**ARCHITECTURAL GUIDE SPECIFICATION**

M**aster** F**ormat** S**ection** 096700– Fluid-Applied Flooring

***Note to specifier: This guide specification requires editing for your specific project, options are shown in {brackets}. Consult with Your Key Resin Representative or Key Resin Technical Service to confirm your edits and other questions.***

**KEY URECON TG**

**1/4” {3/8”} Troweled Urethane Cement Resinous Flooring**

# PART 1 GENERAL

## 1.01 SUMMARY

### A. Section Includes:

1. Fluid-applied urethane cement flooring and {4”} {6”} integral formed cove base.

 a. Cove base resin shall consist of {Key 510-CV} {Key Urecon CV}.

2. Joint and termination strips if specified.

3. Locate and treat all joints and cracks as required. See submittals below.

4. Accessories necessary for complete installation.

1. General Contractor shall provide sufficient water, temporary heat and light, and adequate electric power with suitable outlets connected and distributed for use within 100 feet of any working space.

Note: Ambient temperature shall be maintained as per manufacturer recommendations, minimum 60 degrees Fahrenheit.

1. Backing for urethane cement cove base must be cement board, concrete block, or concrete.

### B. Related Sections:

1. Cast-in-Place Concrete: Section 03300.

a. Concrete sub-floor to be level (maximum variation not to exceed ¼ inch in 10 feet) and to have a steel troweled finish. No curing agents or other additives which could prevent bonding should be used unless the mechanical surface preparation method used completely removes any curing agent residue or sealer.

b. Slabs on grade must have an efficient puncture resistant vapor barrier a minimum thickness of 10 mils placed directly under the slab.

2. Sealants: Section 07920.

3. Gypsum Drywall: Section 09250.

4. Adjacent floor finishes: Division 9.

## 1.02 REFERENCE STANDARDS

The publications listed below form a part of this specification only to the extent referenced. The publications are referred to in the text by the basic designation only.

### A. American Society for Testing and Materials (ASTM) Publications:

C-307 Test Method for Tensile Strength of Chemical-Resistant Mortars.

C-501 Test Method for Relative Resistance to Wear Unglazed Ceramic Tile by the Taber Abraser.

C-531 Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacing.

C-579 Test Methods for Compressive Strength of Chemical-Resistant Mortars and Monolithic Surfaces.

C-580 Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacing.

C-884 Test Method for Thermal Compatibility Between Concrete and an Epoxy Resin Overlay.

D-570 Water Absorption of Plastics.

D-695 Compression Properties of Rigid Plastic.

### B. Military Specifications (Mil. Spec.)

MIL D-3 134 F (Impact Resistance) Section 4.7.3.

MIL D-3 134 F (Indentation Resistance) Section 4.7.4.

MIL D-3234 F (Resistance to Elevated Temperature) Section 4.7.5.

### C. ACI 301 Specifications for Structural Concrete for Buildings (most recent edition). Committee in Concrete 403 bulletin 59-43, Bond Strength to Concrete.

## 1.03 DEFINITIONS

A. Fluid Applied Urethane Resin Cement Flooring specified under this section is referenced on the drawings as Key Urecon TG.

## 1.04 SYSTEM DESCRIPTION

A. System shall be 1/4” {3/8”} troweled urethane cement surfacing.

## 1.05 SUBMITTALS

A. Samples: Submit a minimum of three standard size cured samples of flooring system indicating color and non-skid properties. Approved samples will be used during installation for product match.

B. Certified Test: Submit two copies of supplier’s/manufacturer’s written certification that flooring system meets or exceeds required properties.

C. Manufacturers Application Instructions: Submit descriptive data and specific recommendations for mixing, application, curing including any precautions of special handling instructions required to comply with the Occupational Safety and Health Act.

D. Shop Drawings: Shop Drawings shall be furnished showing installation of cove base, termination details and details at floor material transitions and where adjoining equipment.

1. Locate and provide written detailing of treatment for all types of concrete substrate joints and repair of cracks required for flooring in area of installation.

E. Maintenance Instructions: Submit current copies of the flooring manufacturer's printed recommendations on maintenance methods and products. Submit in accordance with Section 01730 - Operation and Maintenance Manuals.

## 1.06 QUALITY ASSURANCE

A. Materials used in the floor surfacing shall be the products of a single manufacturer.

B. Installation shall be performed by an applicator with minimum 3 years of experience in work of similar nature and scope. Installer must be approved by the manufacturer of the floor surfacing materials. The general contractor shall furnish a written statement from the manufacturer that the installer is acceptable.

C. General Contractor to verify locations of all joints required by the provisions of this Section and Section 3300 Cast-In-Place-Concrete and by the recommendations of the related material manufacturers.

1. Joint locations may or may not be shown in drawings.

2. Refer to drawings required under submittals above.

D. Installer to keep daily log of the date of installation, room number, type, color, and method of application of product being installed. Log must be available for inspection by the Architect upon request.

E. Installer must have proven experience or training approved by flooring system manufacturer with specified system.

F. Portable mock-up: Prior to starting application of flooring, provide full scale portable mock-up to establish acceptable quality, durability, and appearance. Mock-up size must not be less than 1 square foot.

1. Acceptable mock-up to be standard of quality for installed work.

2. Unacceptable installed work to be removed and replaced until acceptable. Aesthetically unacceptable but well bonded work may be overlaid or recoated if thickness clearances permit.

## 1.07 PROJECT CONDITIONS

A. Maintain the ambient room and the floor temperatures at 60 degrees Fahrenheit, or above, for a period extending from 72 hours before, during and 24 hours after floor installation. Concrete to receive surfacing shall have cured for at least 28 days and shall have been free of water for at least 7 days.

B. Dew Point: Substrate temperature must be minimum of 5 degrees above dew point prior to, during or up to 24 hours after application of flooring system.

C. Illumination: Apply flooring system only where a minimum of 30 footcandles exist when measured 3 feet from surface.

D. Advise other trades of fixtures and fittings not to be installed until flooring is cured and protected.

## 1.08 PROTECTION

A. Protect adjacent surfaces not scheduled to receive the flooring by masking, or by other means, to maintain these surfaces free of the flooring material.

B. Provide adequate ventilation and fire protection at all mixing and placing operations. Prohibit smoking or use of spark or flame producing devices within 50 feet of any mixing or placing operation.

C. Provide polyethylene or rubber gloves or protective creams for all workmen engaged in applying products.

## 1.09 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. All materials shall be delivered to project site in original manufacturer's sealed containers including type of material, batch numbers, date of manufacture, and pertinent labels intact and legible.

B. Store materials in dry protected area at a temperature between 60° F to 80° F.

C. Follow all manufacturer's specific instructions and prudent safety practices for storage and handling.

## 1.10 WARRANTY

A. Contractor to guarantee work under this Section to be free from defects of material and installation for the duration of the warranty period. Defects occurring during warranty period shall be repaired, in a manner satisfactory to the Owner and the Architect, at no additional cost to the Owner.

1. Warranty Period: One (1) Year.

# PART 2 PRODUCTS

## 2.01 MANUFACTURERS

A. Specifications and quality of design standard (basis of design) based on Key Resin Company: Key Urecon TG.

 Key Resin Company: 888-943-4532, [www.keyresin.com](http://www.keyresin.com)

B. System description: Heavy duty, three-component urethane resin modified cementitious topping.

C. Alternative manufacturers must have as a minimum the standards set forth in this specification and must be preapproved in accordance with project requirements.

## 2.02 MATERIALS

### **A. Key Urecon TG mixed according to manufacturer's recommendation and tested as supplied. All specimens cured for 7 days at 75 degrees plus or minus 2 degrees Fahrenheit and 50% plus or minus 2% R.H. The product shall meet the following requirements:**

### PropertyRequirement

###  **Flexural Strength 2,000 psi**

Tensile Strength 800 psi

Compressive Strength 7,500 psi

Modulus of Elasticity 1.7 x 105 psi

Coefficient of Thermal Expansion 1.1 x 10-5 per ºF

Vicant Softening Point 265-268ºF

Thermal Conductivity 8 Btu-in/ft2hºF

Electrical Resistance 3 x 108 Ohms

Density 130 lbs/ft3

Flammability (ASTM-D-635) Non-burning

Bond Strength 100% concrete failure minimum, with

 300 psi minimum tensile strength

Chemical Resistance (ASTM-D-1308) Urecon TG has outstanding chemical

 resistance to a variety of strong

 chemicals including acids, alkali, and

 solvents. Consult Key Resin Company

 for details.

1. Mixing: Urecon TG is supplied as a complete three component unit consisting of reactive urethane ingredients and selected fillers and aggregates. Components are thoroughly blended according to manufacturer’s recommendations.

### **C. Strips (if used): Stop and divider "L" strips: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ gauge. (Select gauge white alloy of zinc or aluminum).**

### **D. Sealer: {None required unless specifically recommended by the manufacturer for special performance.} {Optional sealers include: Key Urecon SC, Key Ultracon SC, Key 467-HS, Key 470, Key 625, Key 630.}**

1. Provide slip-resistant, cleanable finish that closely matches approved sample. Sample to be approved by Architect or Owner.

F. Finish: Color as selected by Architect or Owner from the manufacturer's standard colors.

G. Provide 4” inch {6” inch} integral coved base {cant} as required by Architect or Owner.

# PART 3 EXECUTION

## 3.01 PREPARATION

A. Obtain Architect's approval of mock-up before installing flooring; see QUALITY ASSURANCE in **PART 1.**

B. Preparation of Surface:

1. Inspect surfaces to receive flooring and verify that condition is smooth and free from conditions that will adversely affect execution, permanence or quality of work.

a. Remove all projections, all debris detrimental to flooring system, dirt, oil contaminates, grease and surface coatings affecting bond.

2. Notify Architect in writing prior to commencing work of any conditions deemed unsatisfactory for the installation; installation of flooring materials is understood as acceptance of the substrate as satisfactory.

3. Concrete: The General Contractor shall be responsible for hiring an independent testing service to test for moisture content and moisture vapor emission rate; install no flooring over concrete until the concrete has been cured and is sufficiently dry to achieve permanence with flooring as determined by material manufacturer's recommended bond and moisture tests.

a. Effectively remove concrete laitance by steel shot blasting or by diamond grinding with coarse stones. Surface profile must be a minimum CSP-4 profile according to International Concrete Repair Institute Guideline #03732. At discretion of Manufacturer, flooring contractor shall document surface profile using ASTM D-7682 test method.

b. Concrete slab shall have an efficient puncture-resistant reinforced moisture vapor barrier 10 mils thick minimum directly under the concrete slab (for slab on grade). Do not use vapor barrier manufactured with recycled material. Testing must be done to verify that the moisture vapor emission rate of the slab does not exceed that as recommended by the manufacturer at time of installation of the flooring or at any future date. Moisture vapor emission and moisture content testing must conform with the requirements of ASTM F-1869-11 (Calcium Chloride Test) and ASTM F-2170-11 (Relative Humidity Probe Test). If any test result shows excessive levels of moisture content or vapor emission rate, apply manufacturer’s recommended moisture vapor emission control material.

c. Treat cracks in concrete using manufacturer's recommended practice. Rout out crack and fill with epoxy or other material approved by Key Resin. Do not coat surface with flexible crack isolation membrane treatment unless approved by Key Resin Technical Service.

## 3.02 INSTALLATION

A. Install all floor materials in strict conformance with manufacturer's instructions.

B. Route out all cracks (larger than 1/32” width) and fill with epoxy or other material approved by Key Resin. Do not coat surface with flexible crack isolation membrane treatment unless approved by Key Resin Technical Service. All free edges (perimeters or along gutters or drains) require extra anchor to distribute mechanical and thermal stresses. All control joints, expansion joints and cold joints shall be exposed through the system and filled with the appropriate epoxy or urethane joint filler. {Overlaying control joints: Consult with Key Resin Technical Service for recommendations}

C. Integral Cove Base: Where scheduled, provide integral cove base {cant} formed from flooring up concrete block wall or cement board if gypsum drywall is specified. Provide cove base cap strip at top of base as recommended by flooring manufacturer and trowel material up wall to form smooth, integral transition and base 4” inches high unless otherwise indicated or scheduled.

D. Place Key Urecon TG mixture and trowel or screed to a dense flat surface to top of divider strips

E. Maintaining a wet edge between mixes, push material back into previous mix and pull forward with trowel, screed, or light-weight machine trowel to establish thickness. Trowel from side to side to close surface. Do not over trowel. Key in perimeter edges to prevent curling. If needed to match approved sample, lightly backroll surface. If needed for added non-slip texture and/or to match approved sample, lightly broadcast aluminum oxide granules or colored quartz granules and backroll to imbed and wet out aggregate.

F. {***Note to Specifier: Include this section if seal coat is to be used.*** ***Seal coat is not required unless specifically recommended for performance or aesthetic enhancement}*** Seal surface with {Key Urecon SC} {Key Ultracon SC} {Key 467-HS} {Key 470} {Key 625} {Key 630} using procedures and thickness recommended by Manufacturer. Be careful not to puddle resin.

G. Match finished work to approved sample; uniform in thickness, color, texture and free from defects detrimental to appearance.

H. Apply temporary protection until floor is fully cured. The General Contractor shall protect the finished floor from the time that the sub-contractor completes the work.

## END OF SECTION