

## PART 1 GENERAL

### 1.1 SUMMARY

- A. Provide labor, materials, equipment and supervision necessary to install a seamless, fully adhered fluid-applied roof coating system over new sprayed-in-place polyurethane foam as outlined in this specification.
- B. The manufacturer's application instructions for each product used are considered part of this specification and should be followed at all times.
- C. Related Sections:
  - 1. Section 07 60 00: Flashing and Sheet Metal
  - 2. Section 08 60 00: Roof Windows and Skylights
  - 3. Section 07 57 13: Sprayed Polyurethane Foam Roofing

### 1.2 SYSTEM DESCRIPTION

- A. Permthane Aliphatic II shall be a complete system of compatible materials to create a seamless waterproof fluid-applied roof coating system.
- B. Permthane Aliphatic II shall be designated for application on the specific type of substrate as indicated on the drawings and specifications.

### 1.3 SUBMITTALS

- A. Technical Data: Submit Neogard product technical literature and installation instructions.
- B. Samples: Submit samples of specified fluid-applied roof coating system. Samples shall be construed as examples of finished color and texture of the system only.
- C. Applicator Approval: Submit letter from Neogard stating applicator is approved to install the specified fluid-applied roof coating system.
- D. Warranty: Submit a copy of the Neogard warranty to meet project specifications.

### 1.4 QUALITY ASSURANCE

- A. Supplier Qualifications: Permthane Aliphatic II, as supplied by Neogard, is approved for use on this project.
- B. Applicator Qualifications: The Applicator shall be approved by Neogard to install the Permthane Aliphatic II fluid-applied roof coating system. Manufacturer's written verification of applicator approval is required.
- C. Regulatory Requirements:
  - 1. The fluid-applied roof coating system shall be rated Class A in accordance with the spread of flame test requirements of ASTM E108.
  - 2. Materials used in the fluid-applied roof coating system shall meet Federal, State and local VOC regulations.

### 1.5 DELIVERY, STORAGE AND HANDLING

- A. Containers and Packaging: Materials shall be delivered in original, tightly sealed containers, clearly labeled with the manufacturer's name, brand name, type of material and batch number(s).
- B. Storage and Handling: It is recommended to store materials at 75°F (23°C). Handle products to prevent damage to container. All materials shall be stored in compliance with local fire and safety requirements. Avoid high temperatures and direct sunlight.

### 1.6 PROJECT CONDITIONS

- A. Prior to starting work, read and follow the Safety Data Sheet (SDS) and container labels for detailed health and safety information.
- B. Proceed with application of materials only when substrate temperature is above 40°F (4°C) and in dry conditions. Do not apply if precipitation is imminent, or to a damp or frosty surface. Temperature should more than 5°F (3°C) above dew point and rising. If ambient and/or substrate temperatures are approaching or above 110°F (43°C), limit material application to evening hours.
- C. Coordinate fluid-applied roof coating work with other trades to ensure coatings are protected from traffic and other abuse until completely cured and installation is complete.
- D. Maintain work area in a neat and orderly condition, removing empty containers, rags, and trash from the site daily.

#### 1.7 WARRANTY

- A. Upon request, Neogard shall offer a manufacturer's standard warranty for institutional, commercial, industrial, and high-rise/multi-family residential projects only, after substantial completion of the application and receipt of a properly executed warranty request form.

## PART 2 MATERIALS

### 2.1 MANUFACTURER

- A. Neogard, a part of Hempel, 2728 Empire Central, Dallas, TX 75235, 214-353-1600, [www.neogard.com](http://www.neogard.com).

### 2.2 MATERIALS

- A. Fluid-Applied Roofing Materials (Hempel product numbers in parentheses):
  1. Liquid Flashing: 70620-CA (474JB) single-component, moisture-cured polyurethane coating.
  2. Reinforcing Fabric: 86220 (63BJB) reinforcing fabric (Tietex T-272).
  3. Mastic: 70690 (47CJB) urethane roof mastic.
  4. Sealant: 70991 (47XJB) urethane sealant.
  5. Flashing Tape: 86218 (62ZJB) flashing tape.
  6. Base Coat: 70620-CA (474JB) single-component, moisture-cured polyurethane.
  7. Topcoat: 7490-CA (47YJB) single-component aliphatic polyurethane.
  8. Optional Granule Coat: 7490-CA (47YJB) single-component aliphatic polyurethane.
  9. Cleaning Solvent: 08080 Xylene Thinner or 7055 (086JB) Odorless Reducer.

### 2.3 MATERIAL PERFORMANCE CRITERIA

- A. Typical physical properties of cured 70620-CA urethane used on this project are:
  1. Tensile Strength, ASTM D412, 1,000 psi
  2. Elongation, ASTM D412, 375%
  3. Permanent Set, ASTM D412, < 10%
  4. Tear Resistance, ASTM D1004, 100 pli
  5. Water Resistance, ASTM D471, < 3%
  6. Shore A, ASTM D2240, 50–55
- B. Typical physical properties of cured 7490-CA aliphatic urethane used on this project are:
  1. Tensile Strength, ASTM D412, 2,300 psi
  2. Elongation, ASTM D412, 230%
  3. Permanent Set, ASTM D412, 10%
  4. Tear Resistance, ASTM D1004, 200 pli
  5. Water Resistance, ASTM D471, <2% (7 days)
  6. Taber Abrasion, ASTM D4060, 16 mg (1,000 CS-17)
  7. MVT (20 mils), ASTM E96, 0.9 perms
  8. Shore A, ASTM D2240, 85
  9. Fire Resistance, ASTM E108, Pass (as part of a tested system)

- C. Sprayed Polyurethane Foam used on this project shall meet the following minimum physical properties:
  - 1. Tensile Strength ASTM D1623, 60-80 psi
  - 2. Density ASTM D1622, 2.9-3.2 pcf
  - 3. Compressive Strength (parallel to rise), ASTM D1621, 55 +/- 5% psi at yield
  - 4. Closed Cell Content, ASTM D1940, >90% min.
  - 5. Humid Aging (and % linear change) at 158°F/70°C, 97% relative humidity, 28 days, ASTM D2126, -0.26%
  - 6. K Factor (aged), ASTM C518, 0.158 BTU/hr ft<sup>2</sup> °F/in.
  - 7. Flame Spread (nominal 2" thickness), ASTM E84, 55 maximum
- D. The above tested results are typical values. Individual lots may vary up to 10% from the typical value. Further technical information can be found at [www.neogard.com](http://www.neogard.com).

#### 2.4 ACCESSORIES

- A. Fabric reinforcement and waterproofing coverings for expansion joints shall be compatible with specified fluid-applied roof coating system.
- B. Miscellaneous materials such as adhesives, metal primers, metal vents and drains shall be a composite part of the roof system and shall be compatible with the specified fluid-applied roof coating system.
- C. Granules (Optional): Granules shall be #11 screen size, dust free, ceramic-coated roofing granule.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Inspect surfaces which will receive the Permthane Aliphatic II fluid-applied roof coating system to make sure they are clean, smooth, sound, properly prepared, and free of moisture, dirt, debris, or other contaminants.
- B. Verify that polyurethane roofing foam surface texture ranges from smooth orange peel to verge of popcorn and is acceptable to receive the fluid-applied roof coating system. "Popcorn" or "tree bark" surfaces are unacceptable and must be reworked or replaced prior to coating.
- C. Verify that all roof penetrations, mechanical equipment, cants, edge metal, and other on-roof items are in place and secure.
- D. Verify that all critical areas around the immediate vicinity of the coating application area are suitably protected.
- E. Verify that roof has sufficient slope for water to drain.
- F. Verify all roof drains are clean and in working order.
- G. Verify that all air conditioning and air intake vents are suitably protected or closed.

#### 3.2 PREPARATION

- A. All existing HVAC and other equipment shall be protected from any damage that could be caused by the fluid-applied roof coating application.
- B. Raising, re-setting, and protection of air conditioning equipment, ventilators, and exhaust fans may be required.
- C. Protect all adjoining areas that are not to receive the fluid-applied roof coating system and provide a suitable work station to mix the coating materials.
- D. All sprayed polyurethane foam surfaces shall be free of moisture, frost, dust, debris, oils, tars, grease or other materials that will impair adhesion of the fluid-applied roof coating system.

- E. Consult spray polyurethane foam manufacturer for proper cure time of applied polyurethane foam prior to application of fluid-applied roof coating.

### 3.3 APPLICATION

- A. Factors That Affect Dry Film Thickness: Volume of solids, thinning, surface profile, application technique and equipment, overspray, squeegee, brush and roller wet out, container residue, spills and other waste are among the many factors that affect the amount of wet coating required to yield proper dry film thickness. To ensure that specified dry film thickness is achieved, use a wet mil gauge to verify actual thickness of wet coating applied, adjusting as needed for those factors which directly affect the dry film build.
- B. 10-Year Warranty System:
  - 1. Base Coat: Base Coat shall be applied the same day as the sprayed polyurethane foam. Thoroughly mix and apply 70620-CA series single component moisture cured polyurethane coating at approximately 66 sf/gal (1.5 gal/100 sf or 24 wet mils) to yield 18 dry mils and allow to cure.
  - 2. Topcoat: Thoroughly mix and apply 7490-CA at approximately 66 sf/gal (1.5 gal/100 sf or 24 wet mils) to yield 18 dry mils and allow to cure.
  - 3. Optional Granule Coat: Thoroughly mix and apply 7490-CA at approximately 100 sf/gal (1.0 gal/100 sf or 16 wet mils) and immediately broadcast #11 roofing granules at the rate of 30 lbs/100 sf. After cure, remove loose granules from roof surface.
  - 4. Coating Thickness Requirements: Total coating system thickness shall average 36 dry mils, exclusive of Optional Granule Coat and granules. Minimum dry film thickness (DFT) at any point on the roof shall not be less than 24 dry mils of which 16 dry mils must be above the base coat material and 8 dry mils must be 7490-CA series material. Note: Rough surface profiles of sprayed polyurethane foam may increase the number of coats required to achieve uniform film coverage and minimum dry film thickness requirements.
- C. 15-Year Warranty System:
  - 1. First Base Coat: First Base Coat shall be applied the same day as the sprayed polyurethane foam. Thoroughly mix and apply 70620-CA at approximately 80 sf/gal (1.25 gal/100 sf or 20 wet mils) to yield 15 dry mils and allow to cure.
  - 2. Second Base Coat: Thoroughly mix and apply 70620-CA at approximately 80 sf/gal (1.25 gal/100 sf or 20 wet mils) to yield 15 dry mils and allow to cure.
  - 3. Topcoat: Thoroughly mix and apply 7490-CA at approximately 66 sf/gal (1.5 gal/100 sf or 24 wet mils) to yield 18 dry mils and allow to cure.
  - 4. Optional Granule Coat: Thoroughly mix and apply 7490-CA at approximately 100 sf/gal (1.0 gal/100 sf or 16 wet mils) and immediately broadcast #11 roofing granules at the rate of 30 lbs/100 sf. After cure, remove loose granules from roof surface.
  - 5. Coating Thickness Requirements: Total coating system thickness shall average 48 dry mils, exclusive of Optional Granule Coat and granules. Minimum dry film thickness (DFT) at any point on the roof shall not be less than 32 dry mils and 16 dry mils must be 7490-CA. Note: Rough surface profiles may increase the number of coats required to achieve uniform film coverage and minimum dry film thickness requirements.
- D. 20-Year Warranty, Very Severe Hail (VSH) System:
  - 1. Note: System meets FM4473 Class 4 Hail Impact Resistance Classification standard.
  - 2. First Base Coat: First Base Coat shall be applied the same day as the sprayed polyurethane foam. Thoroughly mix and apply 70620-CA at approximately 80 sf/gal (1.25 gal/100 sf or 20 wet mils) to yield 15 dry mils and allow to cure.
  - 3. Second Base Coat: Thoroughly mix and apply 70620-CA at approximately 80 sf/gal (1.25 gal/100 sf or 20 wet mils) to yield 15 dry mils and allow to cure.
  - 4. First Topcoat: Thoroughly mix and apply 7490-CA at approximately 80 sf/gal (1.25 gal/100 sf or 20 wet mils) to yield 15 dry mils and allow to cure.
  - 5. Second Topcoat: Thoroughly mix and apply 7490-CA at approximately 80 sf/gal (1.25 gal/100 sf or 20 wet mils) to yield 15 dry mils and allow to cure.
  - 6. Optional Granule Coat: Thoroughly mix and apply 7490-CA at approximately 100 sf/gal (1.0 gal/100 sf or 16 wet mils) and immediately broadcast #11 roofing granules at the rate of 30 lbs/100 sf. After cure, remove loose granules from roof surface.

7. Coating Thickness Requirements: Total coating system thickness shall average 60 dry mils, exclusive of Optional Granule Coat and granules. Minimum dry film thickness (DFT) at any point on the roof shall not be less than 45 mils and 24 dry mils must be 7490-CA. Note: Rough surface profiles may increase the number of coats required to achieve uniform film coverage and minimum dry film thickness requirements.

### **3.4 FIELD QUALITY CONTROL**

- A. Manufacturer's Field Services: Inspection by an independent third party or coating manufacturer's representative may be required to verify the proper installation of the fluid-applied roof coating system. Any areas that do not meet the minimum standards for application as specified herein shall be corrected at the applicator's expense. Manufacturer's inspection or verification shall not constitute acceptance of responsibility for any improper surface preparation or application of material. Note: It is the responsibility of the applicator to make sure there is sufficient coating applied to the roof.

### **3.5 CLEANING**

- A. Surfaces not intended to receive the Permthane Aliphatic II fluid-applied coating system 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.

### **3.6 PROTECTION**

- A. After completion of application, do not allow traffic on coated surfaces for a period of at least 48 hours at 75°F (23°C) and 50% relative humidity, or until completely cured.

## **END OF SECTION**

Issued by: Hempel (USA) – Neogard Permthane Aliphatic II

This Guide Specification supersedes those previously issued.

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