

**UNIVERSITY OF SOUTH CAROLINA**

**PROJECT MANUAL**

**USC COLUMBIA COKER LIFE SCIENCE FLOORS**

**PROJECT NUMBER: BC00272052**

**JUNE 20, 2014**

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Project Number: BC00272052

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# SE-311 Invitation for Minor Construction Quotes

## SCBO NOTES 2, 4 and 5 APPLY TO THIS INVITATION FOR QUOTES

PROJECT NAME: USC COLUMBIA COKER LIFE SCIENCE FLOORS

PROJECT NUMBER: BC00272052 PROJECT LOCATION: USC Columbia, SC

BID SECURITY REQUIRED? Yes  No

PERFORMANCE BOND REQUIRED? Yes  No

PAYMENT BOND REQUIRED? Yes  No  CONSTRUCTION COST RANGE: \$25,000 - \$35,000

DESCRIPTION OF PROJECT:  
Provide all labor, materials, and equipment required to install epoxy resinous flooring system in Coker Life Science (Bldg. 100) located at 715 Sumter St, Columbia SC 29208. Work includes all required preparation to existing concrete slab and the complete installation of 3,382 SF (roughly) of the specified flooring system. Bidders are encouraged to visit the site to verify SF measurements. See floor plans and finishing schedule attached. Work must begin immediately upon issue of PO. Small minority Business participation is encouraged

A/E NAME: University of South Carolina A/E CONTACT: Dwight Cathcart, USC PM  
ADDRESS: 743 Greene Street PHONE: 803-777-9824 Fax: 803-777-8739  
CITY: Columbia STATE: SC ZIP: 29208 E-MAIL: dcathcar@fmc.sc.edu

PLANS ON FILE AT: AGC: \_\_\_\_\_  
DODGE: Facilities Center  
OTHER: \_\_\_\_\_

PLANS MAY BE OBTAINED FROM: http://purchasing.sc.edu (See Facilities Construction Solicitations & Awards)

PLAN DEPOSIT AMOUNT: \$0.00 IS DEPOSIT REFUNDABLE? Yes  No

PRE-QUOTE CONFERENCE?  Yes  No MANDATORY ATTENDANCE?  Yes  No

DATE: 6/30/2014 TIME: 10:00 am PLACE: 743 Greene St. Columbia SC 29208 Conf rm 53

AGENCY: University of South Carolina  
NAME AND TITLE OF AGENCY COORDINATOR: Ms. Aimee Rish, Procurement Specialist II  
ADDRESS: 743 Greene Street PHONE: 803-777-2261 Fax: 803-777-7334  
CITY: Columbia STATE: SC ZIP: 29208 E-MAIL: arish@fmc.sc.edu

IFQ CLOSING DATE: 7/8/14 TIME: 1:00 pm LOCATION: 743 Greene St. Col. SC 29208 rm 53

IFQ DELIVERY ADDRESSES:

HAND-DELIVERY:

See Mail

MAIL SERVICE:

ATTN: Ms. Aimee Rish  
University of South Carolina/Bid Enclosed  
743 Greene Street, Columbia SC 29208

IS PROJECT WITHIN AGENCY CONSTRUCTION CERTIFICATION? (Agency MUST check one)  YES  NO

APPROVED BY: \_\_\_\_\_ (State Engineer) \_\_\_\_\_ (Date)

**SE-331**  
**Quote Form**

2011 Edition

*Quotes shall be submitted only on SE-331*

QUOTE SUBMITTED BY: \_\_\_\_\_  
*(Offeror's Name)*

QUOTE SUBMITTED TO: University of South Carolina  
*(Agency Name)*

FOR PROJECT: BP00272052 USC COLUMBIA COKER LIFE SCIENCE FLOORS  
*(Number)* *(Name)*

**OFFER**

1. In response to the Form SE-311, *Request for Minor Construction Quotes*, and in compliance with the *Instructions to Bidders* for the above-named Project, the undersigned **OFFEROR** proposes and agrees, if this Quote is accepted, to enter into a Contract with the **AGENCY** in the form included in the Solicitation Documents, and to perform all Work as specified or indicated in the Solicitation Documents, for the prices and within the time frames indicated in the Solicitation and in accordance with the other terms and conditions stated.

2. Pursuant to Section 11-32-3030(1) of the SC Code of Laws, as amended, **OFFEROR** has submitted Bid Security as follows in the amount and form required by the Solicitation Documents:

Bid Bond with Power of Attorney     Electronic Bid Bond     Cashier's Check  
*(OFFEROR check one, if Bid Security is required)*

3. **OFFEROR** acknowledges the receipt of the following Addenda to the Solicitation documents and has incorporated the effects of said Addenda into its Quote:

**ADDENDUM No:** \_\_\_\_\_

4. **OFFEROR** agrees that this Quote, including all bid alternates, if any, may not be revoked or withdrawn after the opening of bids, and shall remain open for acceptance for a period of 30 Days following the Quote Date, or for such longer period of time that **OFFEROR** may agree to in writing upon request of the **AGENCY**.

5. **OFFEROR** agrees that from the compensation to be paid, the **AGENCY** shall retain as Liquidated Damages the amount of for each calendar day the actual construction time required to achieve Substantial Completion exceeds the specified or adjusted Contract Time for Substantial Completion, as provided in the Contract Documents.

6. **OFFEROR** herewith submits its offer to provide all labor, materials, equipment, tools of trades and labor, accessories, appliances, warranties and guarantees, and to pay all royalties, fee, permits, licenses and applicable taxes necessary to complete the following items of construction work:

6.1 **BASE BID** \_\_\_\_\_  
*(enter BASE BID in figures only)*

6.2 **ALTERNATE NO. 1** \_\_\_\_\_ to be **ADDED/DEDUCTED** from **BASE BID**.  
*(circle one)*

6.3 **ALTERNATE NO. 2** \_\_\_\_\_ to be **ADDED/DEDUCTED** from **BASE BID**.  
*(circle one)*

FEIN/SSN: \_\_\_\_\_

SC Contractor's  
License Number: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Telephone/Fax \_\_\_\_\_

E-mail \_\_\_\_\_

This Quote is hereby submitted on behalf of the Offeror named above.

BY: \_\_\_\_\_  
*(Signature of Offeror's Representative)*

\_\_\_\_\_  
*(Print or Type Name of Offeror's Representative)*

ITS: \_\_\_\_\_

Project Name: USC COLUMBIA COKER LIFE SCIENCE FLOORS

Project Number: BC00272052

University of South Carolina

**CONTRACTOR'S ONE YEAR GUARANTEE**

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

WE \_\_\_\_\_  
as General Contractor on the above-named project, do hereby guarantee that all work executed under the requirements of the Contract Documents shall be free from defects due to faulty materials and /or workmanship for a period of one (1) year from date of acceptance of the work by the Owner and/or Architect/Engineer; and hereby agree to remedy defects due to faulty materials and/or workmanship, and pay for any damage resulting wherefrom, at no cost to the Owner, provided; however, that the following are excluded from this guarantee;

Defects or failures resulting from abuse by Owner.

Damage caused by fire, tornado, hail, hurricane, acts of God, wars, riots, or civil commotion.

\_\_\_\_\_  
[Name of Contracting Firm]

\*By \_\_\_\_\_

Title \_\_\_\_\_

\*Must be executed by an office of the Contracting Firm.

SWORN TO before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ (seal)

\_\_\_\_\_ State

My commission expires \_\_\_\_\_

USC SUPPLEMENTAL GENERAL CONDITIONS  
FOR CONSTRUCTION PROJECTS

1. Contractor's employees shall take all reasonable means not to interrupt the flow of student traffic in building corridors, lobbies and stairs. All necessary and reasonable safety precautions shall be taken to prevent injury to building occupants while transporting materials and equipment through the building to the work area. Providing safe, accessible, plywood pedestrian ways around construction may be required if a suitable alternative route is not available.
2. Fraternalization between Contractor's employees and USC students, faculty or staff is strictly prohibited - zero tolerance!
3. USC will not tolerate rude, abusive or degrading behavior on the job site. Heckling and cat-calling directed toward students, faculty or staff or any other person on USC property is strictly prohibited. Any contractor whose employees violate this requirement will be assessed a fine of up to \$500 per violation.
4. Contractor's employees must adhere to the University's policy of maintaining a drug-free and smoke-free/tobacco free workplace.
5. Contractor must sign a Contractor Key Receipt/Return form before any keys are issued. Keys must be returned immediately upon the completion of the work. The Contractor will bear the cost of any re-keying necessary due to the loss of or failure to return keys.
6. A welding permit must be issued by the University Fire Marshall before any welding can begin inside a building. Project Manager will coordinate.
7. Contractor must notify the University immediately upon the discovery of suspect material such as those potentially containing asbestos or other such hazardous materials. These materials **must not** be disturbed until approved by the USC Project Manager.
8. At the beginning of the project, the USC Project Manager will establish the Contractor's lay-down area. This area will also be used for the Contractors work vehicles. No personal vehicles will be allowed in this area, or in any areas surrounding the construction site that are not regular or authorized parking lots. Personal vehicles must be parked in the perimeter parking lots. Parking permits can be obtained at the USC Parking Office located in the Pendleton Street parking garage. The lay down area will be clearly identified to the contractor by the PM, with a sketch or drawing provided to Parking. In turn, the contractor will mark off this area with a sign containing the project name, PM name, Contractor name and contact number, and end date. Where this area is subject to foot traffic, protective barriers will be provided as specified by the PM. The area will be maintained in a neat and orderly fashion.
9. Contractor will be responsible for providing its own temporary toilet facilities, unless prior arrangements are made with the USC Project Manager.

10. Use of USC communications facilities (telephones, computers, etc.) by the Contractor is prohibited, unless prior arrangements are made with the USC Project Manager.
11. For all projects over \$100,000, including IDC's, an SE-395, Contractor Performance Evaluation, will be completed by the USC Project Manager and reviewed with the GC at the beginning of the project and a copy given to the GC. At the end of the project the form will be completed and a Construction Performance rating will be established.
12. Contractor is responsible for removal of all debris from the site, and is required to provide the necessary dumpsters which will be emptied at least one (1) times per week. Construction waste must not be placed in University dumpsters. The construction site must be thoroughly cleaned with all trash picked up and properly disposed of on a daily basis and the site must be left in a safe and sanitary condition each day. The University will inspect job sites regularly and will fine any contractor found to be in violation of this requirement an amount up to \$1,000.00 daily per violation.
13. Contractor must provide all O&M manuals, as-built drawings, and training of USC personnel on new equipment, controls, etc. prior to Substantial Completion. Final payment will not be made until this is completed.
14. Tree protection fencing is required to protect existing trees and other landscape features to be preserved within a construction area. The limits of this fence will be evaluated for each situation with the consultant, USC Arborist and USC Project Manager. The tree protection fence shall be 6' high chain link fence unless otherwise approved by USC Project Manager. No entry or materials storage will be allowed inside the tree protection zone. A 3" layer of mulch shall be placed over the tree protection area to maintain moisture in the root zone if USC Arborist determines that construction may decrease amount of moisture needed to sustain health of tree(s).
15. Contractor shall water trees and other landscape material as directed by USC Arborist until site is returned to Owner.
16. Where it is necessary to cross walks, tree root zones (i.e., under canopy) or lawns the following measures shall be taken: For single loads up to 9,000 lbs., a 3/4" minimum plywood base shall be placed over areas impacted. For single loads over 9,000 lbs., two layers of 3/4" plywood is required.
17. For projects requiring heavy loads to cross walks, tree root zones or lawns on a regular basis (as determined by USC Project Manager), a construction entry road consisting of 10' X 16' oak logging mats placed on 12" coarse, chipped, hardwood base. Mulch and logging mats shall be supplemented throughout the project to keep matting structurally functional.
18. Any damage to existing landscaping (including lawn areas) will be remediated at Contractor's expense before final payment is made.

### **Contractor Vehicle Requirements on Campus**

1. All motorized vehicles on the University campus are expected to travel and park on roadways and/or in parking stalls.
2. All motorized vehicle traffic on USC walkways must first be authorized by USC Grounds Department and USC Project Manager. Violators may be subject to fines and penalties.
3. All motorized vehicles that leak or drip liquids are prohibited from traveling or parking on walks or landscaped areas.
4. Contractors, vendors, and delivery personnel are required to obtain prior parking authorization before parking in a designated space. Violators may be subject to fines and/or penalties. See Item 10 below.
5. Drivers of equipment or motor vehicles that damage university hardscape or landscape will be held personally responsible for damages and restoration expense.
6. Vehicle drivers who park on landscape or drives must be able to produce written evidence of need or emergency requiring parking on same.
7. All vehicles parked on landscape, hardscape, or in the process of service delivery, must display adequate safety devices, i.e. flashing lights, cones, signage, etc.
8. All drivers of equipment and vehicles will be respectful of University landscape, equipment, structures, fixtures and signage.
9. All incidents of property damage will be reported to Parking Services or the Work Management Center.
10. Parking on campus is restricted to spaces designated by Parking Services at the beginning of the project. Once the project manager and contractor agree on how many spaces are needed, the project manager will obtain a placard for each vehicle. This placard must be hung from the mirror of the vehicle, otherwise a ticket will be issued and these tickets cannot be Afixed@. Parking spaces are restricted to work vehicles only; no personal vehicles.



## DIVISION 1 – GENERAL REQUIREMENTS

<b>USC COLUMBIA COKER LIFE SCIENCE FLOORS</b>
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**General Description:** The University of South Carolina (USC) Columbia Campus is accepting bids to provide all materials, labor, and equipment to install a new epoxy flooring system on the top floor of the Coker Life Science Building #100. The building is located on the University of South Carolina main campus at 715 Sumter Street, Columbia SC 29208. Contractors are encouraged to visit the site to verify existing conditions and measurements prior to bid closing. All rooms are currently open and clear of any furniture, lab equipment, and millwork. Work should be immediately upon issuance of a Purchase Order from USC. Work needs to be completed in 10 consecutive business days.

The scope of this project includes any required preparation and repair of the existing concrete slab flooring surface to affectively accept the new epoxy flooring system to be provided. Preparation may require grinding or shot blasting of the existing concrete surface. The area to receive the new epoxy surface is roughly 3,382 SF.

The attached drawing **A2.7 – Partial Seventh Floor Dimension Plan** shows the area in its final configuration with millwork and lab equipment installed. All rooms to receive the new epoxy surface are completely open and do not currently contain any furniture, lab equipment, or millwork.

The attached drawing **A8.0 – Finishing Schedule** calls out the flooring finish for each room. The areas called out to receive painted floors (PNT) are to now receive as part of this request for quote, a new epoxy flooring system.

**Materials and products listed in these Bid Documents establish a standard of required function, dimension, appearance and quality to be met by a proposed substitution or approved equal. Request for substitutions must be submitted to the owner for approval prior to bid closing. Proof of equality of substitutions is the responsibility of the proposer. The owner's decision to approve or disapprove of the requested substitution shall be final. The owner will include in an addendum any additional approved manufacturers not already listed. Specifications for the manufactured material to be provided must be submitted with bid.**

**SUBSTITUTIONS ARE ALLOWED BUT MUST BE APPROVED BY OWNER PRIOR TO BID**

**NOTE – Contractor to submit all product specification sheets with bid.**

## DIVISION 9 - FINISHES

## SECTION 096723 – RESINOUS FLOORING

## PART 1 - GENERAL

## 1.1 Summary

- A. This Section includes:
  - 1. High-performance resinous flooring systems.

## 1.2 Submittals

- A. Product Data: For each type of product indicated.
- B. Installer Certificates for Qualification: Signed by manufacturer certifying that installers comply with specified requirements.
- C. Material Certificates: For each resinous flooring component, from manufacturer.
- D. Material Test Reports: For each resinous flooring system.
- E. Maintenance Data: For maintenance manuals.
- F. Samples: Submit one sample of coating, indicating coating applied on horizontal surfaces. Sample shall illustrate transition from Resinous Flooring system. Provide sample which is a true representation of proposed field applied finish; not laboratory applied finish. No field mock-up will be required as long as the material sample provided for approval represents the true application and finish.
- G. Product Schedule: For resinous flooring.

## 1.3 Quality Assurance

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of flooring systems required for this Project.
  - 1. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.
  - 2. Installer Letter of Certification: Installer to provide letter stating that they have been in business for at least 10 years and listing 5 projects in the last 2 years of similar scope. For each project provide: project name, location, date of installation, contact information, size of project, and manufacturer of materials with system information.
- B. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, from single source from single manufacturer. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.
- C. Pre-installation Conference: Conduct conference at Project site before work and mockups begin.
- D. Mockups: Apply mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. Apply full-thickness mockups on 48-inch square floor area selected by Architect.
  - 2. Simulate finished lighting conditions for Architect's review of mockups.
  - 3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
  - 4. Mockup shall demonstrate desired slip resistance for review and approval by General Contractor prior to installing project areas.

## 1.4 Delivery, Storage, And Handling

- A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.
  - 1. Maintain containers in clean condition, free of foreign materials and residue.
  - 2. Remove rags and waste from storage areas daily.

## 1.5 Project Conditions

- A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.
- B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.

- C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application unless manufacturer recommends a longer period.

## PART 2 - PRODUCTS

### 2.1 Manufacturers

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- 1) Sherwin Williams Company – General Polymers / Ceramic Carpet
- 2) Key Resin Company – Key Quartz B-65/125 Flooring System
- 3) Tnemec – StrataShield
- 4) Cornerstone Flooring – LabFloor / resinous flooring system
- 5) Dur-A-Flex – Dur-A-Quartz

**Materials and products listed in these Bid Documents establish a standard of required function, dimension, appearance and quality to be met by a proposed substitution or approved equal. Request for substitutions must be submitted to the owner for approval prior to bid closing. Proof of equality of substitutions is the responsibility of the proposer. The owners decision to approve or disapprove of the requested substitution shall be final. The owner will include in an addendum any additional approved manufacturers not already listed above. Specifications for the manufactured material to be provided must be submitted with bid.**

- B. Basis of Design for High-Performance Resinous Flooring: General Polymers, a brand of the Sherwin Williams Company. Contact Phillip Smith (803)240-9345 [phillip.c.smith@sherwin.com](mailto:phillip.c.smith@sherwin.com),

1. General Polymers, Ceramic Carpet <http://www.generalpolymers.com/drop/400-425.pdf> installed per data sheet.
  - a. 1st Coat: 2-part epoxy primer 3579
  - b. 2<sup>nd</sup> Coat: 2-part epoxy clear 3561 with 5900F quartz broadcast (to excess).
  - c. 3<sup>rd</sup> Coat: 2-part epoxy clear 3561 with 5900F quartz broadcast (to excess).
  - d. 4th Coat: 2-part epoxy clear 3745
  - e. 5th Coat: 2-part urethane clear 4638 clear (substituted for 3745 seal coat)
  - f. Total System Thickness 1/8"
  - g. If sloping or pitching is required, use: Epoxy grout, TPM 79

### 2.2 Materials

- A. VOC Content of Resinous Flooring: Provide resinous flooring systems, for use inside the weatherproofing system, that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24)].

1. Resinous Flooring: 100 g/L.

### 2.3 High-Performance Resinous Flooring

- A. Resinous Flooring: Abrasion-, impact- and chemical-resistant, high-performance, resin-based, monolithic floor surfacing designed to produce a seamless floor.
- B. System Characteristics:
1. Color and Pattern: As indicated from manufacturers listed above.
  2. Slip Resistance: Provide slip resistant finish.

## PART 3 - EXECUTION

### 3.1 Preparation

- A. Inspection: Prior to commencing Work, thoroughly examine all underlying and adjoining work, surfaces and conditions upon which Work is in any way dependent for perfect results. Report all conditions which affect Work. No "waiver of responsibility" for incomplete, inadequate or defective underlaying and adjoining work, surfaces and conditions will be considered, unless notice of such unsatisfactory conditions has been filed and agreed to in writing before Work begins. Commencement of Work constitutes acceptance of surfaces. Test and report for moisture level in substrate to verify compliance with manufacturer's requirements. Do not proceed unless acceptable test results are achieved.

- B. Only installers approved by the manufacturer in writing shall perform installation of the material.
- C. Surface Preparation: Remove all surface contamination, loose or weakly adherent particles, laitance, grease, oil, curing compounds, paint, dust and debris by blast track method or approved mechanical means (acid etch not allowed). If surface is questionable try a test patch. Create a minimum surface profile for the system specified in accordance with the methods described in ICRI No. 03732 to achieve profile numbers as follows:
  - 1. Thin film, to 10 mils CSP-1 to CSP-3
  - 2. Thin and medium films, 10 to 40 mils CSP-3 to CSP-5
  - 3. Self-leveling mortars, to 3/16" CSP-4 to CSP-6
  - 4. Mortars and laminates, to 1/4" or more CSP-5 to CSP-9

### 3.2 Environmental Conditions

- A. All applicators and all other personnel in the area of the RF installation shall take all required and necessary safety precautions. All manufacturers' installation instructions shall be implicitly instructions shall be implicitly followed.
- B. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written instructions.
- C. Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions by using the following methods as recommended by the resinous flooring manufacturer.
  - 1. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with application of resinous flooring only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. or that required in manufacturer's instructions of slab area in 24 hours.
  - 2. Perform plastic sheet test, ASTM D 4263. Proceed with application only after testing indicates absence of moisture in substrates.
  - 3. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a percent relative humidity level measurement as noted acceptable by resinous floor manufacturer.
- D. Alkalinity and Adhesion Testing: Verify that concrete substrates have pH within acceptable range. Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.
- E. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.
- F. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
- G. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written instructions.

### 3.3 Applications

- A. Install resinous floor over properly prepared concrete surface in strict accordance with the manufacturer's directions.
  - 1. Install the primer and/or base coats over thoroughly cleaned and prepared concrete.
  - 2. Install topcoat over flooring after excess aggregate has been removed.
  - 3. Maintain a slab temperature of 60°F to 80°F for 24 hours minimum before applying floor topping.
- B. Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
  - 1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
  - 2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
  - 3. At substrate expansion and isolation joints, comply with resinous flooring manufacturer's written instructions.
- C. Sealant: Saw cut resinous floor topping at expansion joints in concrete slab. Fill sawcuts with sealant prior to final seal coat application. Follow manufacturer's written recommendations.
- D. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- E. Slip Resistant Finish: Provide grit for slip resistance.
- F. Apply topcoats in number indicated for flooring system and at spreading rates recommended in writing by manufacturer.

**3.4 Completed Work**

- A. **Cleaning:** Upon completion of the Work, clean up and remove from the premises surplus materials, tools, appliances, empty cans, cartons and rubbish resulting from the Work. Clean off all splatterings and drippings, and all resulting stains.
- B. **Protection:** Protect Work in accordance with manufacturer's directions from damage and wear during the remainder of the construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.
- C. Contractor shall insure that coating is protected from any traffic until it is fully cured to the satisfaction of the coating manufacturer.

END OF SECTION 096723



KEY RESIN COMPANY



# KEY QUARTZ B-195

## DESCRIPTION

KEY QUARTZ B-195 is a decorative resin flooring system consisting of clear, 100% solids, epoxy resin and colored quartz aggregate. The durable quartz system is finished with clear catalyst-cured coats of resin available in a satin or gloss finish. The installed system can be textured or smooth as desired. Easy maintenance minimizes bacterial growth. The decorative quartz aggregates are available in a series of pre-blended patterns or solid colors.

Crack-free installations of KEY QUARTZ B-195 can be achieved when installed in conjunction with a Key Waterproofing and Crack Isolation Membrane. An integral cove base can be installed in areas requiring seamless wall to floor coatings. For higher chemical resistant applications, specify KEY QUARTZ B-195-RP.

## KEY ADVANTAGES

- Decorative Appearance
- High Wear and Abrasion Resistance
- Low Maintenance
- Safe (non-skid)
- Chemical Resistant Finishes are Available

## KEY CONSIDERATIONS

- On or below grade installation must have an efficient vapor barrier under the slab.
- Special treatments are necessary where hydrostatic pressure or moisture vapor transmission may be present.
- Substrate temperature must be a minimum of 55°F (Low temperature cure system available on request).
- Substrate must be free of dirt, waxes, curing agents, and other foreign materials.
- All control joints and expansion joints in the substrate must be revealed with the appropriate divider strips in the topping.

## TYPICAL USES

KEY QUARTZ B-195, a 3/16" system, is the best choice for heavy duty use in corridors, auditoriums, kitchen areas, classrooms, shower rooms, cafeterias, laboratories, correctional and health facilities, or production areas. See Selection Guide or consult with Key Resin for specific recommendations.

## SELECTION GUIDE

†	Activity Centers	
	Aircraft Hangars	
†	Airports	Baggage/Service
↔		Terminals
†	Animal Areas	Housing
		Caps Washing
↔	Beverage	Processing
↔		Packaging/Warehousing
		Bottling
†	Cafeterias	
	Chemical Processing	
†	Clean Rooms	
↔	Coolers	
†	Computer Assembly	
†	Commercial Kitchens	
	Containment Areas	
↔	Convention Centers	
†	Correctional Facilities	
†	Corridors	
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↔	Distilleries	Packaging
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↔		Preparation Service
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†	Hospitals	Corridors & Lobbies
†		Patient Rooms
†		Operating Rooms
†		Services
†	Laboratories	
↔	Laundries	
†	Locker Rooms	
↔	Machine Shops	
†	Manufacturing	Light Duty
↔		Heavy Duty
	Meat, Fish, Poultry Processing	
↔	Mechanical Equipment Rooms	
	Munitions Facilities	
	Parking Garages	Interior Decks
		Exterior Decks
†	Pharmaceutical Plants	
	Pulp & Paper Processing Facilities	
†	Schools	
↔	Shopping Malls	
†	Showers	
↔	Utilities	
↔	Warehouses	
↔	Waste Water Treatment Facilities	

†-Excellent Choice ↔-Alternate Choice

## TECHNICAL DATA

### Typical Performance Properties

Flammability	ASTM D-635	Self Extinguishing
Adhesive Strength	MIL-D-26413	420 psi
Fungus & Bacteria Growth	MIL-F-52625 §4.2.11	Will not support growth of fungus or bacteria when subjected to mildew and bacteria tests.
Hardness	ASTM D-2240	80-84 Shore D
Bond Strength to Concrete	ACI Comm #303, Bulletin 66-43	400 psi (100% concrete failure)
Resistance to Elevated Temperature	MIL-D-3134F §4.7.4	No slip or flow at required temperature of 150°F
Coefficient of Friction	ASTM D-2047	0.80
Water Absorption	ASTM D-570	Nil (<0.05%)
Thermal Shock Resistance	ASTM C-384	Passes
Abrasion Resistance	ASTM D-4060	32 mg
Impact Resistance	MIL-D-3124F §4.7.3	Withstands 16 ft/lbs. without cracking, delamination, or chipping.
Compressive Strength	ASTM C-578, 7 days	12,600 psi
Tensile Strength	ASTM C-207	2,600 psi
Flexural Strength	ASTM C-580	4,300 psi
Thermal Coefficient of Expansion	ASTM C-381	22 x 10 <sup>-6</sup>

## APPLICATION

Concrete surfaces must be in sound condition and properly prepared prior to any KEY RESIN COMPANY flooring system installation. Refer to Key Resin Company Technical Bulletin #1 for specific preparation guidelines.

Installation of KEY QUARTZ B-195 involves several steps including priming, applying successive base coats, broadcasting colored quartz, grouting, and sealing. For specific installation guidelines, consult Key Resin Company's Installation Instruction Manual.

## MAINTENANCE

After completing the application of KEY QUARTZ B-195, the installer should provide the owner with maintenance instructions. If floors become slippery due to animal fats, oil, grease, or soap film, clean and rinse thoroughly.

KEY QUARTZ B-195 is easily cleaned with neutral soaps or detergents. Routine mechanical scrubbing is recommended for all surfaces having a non-skid texture. Waxing is optional. Long periods of heavy traffic may cause wear patterns necessitating a maintenance application of a finish coat.

## WARRANTY

Key Resin Company ("Key") warrants for a period of one (1) year that its products will be free of manufacturing defects and will be in conformity with published specifications when handled, stored, mixed, and applied in accordance with recommendations of Key. If any product fails to meet this warranty, the liability of Key will be limited to replacement of any non-conforming material if notice of such non-conformity is given to Key within (1) one year of delivery of materials. Key may in its discretion refund the price received by Key in lieu of replacing the material. No customer, distributor, or representative of Key is authorized to change or modify the published specifications of this warranty in any way. No one is authorized to make oral warranties on behalf of Key. In order to obtain replacement or refund the customer must provide written notice containing full details of the non-conformity. Key reserves the right to inspect the non-conforming material prior to replacement. EXCEPT FOR THE EXPRESSED WARRANTY STATED ABOVE, THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE. KEY'S OBLIGATION SHALL NOT EXTEND BEYOND THE OBLIGATIONS EXPRESSLY UNDERTAKEN ABOVE AND KEY SHALL HAVE NO LIABILITY OR RESPONSIBILITY TO THE PURCHASER OR ANY THIRD PARTY FOR ANY LOSS, COST, EXPENSE, DAMAGE OR LIABILITY, WHETHER DIRECT OR INDIRECT, OR FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

## Neat Resin Performance Properties

Compressive Strength	ASTM D-665	13,000 psi
Ultimate Tensile Strength	ASTM D-638	4,200 psi
Tensile Elongation	ASTM D-638	6-8%
Flexural Strength	ASTM D-780	7,600 psi
Flexural Modulus	ASTM D-790	6.4 x 10 <sup>5</sup>
Hardness	ASTM D-2240	85-88 Shore D

## COMPOSITION

100% solids clear epoxy resin with decorative colored quartz aggregates. Urethane and epoxy finish coats provide specific performance characteristics.

## COLOR & AVAILABILITY

KEY QUARTZ B-195 is available in a variety of standard blends of colored quartz. Colors will not fade or wear thin.

Key Flooring Systems are available throughout the United States, Canada, and a number of other countries. Contact the KEY REPRESENTATIVE in your area for details.

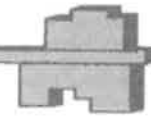
## TECHNICAL SERVICE

Key Resin Company and KRC Associates, Inc. provide services and consultations on material selection, specification, troubleshooting, and other information on the proper repair and protection of concrete surfaces. KEY REPRESENTATIVES are available to assist you at any time. CALL (888)943-4532.





KEY RESIN COMPANY



# KEY URETHANE TOPCOAT #450

## DESCRIPTION

**KEY RESIN #450** is a two component, chemical resistant, polyurethane coating. The high gloss finish offers excellent abrasion resistance, chemical and stain resistance, and superior color retention. **KEY RESIN #450** can be used equally well on vertical or horizontal surfaces. It is ideal for concrete floors and walls in warehouses, storage facilities, aircraft hangars, animal housing, and vehicle maintenance facilities. Available in both clear and pigmented formulations, **KEY RESIN #450** is used as a finish coating option for most Key Flooring Systems.

## KEY ADVANTAGES

- Excellent Abrasion Resistance
- Excellent Chemical & Stain Resistance
- Suitable for both Exterior & Interior Applications
- May be used for both Horizontal & Vertical Applications

## KEY CONSIDERATIONS

- Substrate temperature must be a minimum of 50°F
- Substrate must be free of dirt, waxes, curing agents, and other foreign materials
- Minimum Application Temperature: 40°F (contact Key Resin Company for Low Temperature Cure)
- Maximum Application Temperature: 100°F

## COMPOSITION

Two Component, catalyzed, chemical resistant polyurethane

## APPLICATION

### SURFACE PREPARATION

**Surface Preparation** is the most critical portion of any successful resinous flooring system application. All substrates must be properly prepared as outlined in **KEY RESIN COMPANY'S TECHNICAL BULLETIN #1**. Work must be performed by trained or experienced contractors or maintenance personnel. The **KEY RESIN COMPANY** service department is pleased to answer any questions.

### INSTALLATION

**KEY RESIN #450** is normally applied with a brush, short napped roller, or squeegee and back-rolled with a short nap roller. Care should be taken to minimize the entrapment of air caused by over-rolling. **KEY RESIN #450** can also be applied by airless or conventional spray.

### CLEAN UP

Clean skin with soap and water. Tools and equipment should be cleaned with xylene or lacquer thinner.

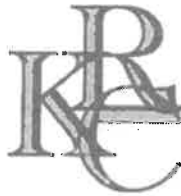
## COVERAGE

**KEY RESIN #450** will yield approximately 3 mils dry film when spread at 300 ft<sup>2</sup> per gallon.

## COLOR SELECTION

**KEY RESIN #450** is available in Clear (gloss or satin) and Key Standard Colors. Custom Colors are available subject to laboratory approval, minimum quantity, lead time for production, and increased cost.





KEY RESIN COMPANY



# KEY PRIMER/LOW MODULUS BINDER #502

## DESCRIPTION

**KEY RESIN #502** is a 100% solids, moisture tolerant epoxy primer for concrete, wood, and masonry surfaces. Combining water insensitivity with good wetting properties, **KEY RESIN #502** is the ideal primer for almost every Key Flooring System.

**KEY RESIN #502** provides excellent filling and sealing properties needed under high performance epoxy wall coatings on concrete and cinder block walls.

The moisture tolerance of **KEY RESIN #502** allows it to be applied to damp concrete after surface preparation. This includes bonding "old to old" or "new to old" concrete.

**KEY RESIN #502** provides an excellent high strength, weather resistant bond for use under Key Lastic SWS parking and pedestrian deck systems.

In addition, the low modulus of elasticity and stress relieving properties of **KEY RESIN #502** makes it ideal for use as a binder for epoxy mortar systems and for patching and grouting applications.

## KEY ADVANTAGES

- Low modulus; stress relieving
- Fast cure formulation available for priming under coatings
- Moisture insensitive cure
- Conforms to ASTM C-881 properties
- Low viscosity-good wetting properties
- Good trowelling properties when used with Key Mortar Systems

## KEY CONSIDERATIONS

- Bonding surfaces must be sound, clean, and free from standing water
- Substrate temperature must be a minimum of 50°F
- Substrate must be free of dirt, waxes, curing agents, and other foreign materials
- Should not be installed on new concrete until maximum shrinkage has occurred (at least thirty (30) days after pour)

## APPLICATION

### SURFACE PREPARATION

Surface Preparation is the most critical portion of any successful resinous flooring system application. All substrates must be properly prepared as outlined in **KEY RESIN COMPANY'S TECHNICAL BULLETIN #1**. Work must be performed by trained or experienced contractors or maintenance personnel. The **KEY RESIN COMPANY** service department is pleased to answer any questions.

### INSTALLATION

When priming, spread **KEY RESIN #502** at a rate of 250-275 ft<sup>2</sup> per gallon. Care should be taken to avoid puddles. Application can be made with brush, roller, or squeegee. For mortar applications, allow **KEY RESIN #502** to set for 30 minutes before topping. After seven (7) hours, it will be too hard. Coating applications should not be recoated until **KEY RESIN #502** has cured. To speed production, use fast cure formulation. For complete installation instructions, contact your Key Representative or Key Resin Company's Technical Service.

### CLEAN UP

Clean skin with soap and water. Tools and equipment should be cleaned with xylene or lacquer thinner. Consult Material Safety Data for safety and health precautions.

## COVERAGE

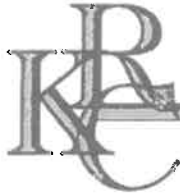
**KEY RESIN #502** when applied at 275 ft<sup>2</sup> yields 5-6 mils

## COMPOSITION

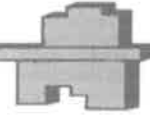
Polyamide-Modified Epoxy Resin and Wetting Agents

## COLOR SELECTION

**KEY RESIN #502** is available in Clear or Key Standard Colors. Custom colors are available subject to laboratory approval, minimum quantity, lead time for production, and increased cost.



KEY RESIN COMPANY



# KEY EPOXY BINDER #510

## DESCRIPTION

**KEY RESIN #510** is a multipurpose epoxy binder for **Key Mortar Systems** and **Key Quartz Systems**. This all purpose epoxy resin is characterized as an excellent general purpose material with good clarity and color retention. Its 100% solids formulation makes it essentially odorless for installation in occupied facilities.

## KEY ADVANTAGES

- Good Clarity & Color Retention
- Low Odor During Application & Cure—Can be Applied in Occupied Buildings
- Low Viscosity—Good Trowelling & Wetting Properties
- Available in "Fast Cure" Systems
- Meets USDA requirements for food handling applications

## KEY CONSIDERATIONS

- Substrate temperature must be a minimum of 50°F (Contact Key Resin Company for Low Temperature Cure).
- Substrate must be free of dirt, waxes, curing agents, and other foreign materials.
- Pigmented version should not be used as a coating.

## COMPOSITION

100% Solids Epoxy Resin with Aliphatic Amines

## PHYSICAL PROPERTIES

Tensile Strength	(ASTM D-638)	8,500 psi
Adhesion to Concrete	(ACI Comm 403)	350 psi (100% concrete failure)
Hardness	(ASTM D-2240)	80 (Shore D)
Flexural Strength	(ASTM D-790)	8,000 psi
Compressive Strength	(ASTM D-695)	11,000 psi
Service Temperature		180°F (wet) 160°F (dry)
Water Absorption	(ASTM D-670-73)	0.10% maximum

## APPLICATION

### SURFACE PREPARATION

**Surface Preparation** is the most critical portion of any successful resinous flooring system application. All substrates must be properly prepared as outlined in **KEY RESIN COMPANY'S TECHNICAL BULLETIN #1**. Work must be performed by trained or experienced contractors or maintenance personnel. The **KEY RESIN COMPANY** service department is pleased to answer any questions.

### INSTALLATION

Installation of **KEY RESIN #510** varies with your application needs. For complete installation instructions, contact your **Key Representative** or **Key Resin Company's Technical Service**.

### CLEAN UP

Clean skin with soap and water. Tools and equipment should be cleaned with xylene or lacquer thinner.

## COVERAGE

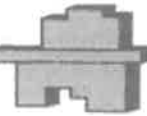
**KEY RESIN #510**, when applied at 160 ft<sup>2</sup>, yields 10 mils.

## COLOR SELECTION

**KEY RESIN #510** is available in Clear and Key Standard Colors. Custom Colors are available subject to laboratory approval, minimum quantity, lead time for production, and increased cost.



KEY RESIN COMPANY



# KEY UV RESISTANT EPOXY GLAZE #512

## DESCRIPTION

**KEY RESIN #512** is a 100% solids epoxy glaze specially formulated for excellent clarity and water-white appearance. Resistant to ultra violet (UV) exposure, **KEY RESIN #512** provides a wear and abrasion resistant finish that resists the normal ambering of epoxy finishes. With low odor and minimal health risks, **KEY RESIN #512** is the ideal seal coat for Key Mortar Systems, Key Quartz Systems, and Key Epoxy Terrazzo.

## KEY ADVANTAGES

- Excellent clarity & color retention
- Low odor during application and cure, can be applied in occupied buildings
- UV resistant epoxy finish
- Excellent glaze for Key Decorative Systems
- Meets USDA requirements for food handling applications

## KEY CONSIDERATIONS

- Substrate temperature must be a minimum of 50°F
- Substrate must be free of dirt, waxes, curing agents, and other foreign materials

## COMPOSITION

- 100% Solids Epoxy Resin with Cycloaliphatic Amines

## COLOR SELECTION

**KEY RESIN #512** is available in Clear only.

## APPLICATION

### SURFACE PREPARATION

Surface Preparation is the most critical portion of any successful resinous flooring system application. All substrates must be properly prepared as outlined in **KEY RESIN COMPANY'S TECHNICAL BULLETIN #1**. Work must be performed by trained or experienced contractors or maintenance personnel. The **KEY RESIN COMPANY** service department is pleased to answer any questions.

### INSTALLATION

Installation of **KEY RESIN #512** varies with your application needs. Typically, **KEY RESIN #512** is spread with a notched or flat trowel or squeegee and back-rolled with a short nap roller. Care should be taken to minimize the entrapment of air caused by over-rolling. For complete installation instructions, contact your Key Representative or Key Resin Company's Technical Service.

### CLEAN UP

Clean skin with soap and water. Tools and equipment should be cleaned with xylene or lacquer thinner.

### COVERAGE

**KEY RESIN #512** when applied at 160 ft<sup>2</sup> yields 10 mils.