Date:01/13

SECTION 09 67 24-SEAMLESS ACRYLIC FLOORING
CRYL-A-CHIP SL METHYL METHACRYLATE BASED SELF-LEVELING FLOOR SYSTEM

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes the following:

1. Seamless acrylic, methyl methacrylate (MMA) flooring system as shown on the drawings and in schedules.

B. Related sections include the following:

1. Cast-in-Place Concrete, section 03 30 00
2. Concrete Curing, section 03 39 00

1.3 SYSTEM DESCRIPTION

A. The work shall consist of preparation of the substrate, the furnishing and application of a methyl methacrylate (MMA) based self-leveling seamless flooring system with Macro or Micro size decorative chips broadcast and topcoats. The system shall have the color and texture as specified by the Owner with a nominal thickness of 3/16 inch. It shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.
B. Cove base (if required) to be applied where noted on plans and per manufacturers standard details unless otherwise noted.

1.4 SUBMITTALS

A. Product Data: Latest edition of Manufacturer's literature including performance data and installation procedures.
B. Manufacturer’s Material Safety Data Sheet (MSDS) for each product being used.
C. Samples: A 3 x 3 inch square sample of the proposed system. Color, texture, and thickness shall be representative of overall appearance of finished system subject to normal tolerances.

1.5 QUALITY ASSURANCE

A. The Manufacturer shall have a minimum of 10 years experience in the production, sales, and technical support of epoxy and urethane industrial flooring and related materials.
B. The Applicator shall have experience in installation of the flooring system as confirmed by the manufacturer in all phases of surface preparation and application of the product specified.

C. No requests for substitutions shall be considered that would change the generic type of the specified System.

D. System shall be in compliance with requirements of United States Department of Agriculture (USDA), Food, Drug Administration (FDA), and local Health Department.
E. System shall be in compliance with the Indoor Air Quality requirements of California section 01350 as verified by a qualified independent testing laboratory.
F. A pre-installation conference shall be held between Applicator, General Contractor and the Owner to review and clarification of this specification, application procedure, quality control, inspection and acceptance criteria and production schedule.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping

1. All components of the system shall be delivered to the site in the Manufacturer's packaging, clearly identified with the product type and batch number.

B. Storage and Protection

1. The Applicator shall be provided with a storage area for all components. The area shall be between 35 F and 85 F, dry, out of direct sunlight and in accordance with the Manufacturer's recommendations and relevant health and safety regulations.
2. Copies of Material Safety Data Sheets (MSDS) for all components shall be kept on site for review by the Engineer or other personnel.

C. Waste Disposal

1. The Applicator shall be provided with adequate disposal facilities for non-hazardous waste generated during installation of the system.

1.7 PROJECT CONDITIONS

A. Site Requirements

1. Application may proceed while air, material and substrate temperatures are between 35 F and 90 F providing the substrate temperature is above the dew point. Outside of this range, the Manufacturer shall be consulted.
2. The relative humidity in the specific location of the application shall be less than 85 % and the surface temperature shall be at least 5 F above the dew point.
3. The Applicator shall ensure that adequate ventilation is available for the work area. This shall include the use of manufacturer’s approved fans, smooth bore tubing and closure of the work area.
4. The Applicator shall be supplied with adequate lighting equal to the final lighting level during the preparation and installation of the system.

B. Conditions of new concrete to be coated with MMA material.

1. Concrete shall be moisture cured for a minimum of 7 days and have fully cured a minimum of twenty eight days in accordance with ACI-308 prior to the application of the coating system pending moisture tests.
2. Concrete shall have a flat rubbed finish, float or light steel trowel finish (a hard steel trowel finish is neither necessary or desirable).
3. Sealers and curing agents should not to be used.
4. Concrete surfaces on grade shall have been constructed with a vapor barrier to protect against the effects of vapor transmission and possible delamination of the system.

C. Safety Requirements

1. All open flames and spark-producing equipment shall be removed from the work area prior to commencement of application.
2. "No Smoking" signs shall be posted at the entrances to the work area.
3. The Owner shall be responsible for the removal of foodstuffs from the work area.
4. Non-related personnel in the work area shall be kept to a minimum.

2.8 WARRANTY

A. Dur-A-Flex, Inc. warrants that material shipped to buyers at the time of shipment substantially free from material defects and will perform substantially to Dur-A-Flex, Inc. published literature if used in accordance with the latest prescribed procedures and prior to the expiration date.
B. Dur-A-Flex, Inc. liability with respect to this warranty is strictly limited to the value of the material purchase.

PART 2 – PRODUCTS

2.1 FLOORING

A. Dur-A-Flex, Inc, Cryl-A-Chip SL, MMA-Based seamless acrylic flooring system

1. System Materials:
   a. Primer Coat: Dur-A-Flex, Inc. Cryl-A-Prime P-101 MMA-based, two-component primer.
   b. Topping: Dur-A-Flex, Inc. Cryl-A-Glaze G-201, MMA-based two-component resin, pigment, and Dur-A-Flex SL Filler Blend.
   c. The decorative chips shall be Dur-A-Flex, Inc., Macro or Micro size decorative color chips.
   d. Topcoats: Dur-A-Flex, Inc. Cryl-A-Top T-301, MMA-based, two-component resin

2. Patch Materials

   a. Shallow Filler/Patch Material: Use Dur-A-Flex, Cryl-A-Glaze G-201 with MMA SL Filler Blend in ¼ inch maximum lifts.
   b. Deep Fill and Sloping Material (over ¼ inch): Use Cryl-A-Tex Polymer Concrete as manufactured by Dur-A-Flex. As required, extend with approved aggregate per manufacturers recommendations.

2.2 MANUFACTURER

A. Dur-A-Flex, Inc., 95 Goodwin Street, East Hartford, CT 06108, Phone: (860) 528-9838, Fax: (860) 528-2802
B. Manufacturer of Approved System shall be single source and made in the USA.

2.3 INSTALLER

A. 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

2.4 PRODUCT REQUIREMENTS

A. Primer	Cryl-A-Prime P-101
1. Percent reactive resin	100 %
2. VOC	<100 g/L
3. Water absorption ASTM D570	0.04 %
4. Tensile strength, ASTM D638	3,550 psi
5. Tensile modulus ASTM D638	400,000 psi
6. Coefficient of thermal expansion ASTM D696	0.000035 in/in/F
7. Electrical resistivity ASTM D257	
Volume resistance,	10^{15} ohm-cm
Surface resistance	10^{12} ohm
8. Pot life @ 68 F	10-20 minutes
9. Cure time @ 68 F	30-45 minutes
10. Recoat time @ 68 F	45-60 minutes
11. Multi-coat application, solution weld	yes

B. Self-Leveling	Cryl-A-Glaze G-201 SL
1. Percent Reactive,	100 %
2. VOC	<100 g/L
3. Water Absorption, ASTM D 570	0.04 %
4. Compressive Strength, ASTM C 109	8,000 psi
5. Tensile Strength, ASTM D 638	2,000 psi
ASTM C 307	1,350 psi
6. Flexural Strength, ASTM D 790	3,700 psi

	ASTM C 580	2,700 psi
7.	Flexural Modulus, ASTM D 790	$4.7x10^5$ psi
8.	Electrical Resistivity, ASTM D 257	
	Volume resistance	10^{15} ohm-cm
	Surface resistance	10^{12} ohm
9.	Pot Life @ 68 F	10-20 minutes
10.	Cure Time @ 68 F	40-60 minutes
11.	Recoat Time @ 68 F	60 minutes
12.	Multi-coat Application, solution weld	yes

C. Topcoat Cryl-A-Top T-301

1.	Percent reactive resin	100 %
2.	VOC	<100 g/L
3.	Water absorption ASTM D 570	0.4 %
4.	Tensile strength, ASTM D 638	3,550 psi
5.	Tensile modulus, ASTM D 638	300,000 psi
6.	Coefficient of thermal expansion	
	ASTM D 638	0.000035 in/in/F
7.	Electrical resistance ASTM D 257	
	Volume resistance	10^{15} ohm-cm
	Surface resistance	10^{12} ohm
8.	Water vapor transmission	
	DIN 53122	0.9 g/cm-hr-mm HG x 10^{-9}
9.	Potlife @ 68 F	10-15 minutes
10.	Cure time @ 68 F	30-45 minutes
11.	Recoat time @ 68 F	30-45 minutes
12.	Multi-coat application, solution weld	yes

PART 3 – EXECUTION

B.9 EXAMINATION

A. Examine substrates, areas and conditions, with Applicator present, for compliance with requirements for maximum moisture content, bond test, installation tolerances and other conditions affecting flooring performance.

1. Verify that substrates and conditions are satisfactory for flooring installation and comply with requirements specified.

3.2 PREPARATION

A. General

1. New and existing concrete surfaces shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, and bituminous products.
2. Bond Test: Random tests for adequate bond strength shall be conducted on the substrate while the surface preparation is ongoing and prior to application of the primer, in accordance with the Manufacturer's recommendations.
   a. A minimum frequency of three tests per 5000 sf. Smaller areas shall receive a minimum of three tests.
   b. Based on the test results, additional substrate preparation may be required before proceeding with the installation of the system.
3. Moisture Testing: Perform tests recommended by manufacturer and as follows.
   a. Perform relative humidity test using is situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 85% relative humidity level measurement.
   b. If the relative humidity exceeds 85% then the Owner and/or Engineer shall be notified and advised of additional cost for the possible installation of a vapor mitigation system that has been approved by the manufacturer or other means to lower the value to the acceptable limit.
4. There shall be no visible moisture present on the surface at the time of application of the system. Compressed oil-free air and/or a light passing of a propane torch may be used to dry the substrate.

5. Mechanical surface preparation
   a. Shot blast all surfaces to receive flooring system with a mobile steel shot, dust recycling machine (Blastrac or equal). All surface and embedded accumulations of paint, toppings hardened concrete layers, laitance, power trowel finishes and other similar surface characteristics shall be completely removed leaving a bare concrete surface having a minimum profile of CSP 5 as described by the International Concrete Repair Institute.
   b. Floor areas inaccessible to the mobile blast machines shall be mechanically abraded to the same degree of cleanliness, soundness and profile using diamond grinders, needle guns, bush hammers, or other suitable equipment.
   c. Where the perimeter of the substrate to be coated is not adjacent to a wall or curb, a minimum 1/4 inch key cut shall be made to properly seat the system, providing a smooth transition between areas. The detail cut shall also apply to drain perimeters and expansion joint edges.
   d. Cracks and joints (non-moving) greater than 1/8 inch wide are to be chiseled or chipped-out and repaired.
6. At spalled or worn areas, mechanically remove loose or delaminated concrete to a sound concrete and patch per manufactures recommendations.

a.10 APPLICATION

A. General

1. The system shall be applied in five distinct steps as listed below:
   a. Substrate preparation, Bond Tests
   b. Priming
   c. Topping/overlay application with decorative chip broadcast, brush chip with floor machine
   d. Topcoat application, sand floor (if required)
   e. Second topcoat application
2. Immediately prior to the application of any component of the system, the surface shall be dry and any remaining dust or loose particles shall be removed using a vacuum or clean, dry, oil-free compressed air.
3. The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results in accordance with the Manufacturer's recommendations.
4. The system shall follow the contour of the substrate unless pitching or other leveling work has been specified by the Architect.
5. A neat finish with well-defined boundaries and straight edges shall be provided by the Applicator.

B. Primer

1. The Cryl-A-Prime P-101 shall consist of one roller applied coat with a coverage rate of 80-100 sf/gal.
2. All components shall be measured and mixed in accordance with the Manufacturer's recommendations.
3. The primer shall cure tack-free before application of the floor topping.
4. Porous concrete may require a second coat of primer should the first coat be absorbed.

C. Topping

1. The topping shall be applied as a self-leveling system as specified. The topping shall be applied in one lift with a nominal thickness of 1/8 inch.
2. The topping shall be comprised of three components, a resin and filler together with a hardener powder that is to be added in accordance with the Manufacturer's recommendations.
3. The hardener powder shall be added to the resin and thoroughly dispersed by suitably approved mechanical means. SL Filler Blend shall then be added to the catalyzed mixture and dispersed in the same manner to achieve a homogenous blend.
4. The topping shall be applied over horizontal cured primed surfaces using gage rakes, trowels or other systems approved by the Manufacturer.
5. Immediately upon raking and/or trowel into place, the topping shall be degassed with a porcupine roller.
6. Decorative chips shall be broadcast into the wet material, Macro chip at the rate of 0.1 lbs/sf and Micro chips at the rate of 0.15 lbs/sf.
7. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose chips.
8. Brush chips with a floor machine with a medium stiffness brush; Vacuum, sweep and/or blow to remove all loose chips.

D. Topcoat

1. The first roller applier topcoat of Cryl-A-Top T-301 shall have a coverage rate of 80-100 sf/gal.
2. The first topcoat coat will be allowed to cure then can be sanded or scraped to give desired finish texture.
3. The second topcoat is applied at a coverage rate of 90-100 sf/gal.
4. The finish floor will have a nominal thickness of 3/16 inch.

3.4 FIELD QUALITY CONTROL

A. Tests, Inspection

1. The following tests shall be conducted by the Applicator:
   a. Temperature
      1. Air, substrate temperatures and, if applicable, dew point.
   b. Bond Test of the primer to the substrate shall be checked as per Clause 3.2, A, 2
   c. Coverage Rates
      1. Rates for all layers shall be monitored by checking quantity of material used against the area covered.

4.11 CLEANING AND PROTECTION

A. Cure flooring material in compliance with manufacturer's directions, taking care to prevent their contamination during stages of application and prior to completion of the curing process.

B. Remove masking. Perform detail cleaning at floor termination, to leave cleanable surface for subsequent work of other sections.