)
Wind Driven Rain	Fed TTC-555B	0.3% by weight moisture absorption
Temp Limits for Service		-30 to 180°F (-35 to 82°C) @ surface
General Performance	ASTM D6083	Fully compliant
Fire Rating		UL 790 Class A & FM Class 1

## D. Cured Coating Characteristics, DIATHON® HT:

ASTM D-6083 Properties		
Property	Method	DIATHON® HT
Ultimate Tensile Strength	ASTM D2370	441 +/- 20 psi (3.04 MPa) @ 75°F (24°C)
Elongation @ Break	ASTM D2370	489% +/- 30 @75°F (24°C)
Elongation after 1000 hours weathering	ASTM D2370/D4798	308% +/-30 @75°F (24°C)
Permeance	ASTM D1653	3.2 Perms (3.76 metric perms) @ 20 mils
Water Swelling	ASTM D471	10.3%
Fungi Resistance	ASTM G21	0 rating
Tear Resistance	ASTM D624	108 lft/in
Low Temperature Flex	ASTM D522-B	Pass -15°F (-26°C)

Other Properties		
Property	Method	DIATHON® HT
Ultimate Tensile Strength	ASTM D412	550 +/- 50 psi (4.00 MPa) @ 70°F (21°C)
Elongation @ Break	ASTM D412	500% +/- 50 @70°F (21°C)
Hardness	ASTM D2240	75-80 Shore Type A
Wind Driven Rain	Fed TTC-555B	0.04% by weight moisture absorption
High Temp Stability		No age hardening to 250°F (121°C)
Temp Limits for Service		-30 to 200°F (-35 to 93°C) @ surface
General Performance	ASTM D6083	Fully compliant
Fire Rating		UL 790 Class A, FM Class 1 and ASTM E-108

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**PART 3**      **EXECUTION**

## 3.1 EXAMINATION

- A. All surfaces shall be clean and dry, free of any dirt, dust, gravel, oil, surface chemicals or other contaminants that may interfere with optimum adhesion of the foam and coating system. Verify that substrates are structurally sound and stable, free of cracks, pits, or projections that could interfere with proper application and performance of waterproof coating.
- B. Verify that any items that penetrate surfaces to receive foam and coating are securely installed and suitably flashed.
- C. Verify that substrate areas are adequately supported and firmly fastened in place.
- D. Verify that roof deck has a minimum slope of 0.25 inch / foot (2.08 cm/meter), and that positive drainage is assured. Ponding water present 48 hours after rainfall is unacceptable, as is a substrate moisture content of 15% or greater. Existing SPF that exhibits cracking, delamination, UV degradation, or moisture intrusion/saturation must be scarified or removed and replaced to restore an even plane with the original surface.
- E. Verify that all contiguous walls are correctly flashed.

## 3.2 PREPARATION - GENERAL

- A. Protect adjacent surfaces not designated to receive foam and coating system.
- B. At a minimum, clean and prepare surfaces to receive foam & coating by removing all loose and flaking particles, grease and laitance with the use of a stiff bristle push broom and/or washing. Care should be taken not to inject water into the substrate during washing. Allow adequate time for complete drying after the cleaning process. Inspect and make all necessary repairs to substrate. Seal cracks and joints with sealant materials using depth to width ratio as recommended by sealant manufacturer.
- C. Do not apply waterproofing to surfaces unacceptable to manufacturer, or under inclement environmental conditions.

## 3.3 APPLICATION

- A. Polyurethane foam components shall be metered and sprayed **in strict accordance with the foam manufacturer's directions and specifications. Refer to specific product literature for details.** Polyurethane foam shall **not** be sprayed during inclement weather or when the following conditions exist:
  - 1. If surface temperature is above 120°F (49°C) or below 35°F (2°C), or when the dew point is less than 5°F (3°C) above the surface temperature (temperature shall be measured with a surface thermometer). For surface temperatures between 35°F and 50°F (2°C and 10°C), special catalyzed foam with short cream time must be used.
  - 2. If surface moisture is present, or where moisture meter readings are in excess of 10% (this may vary slightly depending on geographic location).
  - 3. If wind velocity is above 12 miles per hour (unless adequate windscreens are provided).
  - 4. If relative humidity is above 80%.

The finished surface texture of the applied polyurethane foam shall range from a smooth to a medium "orange peel" finish. **Surface textures defined as "popcorn" or "tree bark," or surfaces that exhibit crevices, voids or pinholes are not acceptable.**

- B. **DIATHON®** shall be applied within 72 hours of the foam installation to prevent surface oxidation that would interfere with coating adhesion. **Refer to separate DIATHON® Application Instructions sheet for additional details on equipment and coating process.** **DIATHON®** must be applied in two or more separate coats to ensure proper coverage and cure rate, and to achieve a pinhole-free continuous film. Each coat of **DIATHON®** must be dry and cured before an additional coat is applied. **All surfaces must be uniformly coated and free from voids, pinholes or blisters.**
- C. To qualify for the **5-Year Standard Warranty Program**, the following requirements shall be adhered to:
1. **DIATHON®** shall be applied in a minimum of two (2) separate coats to a minimum total of 3 gallons per 100 ft<sup>2</sup> (1.2 l/m<sup>2</sup>).
  2. This coverage rate will theoretically result in 25.9 mils dry (658 microns). The actual minimum total dry film thickness required at any location to qualify for a **5-Year Standard Warranty** is 22 mils (559 microns).

To qualify for the **10-Year Standard** or **5-Year System Warranty Program**, the following requirements shall be adhered to:

1. **DIATHON®** shall be applied in two (2) or three (3) separate coats to minimum total of 3.75 gallons per 100 ft<sup>2</sup> (1.5 l/m<sup>2</sup>).
2. This coverage rate will theoretically result in 32.4 mils dry (823 microns). The actual minimum total dry film thickness required at any location to qualify for a **10-Year Standard** or **5-Year System Warranty** is 28 mils (711 microns).

To qualify for the **15-Year Standard** or **10-Year System Warranty Programs**, the following requirements shall be adhered to:

1. **DIATHON®** shall be applied in a minimum of three (3) separate coats to a minimum total of 4.5 gallons per 100 ft<sup>2</sup> (1.8 l/m<sup>2</sup>).
2. This coverage rate will theoretically result in 39 mils dry (991 microns). The actual minimum total dry film thickness required at any location to qualify for a **15-Year Standard** or **10-Year System Warranties** is 34 mils (864 microns).

To qualify for the **20-Year Standard** or **15-Year System Warranty Programs**, the following requirements shall be adhered to:

1. **DIATHON®** shall be applied in a minimum of four (4) separate coats to a minimum total of 5.25 gallons per 100 ft<sup>2</sup> (2.1 l/m<sup>2</sup>).
2. This coverage rate will theoretically result in 45 mils dry (1,143 microns). The actual minimum total dry film thickness required at any location to qualify for the **20-Year Standard** or **15-Year System Warranties** is 40 mils (1,016 microns).

To qualify for the **20-Year System Warranty Program**, the following requirements shall be adhered to:

1. **DIATHON®** shall be applied in a minimum of four (4) separate coats to a minimum total of 6 gallons per 100 ft<sup>2</sup> (2.4 l/m<sup>2</sup>).
2. This coverage rate will theoretically result in 51.8 mils dry (1,316 microns). The actual minimum total dry film thickness required at any location to qualify for a **20-Year System Warranty** is 46 mils (1,168 microns).

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D. **DIATHON®** shall be extended up and over all polyurethane foam on vent pipes and parapets, and terminated a minimum of 2" (5 cm) above the foam, creating a self-terminating flashing.

**3.4 PROTECTION OF FINISHED WORK**

A. Monitor finished system for seven days, sweeping off any birdbaths to allow for full cure.

**3.5 CLEANUP**

- A. Immediately clean unscheduled surfaces receiving waterproofing in accordance with manufacturer's instructions. Maintain work and work areas in a clean, safe condition at all times during coating installation. Remove excess materials, trash and debris from the jobsite daily.
- B. At the completion of the project, clean area of any spills and containers, and clean up all roofing debris, leaving jobsite in a clean and orderly condition.
- C. Refer to project specifications and manufacturer's published requirements for minimum application rates to meet desired warranty duration and coverage.

**END OF SECTION**