SECTION 09960

HIGH PERFORMANCE COATINGS

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PART 1 GENERAL

PART 1.1 SECTION INCLUDES

A. Polyurethane coatings.

B. Epoxy coatings.

C. Polyaspartic coatings.

PART 1.2 RELATED SECTIONS

A. Section 03300 - Cast-in-Place Concrete.

B. Section 09630 - Masonry Flooring: Unglazed brick flooring, flagstone flooring.

C. Section 09640 - Wood Flooring: Unsealed wood flooring.

D. Section 09910 - Paints.

PART 1.3 REFERENCES

A. ASTM D 2240 - Standard Test Method for Rubber PropertyDurometer Hardness

B. South Coast Air Quality Management District (SCAQMD) Rule 13 (2008).

C. SSPC-SP1 - Solvent Cleaning.

D. SSPC-SP2 - Hand Tool Cleaning.

E. SSPC-SP3 - Power Tool Cleaning.

F. SSPC-SP6/NACE 3 - Commercial Blast Cleaning.

PART 1.4 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Surface preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

D. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

E. Installer's Project References: Submit list of successfully completed projects, including project name and location, name of architect, and type and quantity of coatings applied.

F. Maintenance Instructions: Submit manufacturer's maintenance and cleaning instructions.

PART 1.5 QUALITY ASSURANCE

A. Installer Qualifications:
1. Successful experience in application of similar coating systems.
2. Employ persons trained for application of coating systems.

B. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
1. Finish areas designated by Architect.
2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
3. Refinish mock-up area as required to produce acceptable work.

C. Single Source Responsibility: Materials shall be products of a single manufacturer.

D. Pre-installation Meeting: Convene a meeting before the start of the application of coatings application. Require attendance of parties directly affecting work of this section, including Contractor, Architect, and applicator. Review surface preparation, application, protection, and coordination with other work.

PART 1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

C. Handling: Protect materials during handling and application to prevent damage or contamination.

PART 1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 1.8 SEQUENCING

A. Prepare surface and apply coating systems after other interior finish work is completed and before trim and base is installed.

PART 2 PRODUCTS

PART 2.1 MANUFACTURERS, INSTALLERS

A. Acceptable Manufacturer: EPMAR Corporation, which is located at: 13240 Barton Circle ; Whittier, CA 90605-3254; Tel: 562-236-1175; Email: request info (villaw@quakerchem.com); Web: www.epmar.com

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

D. Northwest Floor Care, Inc. 2920 Malmo Drive, Arlington Heights, IL 60005, Phone (847) 640-0390, Fax: (847) 640-1050 Contact: Jim Muzzillo Jr., email: jmuzzillojr@northwestfloor.com

PART 2.2 POLYUREA

A. 100% Solids Polyaspartic:
1. Product: Kemiko (Sta Crete) SS3300.
2. Type: 100 percent solids two component Polyaspartic with excellent adhesion, UV resistance, abrasion resistance, chemical resistance, zero VOC, low odor and has rapid setting properties. Designed as a decorative or industrial environment basecoat and topcoat for exterior concrete and carbon steel substrates. Utilizes the best available 100 percent solids Polyaspartic technology for atmospheric and chemical exposure.
3. VOC: 0 g/l.
4. Volume Solids: 100 percent.
5. Flash Point: >200 degree F (93 degrees C).
6. Sheen: High Gloss.
7. Mix Ratio: 1:1 (A:B) by volume.
8. Pot Life (0.8 gal mass): 30-45 minutes at 70 degree F (21 degree C), 50% RH.
9. Dry Time at 70 degree F (21 degree C), 50% RH; 2-3-hours to touch, recoat within 4-48 hours. 4-6 hours cure for foot traffic, 24-48 hours for vehicular traffic depending on substrate temperature and humidity. 10-14 days for full chemical and physical properties depending on substrate temperature and humidity.
10. Film Thickness: 5 to 15 mils (.13 to .38 mm) on horizontal substrates.
11. Thinning: None required. Acetone for clean up.
12. Primer - Steel: Kemiko SS3800.
13. Primer - Concrete: Kemiko SS1600
14. Primer - Concrete: Kemiko SS3700.
15. Primer - Concrete: Kemiko SS3800.
16. Color: Clear.
17. Color: White.

18. Color: Gray.
19. Color: Special color - Refer to Finish Schedule.
20. Topcoat: None required.

PART 2.3 POLYURETHANE COATING

A. Waterborne Aliphatic Polyurethane Coating:
1. Product: Kemiko (Sta Crete) SS2700.
2. : Two component, waterborne, high-solids, aliphatic polyurethane coating.
3. Flash Point: >200 degree F (93 degree C) (non flammable).
4. Sheen: High gloss.
5. Dry Film Thickness: 2.5 to 3.5 mils (.6 mm to .9 mm).
6. Mix Ratio: Clear - 2:3 (A:B) by volume. Pigmented - 1:2 (A:B) by volume.
7. Volume Solids: Clear - 75 percent. Pigmented - 77 percent.
8. Maximum VOC: 50 g/l. Meets final SCAQMD Rule 13 (2008).
9. Pot Life at 70 degree F (21 degree C): 1.5 hours.
10. Dry Time at 70 degree F (21 degree C) and 50% RH - 5 hours to touch; Foot traffic in 14 hours; Heavy traffic in 24 hours; Full cure in 7 days (chemical resistance).
11. Recoat Intervals: 50 degree F (10 degree C) - minimum 12 hours, maximum 72 hours.
12. Recoat Intervals: 70 degree F (21 degree C) - minimum 6 hours, maximum 24 hours.
13. Recoat Intervals: 90 degree F (32 degree C) - minimum 3 hours, maximum 12 hours.
14. Film Thickness: 4 to 5 mils (.10 to .12 mm) wet to achieve 3 to 4 mils (.08 to .10 mm) dry film thickness. Do not exceed 6 mils (.15 mm) wet film thickness - air entrapment and foaming may occur.
15. Thinning: Add 0 percent to 5 percent water required for spray. Add 5 percent to 10 percent water for brush and roller.
16. Primer: Self-priming.
17. Color: Clear.
18. Color: White.
19. Primer: Kemiko SS1600.
20. Primer: Kemiko SS3700.
21. Primer: Kemiko SS3800.

PART 2.4 EPOXY COATING

A. Moisture Vapor Barrier System (Positive and Negative Side): High solids epoxy.
1. Product: Kemiko (Sta Crete) SS1120.
2. Type: Two component polyamide amine cured epoxy.
3. VOC: <50 g/l meets final SCAQMD Rule 1113 (2008).
4. Hardness: Shore D 78.
5. Volume Solids: 95 percent.
6. Flash Point: >200 degree F (93 degree C).
7. Sheen: Medium Gloss.
8. Mix Ratio: 1:1 (A:B) by volume.
9. Pot Life: 30 minutes at 70 degree F (21 degree C), 50% RH.
10. Dry Time at 70 degree F (21 degree C), 50% RH: 6-8 hours recoat, 3 days full cure.
11. Film Thickness, 2 to 3 coats at 5 to 6 mils/coat (.125 to .150 mm/coat): 10 to 15 mils (.25 to .38 mm) total DFT.

12. Thinning: None required, not advised.
13. Primer: Self-priming.
14. Topcoat: Kemiko SS1202.
15. Topcoat: STA CRETE SS1500.
16. Topcoat: Kemiko SS3300.
17. Topcoat: Kemiko SS3500.
18. Topcoat: Kemiko SS1600.
19. Topcoat: Kemiko SS2700.
20. Topcoat: Kemiko SS3700.
21. Topcoat: Kemiko SS3800.
22. Topcoat: Wait 2-3 days before applying top-coat - Kemiko SS1600.
23. Topcoat: Wait 2-3 days before applying top-coat - Kemiko SS2700.
24. Topcoat: Wait 2-3 days before applying top-coat - Kemiko SS3700.
25. Topcoat: Wait 2-3 days before applying top-coat - Kemiko SS3800.
26. Color: Gray.
27. Color: Whisper White.
28. Color: Light Gray.
29. Color: Beige.
30. Color: Diego Blue.
31. Color: Bernard Tan.
32. Color: Navajo White.

B. Self Leveling Clear Floor Coating: 100% solids epoxy.
1. Product: Kemiko (Sta Crete) SS1202.
2. Type: 100 percent solids, zero VOC, water clear epoxy coating. Designed to be used with color quartz and selected aggregate.
3. USDA acceptable in food processing facilities.
4. Volume Solids: 100 percent
5. Flash Point: >200 degree F (93 degree C).
6. Sheen: High Gloss.
7. Mix Ratio: 2:1 (A:B) by volume.
8. VOC: Calculated VOC 0 g/l.
9. Pot Life (100 gm mass): 15 - 40 minutes at 70 degree F (21 degree C) depending on cure selection.
10. Dry Time at 70 degree F (21 degree C). 50% RH: Recoat in 4-24 hours. Dry for walking traffic in 6-24 hours depending on selected cure rate. Full cure in 3-days.
11. Film Thickness: 8 to 100 mils (.2 to 2.5 mm) (double coats with or without aggregate).
12. Thinning: None Required. Acetone for clean up.
13. Primers: Self priming.
14. Color: Clear.

C. Water Extended Epoxy Coating:
1. Product: Kemiko (Sta Crete) SS1600.
2. Type: Two component, water extended epoxy coating, low-VOC, water clean up, low odor, and designed to be used as a thin film resilient primer/finish.
3. USDA acceptable in food processing facilities.
4. Volume Solids: Clear - 45 percent, Pigmented - 45 percent.
5. VOC: Clear - Max VOC 250 g/l, Pigmented - Max VOC 100 g/l.
6. Flash Point >200 degree F (93 degree C).
7. Sheen: Gloss.
8. Mix Ratio: Clear - 1:3 (A:B) by volume 1:4 (A:B) by volume (most).
9. Pot Life 6 hours at 70 degree F (21 degree C), 50% RH.

10. Dry Time at 70 degree F (21 degree C) 50% RH: Recoat in a minimum of 6-hours to a maximum of 3-days, foot traffic in 18 hours. Full cure in 5-days at 60 degree F (16 degree C) and 40% RH. Recoat in minimum of 12-hours to a maximum of 5-days at 90 degree F (32 degree C) 30% RH. Recoat in a minimum of 3-hours to a maximum of 48-hours.
11. Film Thickness: 3 to 5 mils (.08 to .13 mm) DFT.
12. Thinning: 0 to 10 percent by volume with clean water only. Water for clean up.
13. Primers: Self priming.
14. Color: Gray.
15. Color: Whisper White.
16. Color: Light Gray.
17. Color: Beige.
18. Color: Diego Blue.
19. Color: Bernard Tan.
20. Color: Navajo White.
21. Topcoat: Kemiko SS2700 Series Polyurethane (for exterior color and gloss retention).

D. 100% Solids High Gloss Self Leveling Epoxy Coating:
1. Product: Kemiko (Sta Crete) SS3500.
2. Type: Pigmented, two component, abrasion resistant epoxy coating with excellent adhesion to steel and concrete, and cures to a very hard resilient high-gloss film.
3. VOC: Maximum 50 g/l.
4. Volume Solids: 100 percent.
5. Flash Point >200 degree F (93 degree C).
6. Sheen: High Gloss.
7. Mix Ratio: 2:1 (A:B) by volume.
8. Get Time: 45 minutes at 70 degree F (21 degree C). (100 gram mass).
9. Pot Life (100 gm mass): 1/2 hour.
10. Dry Time at 70 degree F (21 degree C), 50% RH: Recoat within 4 to 24 hours. Full cure in 5 days (chemical resistance). Recoat Time at 50 degree F (10 degree C) - minimum 16 hours - maximum 72 hours. Recoat Time 70 degree F (21 degree C) - minimum 8 hours - maximum 24 hours. Recoat Time 90 degree F (32 degree C) - minimum 4 hours - maximum 12 hours.
11. Film Thickness: 3 to 100 mils (.08 to 2.5 mm).
12. Thinning: None required. Acetone or PCBTF for clean-up.
13. Primer: Self priming.
14. Primer: Kemiko SS1600.
15. Primer: Kemiko SS3700.
16. Primer: Kemiko SS3800.
17. Color: Gray.
18. Color: Whisper White.
19. Color: Light Gray.
20. Color: Beige.
21. Color: Diego Blue.
22. Color: Bernard Tan.
23. Color: Navajo White.
24. Topcoat: Kemiko SS2700 Polyurethane (for exterior UV, color and gloss retention).
25. Topcoat: Kemiko SS3300 Polyaspartic.

E. WB high-gloss epoxy coating.

1. Product: Kemiko (Sta Crete) SS3700.
2. Type: High-gloss, quick-dry, amine-cured, water-extended, epoxy coating.
3. Dry Film Thickness: 2 to 3 mils (.05 to .08 mm).
4. Volume Solids, Clear and Pigmented: 50 percent.
5. Clear: Maximum VOC: 250 g/l.
6. Satin - Maximum VOC: < 50 g/l.
7. Color: Clear.
8. Color: White.
9. Color: Gray.
10. Color: Tan.
11. Color: Spanish Red.
12. Color: Light Gray.
13. Color: Beige.
14. Color: Diego Blue.
15. Color: Yellow.
16. Color: Navajo White.

F. Universal Epoxy Coating:
1. Product: Kemiko (Sta Crete) SS3800.
2. Type: High gloss, ultra low VOC, quick dry amine cured water extended epoxy coating with excellent adhesion, abrasion resistance, low odor. Designed to be used as a thin film resilient primer finish.
3. VOC: Max VOC 50 g/l.
4. Volume Solids: Clear - 42 percent; Pigmented - 46 percent.
5. Pot Life: 4 hours at 70 degree F (21 degree C).
6. Flash Point >200 degree F (93 degree C).
7. Sheen: High Gloss for clear and pigmented.
8. Sheen: Satin finish for clear.
9. Dry Time at 70 degree F (21 degree C). 50% RH - Recoat in minimum of 2 hours to a max of 3-days. Dry for foot traffic in 4 hours; Heavy traffic in 12 hours. Full cure in 5 days. At 50 degree F (10 degree C) and 40% RH - Recoat intervals are increased to 6 hours minimum to 10-days. At 90 degree F (32 degree C) and 30% RH - Recoat intervals are decreased to 1 hour minimum to 2 days maximum.
10. Film Thickness- Coverage: 2 to 4 mils (.05 to .10 mm) DFT.
11. Thinning: Normally, none required or a maximum of 10 percent clean water by volume reduction. Water is used for clean up.
12. Primers: Self priming.
13. Color: Gray.
14. Color: Whisper White.
15. Color: Light Gray.
16. Color: Beige.
17. Color: Diego Blue.
18. Color: Bernard Tan.
19. Color: Navajo White.
20. Topcoat: Kemiko SS1202.
21. Topcoat: STA-CRETE SS1500.
22. Topcoat: Kemiko SS1600.
23. Topcoat: Kemiko SS2700.
24. Topcoat: Kemiko SS3300 Polyaspartic (for exterior color and gloss retention).

PART 3 EXECUTION

PART 3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

PART 3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

PART 3.3 POLYASPARTIC APPLICATION

A. Apply coating in accordance with manufacturer's instructions at locations indicated on the drawings.

B. Concrete:
1. Remove dirt, dust, oil, grease, and other surface contaminants before abrasive surface preparation, acid etching, and water washing.
2. Ensure surfaces are cured, dry, and free from alkali stain and laitance.
3. Blas-Trac, SSPC-SP7 Brush-Off Blast Cleaning or other approved mechanical method to achieve a 60-80 grit profile for long term adhesion.

C. Metals:
1. Remove dirt, dust, oil, grease, and other surface contaminants before abrasive surface preparation.
2. Prepare carbon steel in accordance with SSPC-SP6. Achieve 1-mil to 2-mil (.025 to .05 mm) surface profile.
3. Prepare small surfaces in accordance with SSPC-SP2 and SSPC-SP3, followed by SSPC-SP1.

D. Mix components in accordance with manufacturer's instructions.

E. Keep material containers closed when not in use to avoid contamination.

F. Use application equipment, tools, pressure settings, and techniques in accordance with manufacturer's instructions.

G. Environment: Applied at substrate and environmental temperatures as low as 30 degree F (-1 degree C) and as high as 100 degree F (38 degree C) and 5 degree above dew point providing the material temperature is maintained at 60 degree F to 80 degree F (16 degree C to 27 degree C) depending on application method.

H. Uniformly apply coating at spreading rate required to achieve specified dry film thickness.

I. Apply coating to be free of film characteristics and defects that would adversely affect performance or appearance.

PART 3.4 POLYURETHANE APPLICATION

A. Apply polyurethane coating in accordance with manufacturer's instructions at locations indicated on the drawings.

B. Concrete:
1. Remove dirt, dust, oil, grease, and other surface contaminants before

abrasive surface preparation, acid etching, and water washing.

2. Ensure surfaces are cured, dry, and free from alkali stain and laitance.
3. Blas-Trac or other approved mechanical method to achieve a 60-80 grit profile for long term adhesion and non-slip surface on floors.
4. Ensure concrete is a minimum of 28 days old.

C. Metals:

1. Remove dirt, dust, oil, grease, and other surface contaminants before abrasive surface preparation.
2. Prepare carbon steel in accordance with SSPC-SP6. Achieve 1-mil to 2-mil (.025 to .05 mm) surface profile.
3. Prepare small surfaces in accordance with SSPC-SP2 and SSPC-SP3, followed by SSPC-SP1.

D. Wood: Ensure surfaces are clean, dry, and free from mildew, organic matter, and surface contaminants.

E. Existing Coatings:

1. Remove dirt, dust, oil, grease, chalk, loose coatings, and other deleterious matter in accordance with manufacturer's instructions.
2. Spot prime surfaces as required.

F. Mix components and thin in accordance with manufacturer's instructions.

G. Do not use mixed materials beyond pot life limits.

H. Keep material containers closed when not in use to avoid contamination.

I. Use application equipment, tools, pressure settings, and techniques in accordance with manufacturer's instructions.

J. Environment: Apply between 60 degrees F (16 degree C) and 100 degrees F (38 degree C) and 5 degrees above dew point.

K. Apply primer in accordance with manufacturer's instructions.

L. Uniformly apply polyurethane coating at spreading rate required to achieve specified dry film thickness.

M. Apply polyurethane coating to be free of film characteristics and defects that would adversely affect performance or appearance.

PART 3.5 EPOXY APPLICATION

A. Concrete and Masonry Surface Preparation:

1. All visible oil, grease, sludge, and any other contaminants shall be removed prior to any abrasive surface preparation and water washing.
2. Surface shall be cured, dry and free from alkali stain and laitance.
3. Prepare surfaces in accordance with SSPC-SP7 Brush-Off Blast Cleaning, Blas-Trac or other approved mechanical method to achieve a 60-80 grit profile for long term adhesion and non-slip surface on floors.
4. Repair all cracks, holes, and grout joints in an approved manner.

B. Metals Surface Preparation:

1. Remove dirt, dust, oil, grease, and other surface contaminants before abrasive surface preparation.
2. Prepare carbon steel in accordance with SSPC-SP6. Achieve 1-mil to

2-mil (.025 to .05 mm) surface profile.

3. Prepare small surfaces in accordance with SSPC-SP2 and SSPC-SP3, followed by SSPC-SP1.

C. Surface Preparation: Ensure surfaces are clean, dry, and free from mildew, organic matter, and surface contaminants.

D. Existing Coatings Surface Preparation:

1. Remove dirt, dust, oil, grease, chalk, loose coatings, and other deleterious matter in accordance with manufacturer's instructions.
2. Spot prime surfaces as required.

E. Environment: Apply between 60 degrees F (16 degree C) and 100 degrees F (38 degree C) and 5 degrees above dew point.

F. Wall and Surface Wetting:

1. In advance of the coating application to help allow for absorption of the applied material, spray water onto the surface to slightly dampen using a Hudson type sprayer.

G. Apply epoxy coating in accordance with manufacturer's instructions at locations indicated on the drawings.

H. Mix components and thin in accordance with manufacturer's instructions.

I. Do not use mixed materials beyond pot life limits.

J. Keep material containers closed when not in use to avoid contamination.

K. Use application equipment, tools, pressure settings, and techniques in accordance with manufacturer's instructions.

L. Uniformly apply epoxy coating at spreading rate required to achieve specified dry film thickness.

M. Apply epoxy coating to be free of film characteristics and defects that would adversely affect performance or appearance.

PART 3.6 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION