

PART 1 GENERAL

1.1 SUMMARY

- A. Provide labor, materials, equipment and supervision necessary to install a heavy duty cementitious polyurethane floor system as outlined in this specification to new or existing concrete surfaces. System thickness shall be a nominal ¼" system unless agreed upon by Neogard personnel.
- 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. Hybri-Gard EF shall be a complete system of compatible materials manufactured by Neogard to create a seamless flooring surface.
- B. Hybri-Gard EF 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 Hybri-Gard EF cementitious polyurethane 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 Hybri-Gard EF cementitious polyurethane 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: Hybri-Gard EF, as manufactured 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 20 lbs/1,000 sq. ft./24 hours, when tested by the quantitative calcium chloride test method (ASTM F1869). Relative Humidity is not to exceed 99% 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.
- I. 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.

2.2 MATERIALS

- A. Hybri-Gard EF (Hempel product numbers in parentheses):
 1. Crack and Joint Filler: 70718/70719 (25000) flexible epoxy.
 2. Sealant: 70991 (47XJB) or other polyurethane sealant approved by Neogard.
 3. Epoxy (100% Solids): 70714/70715 (45060) clear.
 4. Neocrete SL mix (48012):
 - a. Resin: 70800 (48019) series, gray, tan, or red in color.
 - b. Hardener: 70801 (98010).
 - c. Powder: Neocrete SL 70804 (6602209990P038, 38-lb bag).
 5. Fumed Silica: P1934 (D261).
 6. Topcoats (three options, may be used in conjunction):
 - a. 70734/70735 (45049/95049) clear, low-yellowing epoxy.
 - b. 70817/70818 (57079/95059) clear Chemical Resistant Urethane (CRU).

- c. 70869/70819 (57039/95055) clear Polyaspartic.
7. Finish Coat (Optional):
 - a. Hybri-Gard HTU: High Traffic Chemical Resistant Urethane 653JB
8. Color Flake: Integrally colored, random sized flake.

2.3 MATERIAL PERFORMANCE CRITERIA

- A. Typical physical properties of cured Neocrete SL (70800/70801/70804) polyurethane used on this project are:
 1. Compressive Strength, ASTM C579, 7,700 psi
 2. Tensile Strength, ASTM C307, 712 psi
 3. Flexural Strength, ASTM C580, 2,200 psi
 4. Modulus of Elasticity, ASTM C580, 446,700 psi
 5. Shore D, ASTM D2240, 84
 6. Adhesion to Concrete, ASTM D4541, 400 psi
 7. Water Resistance, ASTM C413, 0.42%
 8. Density, ASTM C905-01, 121 lbs/ft³
 9. Coefficient of Thermal Expansion, ASTM C531, 2.4 x 10⁻⁵ in/in/°F
 10. Resistance to Fungal Growth, ASTM G21, No Support of Growth
 11. Flammability, ASTM D635, Pass
- B. Typical physical properties of cured 70734/70735 epoxy used on this project are:
 1. Compressive Strength, ASTM D695, 11,000 psi
 2. Tensile Strength, ASTM D638, 8,000 psi
 3. Elongation at Break, ASTM D638, 14%
 4. Flexural Strength, ASTM D790, 10,000 psi
 5. Flexural Modulus, ASTM D790, 400,000 psi
 6. Modulus of Elasticity, ASTM D790, 170,000 psi
 7. Shore D, ASTM D2240, 82
 8. Adhesion, ASTM D4541, 400 psi
 9. Water Resistance, ASTM D570, < 2%
 10. MVT (20 mils), ASTM E96, 0.10 Perm
 11. Flammability, ASTM D635, Pass
 12. Taber Abrasion, ASTM D4060, 89 mg (1,000 CS-17)
- C. Typical physical properties of cured 70817/70818 clear 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
- D. Typical physical properties of cured 70869/70819 clear polyaspartic used on this project are:
 1. Tensile Strength, ASTM D2370, 3,362 psi
 2. Elongation, ASTM D412, 63%
 3. Taber Abrasion, ASTM D4060, 55 mg (1,000 CS-17)
 4. Shore D, ASTM D2240, 70
 5. Anti-Microbial, JIS Z 2801-2010, Pass
- E. Typical physical properties of cured Hybri-Gard HTU used on this project are:
 1. Tensile Strength, ASTM D2370, 6,250 psi
 2. Tabor Abrasion, ASTM D4060, 10mg 1000 cycles CS-17 Three Components
 3. Shore D, ASTM 2240, 83
 4. Weight Per Gallon, ASTM 1475, 9.64 lbs/gallon
 5. Weight Solids (mixed), ASTM 4209, 94%
 6. Volume Solids (mixed), Calculated, 92%
 7. VOC, ASTM 5201, < 25 g/L
 8. Flash Point, ASTM 3278, > 200°F

9. Pot Life, 75°F / 23°C, 50% relative humidity, 75 minutes
10. Cure Time, 75°F / 23°C, 55% relative humidity, 24 hours light foot traffic, 3 days medium duty, 7 days full service
11. Shelf life, unopened, stored at 73°F, 1 year

F. 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.

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 Hybri-Gard 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 10 days (green cured concrete). 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. 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 20 lbs/1,000 sq. ft./24 hours, when tested by the quantitative calcium chloride test method (ASTM F1869). Relative Humidity is not to exceed 99% 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 deck 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.
- F. Key Cuts: Cut 1/8"–1/4" joints around perimeter of floor, drains, penetrations, doorways, and in field of floor to mechanically anchor floor system.

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. Primer: Neocrete SL does not require a primer.
- C. Cementitious Polyurethane Mix:
1. Pre-mix 70800 for a minimum of one minute before mixing with 70801 hardener.
 2. IMPORTANT: To avoid color variation from mix to mix, scrape all of the pre-mixed 70800 from the 70800 can into the mixing container.
 3. Mix 141 fluid ounces of 70800 resin (contents of one 2-gallon can) with 90 fluid ounces of 70801 hardener (contents of one 1-gallon can). Slowly add one 38-pound bag of 70804 powder to the resin mix. Mix with a variable speed drill utilizing a Jiffy Mixer to suspend any settled pigment and attain a uniform color. Continue mixing until the powder has been uniformly blended with the resin mix.
 4. Pour the cementitious polyurethane mix onto the floor and spread using a gauge rake. Immediately backroll with a spike roller to de-air and level the material.
 5. One unit of mixed material covers approximately 32 square feet at 3/16" thickness or 45 square feet at 1/8" thickness.. Thickness and coverage rate can vary due to finish of substrate.
- D. Color flake: Immediately broadcast blended color flake into wet cementitious polyurethane mix at a rate of 15–20 lbs. by weight per 100 square feet until desired pattern is achieved. Make sure the blended color chips are thrown up into the air so they will fall vertically into the wet cementitious polyurethane mix. Maintain a 1 to 2 foot wet edge without any chips to allow for a smooth transition to the next application of cementitious polyurethane mix.
- E. Allow to cure 6-10 hours at 70°F/21°C. After curing, remove excess flake and lightly sand with a circular floor sander and #50 grit sandpaper to remove any rough spots. All debris from sanding must be removed to provide a clean, moisture-free surface.
- F. Topcoats (may be used in conjunction) Choose depending on chemical exposure (see Chemical Resistance Charts at www.neogard.com):
1. 70734/70735 (45049/95049) clear, low-yellowing epoxy:
 - a. First Interior topcoat: Mix and apply 70734/70735 clear epoxy at a rate of 160 sf/gal (10 wet mils) to yield 10 dry mils and allow to cure until tack free (12–16 hours at 75°F/23°C).
 - b. Second Interior topcoat: Mix and apply 70734/70735 at a rate of 200 sf/gal (8 wet mils) to yield 8 dry mils.
 2. HS CRU 70817/70818 (57079/95059):
 - a. First Topcoat: Pre-mix 70817 for 3 minutes. Add 70817 to 70818 and immediately mix for 3 minutes. Mix using a slow-speed drill with a Jiffy Mixer paddle. Apply mixed 70817/70818 at a rate of 160 square feet per gallon to achieve 10 mils DFT. Allow to cure 6 to 8 hours at 75°F/23°C.
 - b. Second Topcoat: Pre-mix 70817 for 3 minutes. Add 70817 to 70818 and immediately mix for 3 minutes. Mix using a slow-speed drill with a Jiffy Mixer paddle. Apply mixed 70817/70818 at a rate of 200 square feet per gallon to achieve 8 mils DFT and allow to cure 8–12 hours at 75°F/23°C before allowing foot traffic.
 3. Polyaspartic 70869/70819 (57039/95055):
 - a. First Topcoat: Pre-mix 70869 for 3 minutes. Add entire contents of 70819 container to 70869 container and immediately mix for 3 minutes. Mix using a slow-speed drill with a Jiffy Mixer paddle. Apply mixed 70869/70819 at a rate of 160 square feet per gallon to achieve 10 mils DFT. Allow to cure 8–12 hours at 75°F/23°C before allowing foot traffic.
 - b. Second Topcoat: Pre-mix 70869 for 3 minutes. Add entire contents of 70819 container to 70869 container and immediately mix for 3 minutes. Mix using a slow-speed drill with a Jiffy Mixer

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paddle. Apply mixed 70869/70819 at a rate of 200 square feet per gallon to achieve 8 mils DFT. Allow to cure 8–12 hours at 75°F/23°C before allowing foot traffic.

- G. Finish Coat (Optional):
 - 1. Hybri-Gard HTU: Mix and apply pigmented Hybri-Gard HTU 653JB 475-500 sq. feet/gallon according to Product Data Sheet.
- H. 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

- A. After completion of application, do not allow heavy traffic on coated surfaces for a period of at least 24 hours at 75°F/23°C.

END OF SECTION

This Guide Specification (“**Guide Spec**”) relates to the supplied products/system (“**System**”) and is subject to update from time-to-time. Accordingly, the buyer/applicator should refer to the Guide Spec current as of the time of delivery. In addition to the Guide Spec, the buyer/applicator may receive some or all of the specifications, statements and/or guidelines listed below or available at www.neogard.com (the “**Additional Documents**”):

| No. | Document Description |
|-----|--|
| 1 | PDS |
| 2 | Guide Specification |
| 3 | Application Manual |
| 4 | Other Technical Support Information (i.e. summary application tables, troubleshooting guides, maintenance manuals, chemical resistance charts and other technical information) |

In the event of a conflict between this Guide Spec and the Additional Documents, the conflict shall be resolved in accordance with the order of priority set forth above. In addition, the buyer/applicator should refer to the relevant Safety Data Sheets current as of the time of delivery of the System and available at www.neogard.com. Buyer/applicator is responsible for determining the suitability of the intended use of the System, and Neogard disclaims all responsibility for any use, handling and storage of any components of the System that are not in accordance with the requirements set forth in the relevant PDS(s), this Guide Spec and the Additional Documents. The terms and provisions hereof apply to this Guide Spec, the Additional Documents and any other documents supplied by Neogard in respect of the System. The System is supplied and all technical assistance is given subject to the General Conditions of Sale of Hempel Products and/or Services available at www.hempel.com. **NEOGARD MAKES NO OTHER WARRANTY THAT EXTENDS BEYOND THE WARRANTY REFERENCED THEREIN INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NEOGARD WILL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY OR CONDITION, OR THAT IN ANY WAY ARISE IN RELATION TO THE SYSTEM.**