

## PART 1 GENERAL

### 1.1 SUMMARY

- A. Provide labor, materials, equipment and supervision necessary to install an MRO-grade slurry/broadcast epoxy mortar aviation hangar floor system 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 03 30 00: Cast-in-Place Concrete
  - 2. Section 07 92 00: Joint Sealants
  - 3. Section 07 95 00: Expansion Control

### 1.2 SYSTEM DESCRIPTION

- A. SkyGard MRO shall be a complete system of compatible materials supplied by Neogard to create an MRO-grade, seamless, light-reflective, UV-stable, Skydrol-resistant flooring system.
- B. SkyGard MRO shall be designated for application on the specific type of substrate indicated on the drawings.

### 1.3 SUBMITTALS

- A. Technical Data: Submit manufacturer's product data, Safety Data Sheets (SDS) and installation instructions.
- B. Samples: Submit samples of SkyGard MRO hangar flooring system. Samples shall be construed as examples of finished color and texture of the system only.
- C. Applicator Approval: Submit letter from manufacturer stating applicator is approved to install the SkyGard MRO hangar flooring system.
- D. Warranty: Submit copy of manufacturer's standard sample warranty, identifying the terms and conditions stated in section 1.7 Warranty.

### 1.4 QUALITY ASSURANCE

- A. Supplier Qualifications: SkyGard MRO, as supplied by Neogard, is approved for use on this project.
- B. Applicator Qualifications: Applicators shall be approved to install specified system.
- C. Requirement of Regulatory Agencies: Specified materials shall meet existing Federal, State and local VOC regulations.
- D. Field Sample:
  - 1. Install a field sample of at least 100 square feet at the project site or pre-selected area as agreed to by owner's representative, applicator and manufacturer.
  - 2. Apply material in accordance with manufacturer's written application instructions.
  - 3. Field sample will be standard for judging color and texture on remainder of project.
  - 4. Maintain field sample during construction for workmanship comparison.
  - 5. Do not alter, move, or destroy field sample until work is completed and approved by Owner's representative.

### 1.5 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Materials shall be delivered in original sealed containers, clearly marked with supplier's name, brand name and type of material.
- B. Storage and Handling: Recommended material storage temperature is 75°F (23°C). Handle products to

prevent damage to container. All materials shall be stored in compliance with local fire and safety requirements. Do not store at high temperatures or in direct sunlight.

#### 1.6 PROJECT CONDITIONS

- A. Read and follow the SDS and container labels for detailed health and safety information.
- B. Apply materials only when substrate temperature is 50°F (10°C) or greater, and to a clean, dry surface. Do not apply if precipitation is imminent, or to a damp, unclean or frosty surface. Maintain a minimum substrate temperature of 50°F (10°C) for a minimum of 48 hours before, during and after installation, or until cured.
- C. Apply materials only if ambient temperature between 50°F (10°C) and 85°F (29°C). Ambient temperature must be a minimum of 5°F (3°C) above dew point. Cure times, flow/leveling, cured physical properties, and overall appearance will be adversely affected if products are applied outside of these temperature ranges.
- D. Due to hydrostatic, capillary and moisture vapor pressure, substrates in contact with ground must have a properly installed, effective vapor barrier. Moisture vapor emission of concrete not to exceed 3 lbs/1,000 sq. ft./24 hrs, when tested by the quantitative calcium chloride test method (ASTM F1869). Relative Humidity is not to exceed 80% when tested by In-situ Probe Test (ASTM F2170).
- E. Coordinate flooring work with other trades. Applicator shall have sole right of access to the specified area for the time needed to complete the application and allow the flooring system to cure adequately.
- F. Protect adjacent surfaces from damage resulting from installation of the system. If necessary, mask and/or cover adjacent surfaces, fixtures, equipment, and others by suitable means.
- G. Provide adequate ventilation.
- H. Provide a suitable work station to mix coating materials. Maintain work area in a neat and orderly condition, removing empty containers, rags and trash daily from the site.

#### 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, upon 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. SkyGard MRO materials (Hempel product numbers in parentheses):
  - 1. Crack and Joint Filler: 70718/70719 (25000) flexible epoxy.
  - 2. Fillers:
    - a. 86468 (66040) silica flour.
    - b. 86364 (66030) silica quartz.
  - 3. Sealant: 70991 (47XJB) or other polyurethane sealant approved by Neogard.
  - 4. Aggregate: 86364 silica quartz (66030).
  - 5. Slurry Base Coat: 70714/70715 (45060) clear epoxy.
  - 6. First Seal Coat: 70714/70715 (45060) pigmented epoxy.
  - 7. Second Seal Coat (epoxy, or two 70817 series options):
    - a. 70714/70715 (45060) pigmented epoxy.
    - b. 70817/70818 (5707000050) clear or pigmented Chemical Resistant Urethane (CRU).
    - c. 70817-01/70818 (5707016640) white CRU.

### 2.3 MATERIAL PERFORMANCE CRITERIA

- A. Typical physical properties of cured 70714/70715 clear/pigmented epoxy used on this project are:
1. Tensile Strength, ASTM D638, 3,700 psi
  2. Elongation, ASTM D638, 25%
  3. Compressive Strength, ASTM D695, 25,300 psi
  4. Flexural Strength, ASTM D790, 3,180 psi
  5. Flexural Modulus, ASTM D790, 57,700 psi
  6. Water Resistance, ASTM D570, 0.21%
  7. MVT (10 mils), ASTM E96, 0.16
  8. Taber Abrasion, ASTM D4060, 25 mg (1,000 CS-17)
  9. Shore D, ASTM D2240, 78
  10. Adhesion, ASTM D4541, 350 psi
  11. Flammability, ASTM D635, Pass
- B. Typical physical properties of cured 70817/70818 clear/tinted CRU used on this project are:
1. Tensile Strength, ASTM D2370, 7,500 psi
  2. Elongation, ASTM D2370, 12%
  3. Shore D, ASTM D2240, 70
  4. Water Resistance, ASTM D471, < 1% (7 days)
  5. Taber Abrasion, ASTM D4060, 23 mg (1,000 CS-17)
  6. Anti-Microbial, JIS Z 2801-2010, Pass
- C. Typical physical properties of cured 70817-01/70818 white CRU used on this project are:
1. Tensile Strength, ASTM D2370, 5,800 psi
  2. Elongation, ASTM D2370, 40%
  3. Shore D, ASTM D2240, 65
  4. Water Resistance, ASTM D471, < 1% (7 days)
  5. Taber Abrasion, ASTM D4060, 17 mg (1,000 CS-17)
  6. Anti-Microbial, JIS Z 2801-2010, Pass
- 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. Miscellaneous materials such as cleaning agents, adhesives, closed cell backer rod, deck drains, and others, shall be compatible with the specified SkyGard MRO system.

## 2.5 MIXING

- A. Comply with manufacturer's instructions for mixing procedures.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that the work done under other sections meets the following requirements:
1. That the concrete deck surface is free of ridges and sharp projections, sound and dry.
  2. That the concrete was cured for a minimum of 28 days. (Minimum of 3,500 psi compressive strength). The use of concrete curing agents, if any, shall be of the sodium silicate base only; others require written approval by Neogard.
  3. That damaged areas of the concrete substrate be restored to match adjacent areas. Use 70714/70715 epoxy and oven-dry silica aggregate approved by Neogard for filling and leveling at a ratio of one part epoxy mixed with four parts aggregate by volume.
  4. That due to hydrostatic, capillary and moisture vapor pressure, substrates in contact with ground must have a properly installed, effective vapor barrier. Moisture vapor emission of concrete not to exceed 3 lbs/1,000 sq. ft./24 hrs, when tested by the quantitative calcium chloride test method (ASTM F1869). Relative Humidity is not to exceed 75% when tested by In-situ Probe Test (ASTM F2170).

### 3.2 PREPARATION

- A. Cleaning: Surfaces contaminated with oil or grease shall be vigorously scrubbed with a power broom and a strong non-sudsing detergent. Thoroughly wash, clean, and dry. Areas where oil or other contaminants penetrate deep into the concrete may require removal by mechanical methods. Do not apply materials unless surface is clean and dry.
- B. Shot-Blasting: Required surface preparation method for remedial construction is also the preferred method for new construction. Mechanically prepare surface by shot-blasting to industry standard surface texture (ICRI's CSP3-4) without causing additional surface defects in substrate. Shot-blasting does not remove deep penetrating oils, grease, tar or asphalt stains. Proper cleaning procedures should be followed to ensure proper bonding of the coating. Note: If shot-blasting is not practical, contact Neogard Technical Service.
- C. Cracks: After shot-blasting, fill all non-moving cracks with 70714/70715 epoxy, mixed with P1934 fumed silica to form a paste. The mix ratio is one part 70714/70715 epoxy to 3 parts P1934 by volume.
- D. Control and Cold Joints: Fill control and cold joints flush with 70718/70719 flexible epoxy at 3/4" depth. Install backer rod if necessary to limit depth to 3/4".
- E. Expansion and Isolation Joints: Expansion and isolation joints  $\leq$  1" in width, shall be sealed with 70991 sealant. Sealant shall be applied to inside of joint only, not applied to floor surface.

### 3.3 APPLICATION

- A. Factors That Affect Dry Film Thickness: Volume 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. Slurry Base Coat: Mix 70714/70715 pigmented epoxy for three minutes. Add 86468 silica flour at a ratio of 1:1 with mixed epoxy. Continue mixing until a smooth consistency is attained. Spread mix using a 1/4" notched trowel or squeegee at a minimum rate of 40 sf/gal to achieve 40 mils DFT. Allow to self-level and de-air with a spiked roller. Allow to cure 8–12 hours at 70°F (21°C) or until tack free.
- C. Aggregate: Broadcast 86364 silica quartz into wet Slurry Base Coat until refusal (approximately 100 lb/100 sf). Maintain a one to two foot wet edge without any aggregate to allow for a smooth transition to the next application of epoxy matrix. Allow to cure 8–12 hours at 75°F (23°C). Remove excess aggregate and lightly sand with a circular floor sander and #50 grit sandpaper to remove rough spots.
- D. To achieve additional thickness, repeat 3.3B and 3.3C.
- E. First Seal Coat: Mix and apply 70714/70715 pigmented epoxy at a rate of 200 sf/gal (8 wet mils) to yield 8 dry mils. Allow to cure until tack free (8–9 hours at 75°F, 23°C).
- F. Second Seal Coat:
  - 1. For general conditions: Mix and apply 70714/70715 pigmented epoxy at a rate of 200 sf/gal (8 wet mils) to yield 8 dry mils.
  - 2. For high resistance to Skydrol and other chemicals: Pre-mix 70817 series for 3 minutes. Add 70817 to 70818 and immediately mix for 3 minutes. Apply mixed 70817/70818 at a rate of 285 sf/gal (5 wet mils) to yield 5 dry mils.
- G. Applicator is responsible for applying sufficient coating to the substrate.

### 3.4 CLEANING

- A. Remove debris resulting from completion of flooring operation from the project site.
- B. Refer to the Preventive Maintenance Manual for Neogard Floor Coating Systems for typical cleaning methods.

### 3.5 PROTECTION

# Guide Specification

## SkyGard MRO

### Section 09 67 23 Resinous Flooring



- A. After completion of application, do not allow foot traffic on coated surfaces for a minimum of 24 hours at 75°F (23°C), heavy traffic for a minimum of 48 hours at 75°F (23°C), or until system has reached full chemical cure (7 days at 75°F, 23°C).

## END OF SECTION

Issued by: Hempel (USA) – Neogard SkyGard MRO

This Guide Specification supersedes those previously issued.

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