SECTION 09 67 00

FLUID-APPLIED FLOORING

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\*\* NOTE TO SPECIFIER \*\* Key Resin Co.; Fluid-applied resinous flooring for concrete floors and wall surfacing/coating systems.
 This section is based on the products of Key Resin Co., which is located at:4050 Clough Woods Dr.Batavia, OH 45103Toll Free Tel: 888-943-4532Tel: 513-943-4225Fax: 513-943-4255Email: [request info (sales@keyresin.com)](https://arcat.com/rfi?action=email&company=Key%252BResin%252BCo.&message=RE%253A%2520Spec%2520Question%2520(09670krc)%253A%2520&coid=40601&spec=09670krc&rep=&fax=513-943-4255)
Web: <https://keyresin.com>
 [ [Click Here](https://arcat.com/company/key-resin-co-40601) ] for additional information.
Key Resin Company is a leading international supplier of fluid-applied resinous flooring, epoxy terrazzo, moisture vapor control systems and polymer resin coatings for concrete floors and walls. It is our goal to offer the best in product, experience, service, and expertise in the industry. By accomplishing this goal, we will provide the best possible solutions for your project requirements. This Internet-based catalogue has been designed to provide you with product and system data and specifications for our complete line.
KEY THIN-SET EPOXY TERRAZZO SYSTEMS are highly decorative flooring systems that exhibit outstanding durability and wear. Installed at 1/4 inch (6 mm) to 3/8 inch (9 mm), KEY EPOXY TERRAZZO has a very low life-cycle cost and contributes to various USGBC LEED points.
KEY QUARTZ SYSTEMS are a series of decorative floor surfacing systems which offer distinctive and pleasing appearance in addition to the outstanding performance characteristics common in Key Resin Company flooring systems. KEY QUARTZ SYSTEMS are generally characterized by clear resin finishes combined with colored aggregates to provide attractive and seamless color patterns.
KEY CHIP SYSTEMS are a series of decorative flooring systems consisting of colored chips/flakes broadcast into epoxy, urethane cement or MMA resin, sealed with clear topcoats. The thickness varies from 20 mils to 1/4 inch depending on expected service, topcoats vary depending on expected service and exposure to chemicals and cleaning agents.
KEY MORTAR SYSTEMS are 100 percent solids epoxy/aggregate systems ideal for areas needing protection from high traffic, impact, thermal shock, and chemical attack. Designed for a variety of applications, KEY MORTAR SYSTEMS are highly versatile flooring systems which can be tailored to specific needs.
KEY URECON SYSTEMS are urethane modified, cementitious systems ideal for areas needing protection from high traffic, impact, thermal shock, moisture vapor tolerance and chemical attack. Designed for a variety of applications, KEY URECON SYSTEMS produce a dense, non-porous wear surface ideal for commercial kitchen, food handling/processing, and similar areas.
KEY SECONDARY CONTAINMENT SYSTEMS are 100 percent solids chemical resistant epoxy/aggregate systems ideal for areas needing protection from chemical spills, high traffic, impact and thermal shock. Specially formulated bis-F and novolac epoxy resins for high chemical resistance applications, KEY RESISTANT SYSTEMS and KEY CONTAIN SYSTEMS are highly versatile flooring systems which can be tailored to meet specific needs.
KEY VINYL ESTER SYSTEMS utilize Key Resin Company's vinyl ester resin in a wide range of industrial applications requiring the ultimate in chemical resistance and high temperature performance. KEY VINYL ESTER SYSTEMS can be installed as a high-build coating, fiberglass reinforced lining, slurry, or mortar to meet your various chemical and heat resistance needs.
KEY LASTIC SYSTEMS are elastomeric urethane and flexible epoxy systems specially formulated for areas with high traffic, impact, structural vibration, or that require ergonomic comfort under foot, noise reducing performance, and crack resistance such as mechanical equipment rooms, showers, parking structures, hallways, and healthcare facilities. KEY LASTIC SQT is a decorative elastomeric resin mortar with colored rubber chips, grinding the surface exposes the decorative colored chips to create a smooth finish.
KEY CONDUCTIVE and ESD (Electro-Static Dissipative) SYSTEMS are epoxy or urethane systems used to create non-sparking floors to prevent explosions in hazardous environments or to dissipate the build up of static electricity to prevent damaging discharges to electronic components.
KEY MMA (Methyl Methacrylate) SYSTEMS are rapid curing acrylic resins used where fast installation times are of critical importance. KEY MMA SYSTEMS have zero VOC, cure in about one hour, and are able to cure down to minus -20 Fahrenheit in freezers and other cold environments. KEY MMA SYSTEMS are UV light resistant and are suitable for exterior use.
KEY COATING SYSTEMS consist of a variety of epoxy, novolac, polyurethane, acrylic and vinyl ester coatings for floors and walls. KEY COATING SYSTEMS protect floors and walls from chemical attack and mild abrasion. Typical coating systems vary from Thin-Film 6-7 mils (.15 mm) up to High-Build 30+ mils (.76 mm) dry film thickness and are suitable for light to medium duty service.
KEY MOISTURE VAPOR CONTROL SYSTEMS allow the contractor to install any moisture sensitive epoxy or other floor covering system such as VCT, wood or sheet vinyl on concrete with excessive moisture vapor emissions or moisture content. KEY EPOCON SL MOISTURE VAPOR CONTROL SYSTEM and KEY EPOCON FLOORING SYSTEMS incorporate the unique epoxy technology of KEY EPOCOAT resin. Moisture sensitive floor covering systems can be installed on new concrete (5 days old) without any fear of moisture entrapment. KEY EPOCON SL can be used underneath every type of Key Resin Flooring System and other floor coverings such as VCT, sheet vinyl, wood and carpet. Other KEY MOISTURE VAPOR CONTROL SYSTEMS include KEY URECON SLT and KEY #635 MVT.
ACCESSORY MATERIALS: Key Flexible Epoxy #580 Crack Isolation & Waterproofing Membrane. Key Epoxy Crack Filler #715. Key Semi-Rigid Epoxy Joint Filler #780.
KEY RESIN FLOORING and COATING SYSTEMS are easily cleaned with neutral soaps or detergents. Routine mechanical scrubbing is recommended for all surfaces having a non-skid texture. If floors become slippery due to animal fats, oil, grease, or soap film, promptly remove contaminant and rinse thoroughly. Waxing is optional. Long periods of heavy traffic may cause wear patterns necessitating a maintenance application of a finish coat. Refer to Key Resin Technical bulletins #3 and #3-A for further information.

1. GENERAL
	1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Decorative fluid-applied resinous flooring.
		2. Industrial fluid-applied resinous flooring.
		3. High-build epoxy/urethane coating systems for concrete floors
	1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 03 30 00 - Cast-in-Place Concrete.
		2. Section 07 91 26 - Joint Fillers.
		3. Section 09 29 00 - Gypsum Board.
	1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. ASTM C 307: Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacings.
		2. ASTM C 501: Standard Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser.
		3. ASTM C 522: Standard Test Method for Airflow Resistance of Acoustical Materials.
		4. ASTM C 531: Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.
		5. ASTM C 884: Standard Test Method for Thermal Compatibility Between Concrete and an Epoxy-Resin Overlay.
		6. ASTM D 570: Standard Test Method for Water Absorption of Plastics.
		7. ASTM D 635: Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
		8. ASTM D 2047: Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.
		9. ASTM D 2240: Standard Test Method for Rubber Property-Durometer Hardness.
		10. ASTM D 5054: Gardner Impact Test.
		11. ASTM F 1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
		12. ASTM F 2170: Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
		13. MIL-D-3134F: Bond Strength.
		14. MIL-F-52505: Fungus and Bacteria Growth.
	1. SUBMITTALS
		1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
		2. [ Product Data ]: Manufacturer's data sheets on each product to be used, including:
			1. 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.
			2. Prepare instructions and recommendations.
			3. Submit storage and handling requirements and recommendations.
		3. Shop Drawings: Shop Drawings shall be furnished showing installation and details at floor material transitions and flexible joints.
			1. Locate and provide detailing for flexible joints required of flooring in area of installation.
				1. Joint locations are required whether shown or not in Contract drawings.

\*\* NOTE TO SPECIFIER \*\* Delete selection samples if colors have already been selected.

* + 1. Selection Samples: For each finish product specified, submit maximum of three samples, 6 inches by 6 inches for each color and type of coating available from manufacturer's full range.
		2. Verification Samples: For each finish product specified, submit maximum of three samples, 6 inches by 6 inches for each color and type of coating as specified.
		3. Maintenance Literature: Submit two copies of manufacturer's maintenance recommendations.
	1. QUALITY ASSURANCE
		1. Manufacturer Qualifications: Materials used in the floor surfacing shall be the products of a single manufacturer.
		2. Installer Qualifications:
			1. Installer shall be acceptable to Architect and Key Resin Company.
			2. Installation shall be performed by an applicator with minimum 3 years experience in work of similar nature and scope. Installer shall be approved by the manufacturer of the floor surfacing materials. The Contractor shall furnish a written statement from the manufacturer that the installer is acceptable.
			3. Contractor shall have proven experience with specified system.
		3. Certification:
			1. Manufacturer shall furnish certification attesting that materials meet specification requirements.
			2. Manufacturer shall furnish properly labeled material and Material Safety Data Sheets which comply to current state and federal requirements.
			3. Manufacturer shall submit certification that installer is an approved applicator of material selected.
		4. Pre-Construction Meeting:
			1. Pre-job meeting between Contractor, Architect, and installer shall be held to discuss concrete substrate, location of joints and/or saw cuts to minimize sub-floor cracking.

\*\* NOTE TO SPECIFIER \*\* Include an installed mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how an installed mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Provide an installed mock-up for evaluation of surface preparation techniques and application workmanship.
			1. Finish areas designated by Architect.
			2. Mock-up size shall not be less than 50 square feet.
			3. Acceptable mock-up to be standard of quality for installed work.
			4. Unacceptable installed work to be removed and replaced or refinished until acceptable.
	1. DELIVERY, STORAGE, AND HANDLING
		1. 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.
		2. Store materials in dry protected area at a temperature between 60 degree F (15 degrees C) and 80 degree F (27 degrees C).
		3. Follow all manufacturer's specific instructions and prudent safety practices for storage and handling.
		4. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
	2. PROJECT CONDITIONS
		1. Maintain the ambient room and floor temperature at 60 degree F (15 degrees C) or above for a period extending from 72 hours before, during and after floor installation. Concrete to receive surfacing shall have cured for at least 28 days and be free of all curing compounds.
		2. 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.
	3. WARRANTY
		1. Defective Material Warranty: One year from date of completion of coating installation.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: Key Resin Co., which is located at:4050 Clough Woods Dr.Batavia, OH 45103Toll Free Tel: 888-943-4532Tel: 513-943-4225Fax: 513-943-4255Email: [request info (sales@keyresin.com)](https://arcat.com/rfi?action=email&company=Key%252BResin%252BCo.&message=RE%253A%2520Spec%2520Question%2520(09670krc)%253A%2520&coid=40601&spec=09670krc&rep=&fax=513-943-4255);Web: <https://keyresin.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

\*\* NOTE TO SPECIFIER \*\* KEY FLUID-APPLIED FLOORING SYSTEMS are easily cleaned with neutral soaps or detergents. Routine mechanical scrubbing is recommended for all surfaces having a non-skid texture. If floors become slippery due to animal fats, oil, grease, or soap film, promptly remove contaminant and rinse thoroughly. Waxing is optional. Long periods of heavy traffic may cause minor wear patterns necessitating a maintenance application of a finish coat. Refer to Key Resin Technical Bulletins #3 and #3-A for further information.
 \*\* NOTE TO SPECIFIER \*\* KEY FLUID-APPLIED FLOORING SYSTEMS are available in a wide variety of decorative and industrial systems, typically installed in a thickness range of 15 to 375 mils (.38 mm to 9.5 mm) thickness, provide a brighter environment with improved cleanability and durability over concrete surfaces. Review the requirements of your facility with the [ Product Data ] to select the finish that best meets the needs of the application.
 \*\* NOTE TO SPECIFIER \*\* KEY ADVANTAGES: Improves Abrasion & Chemical Resistance of Concrete Floors; Skid Resistant Finishes Available; Gloss Brightens Environment; Low Odor Formulations Available. Aggregate reinforced systems have excellent impact resistance, coatings have limited impact resistance--may chip with concrete.
\*\* NOTE TO SPECIFIER \*\* KEY FLUID-APPLIED FLOORING SYSTEMS are typically installed in light to heavy traffic areas that require a cleanable, durable, resin floor system such as aircraft hangars, coolers, computer assembly areas, storage rooms, corridors, kitchens, locker rooms, manufacturing areas, food processing areas, and numerous other applications. Delete if not required.
 \*\* NOTE TO SPECIFIER \*\* Delete systems not required. Additional systems are also available, consult with Key Resin Company.

* 1. FLUID-APPLIED FLOORING SYSTEM
		1. Acceptable System: Provide the systems listed below.
			1. Key High-Build Coating System as manufactured by Key Resin Company.
			2. Key Chip 100 as manufactured by Key Resin Company.
			3. Key Zycke as manufactured by Key Resin Company.
			4. Key Luster Metallic as manufactured by Key Resin Company.
			5. Key Traffic Coating as manufactured by Key Resin Company.
			6. Key Mortar SLT as manufactured by Key Resin Company.
			7. Key Quartz B-125 as manufactured by Key Resin Company.
			8. Key Quartz T-250 as manufactured by Key Resin Company.
			9. Key Mortar STD as manufactured by Key Resin Company.
			10. Key Lastic ME as manufactured by Key Resin Company.
			11. Key Lastic SQT as manufactured by Key Resin Company.
			12. Key Urecon SLT as manufactured by Key Resin Company.
			13. Key Urecon SLT Quartz as manufactured by Key Resin Company.
			14. Key Epocon SLT as manufactured by Key Resin Company.
			15. Key Conductive as manufactured by Key Resin Company.
			16. Key ESD as manufactured by Key Resin Company.
			17. Key MMA Chip 900 as manufactured by Key Resin Company.
			18. Key MMA Quartz SLT as manufactured by Key Resin Company.
			19. Key MMA Mortar SLT as manufactured by Key Resin Company.
			20. Key Vinyl Ester as manufactured by Key Resin Company.
			21. Key Contain Novolac as manufactured by Key Resin Company.

\*\* NOTE TO SPECIFIER \*\* KEY FLUID-APPLIED FLOORING SYSTEMS are available in numerous different formulations and finished appearance, contact Key Resin Company to confirm the appropriate system for your project. KEY FLUID-APPLIED FLOORING SYSTEMS are installed in two or more steps including priming, spreading base and finish coats with a trowel or squeegee to the desired thickness, back-rolling with a medium or short nap roller. For specific installation guidelines, consult Key Resin Company's Installation Instruction Manual.
 \*\* NOTE TO SPECIFIER \*\* Insert total system thickness in DFT.

* + 1. Thickness:
		2. Primer: Only as recommended by the manufacturer.

\*\* NOTE TO SPECIFIER \*\* KEY FLUID-APPLIED FLOORING SYSTEMS are available in a variety of standard colors. Custom colors are available subject to laboratory approvals, minimum quantities, lead time for production, and increased cost. KEY PERSONNEL are ready to assist.

* + 1. Color:
		2. System shall meet the following requirements:
			1. Flammability: ASTM D 635, Self Extinguishing.
			2. Fungus & Bacteria Growth: MIL-F-52505, Will not support growth of fungus or bacteria when subjected to mildew and bacteria tests.
			3. Hardness: ASTM D 2240, 80-84 Shore D.
			4. Bond Strength to Concrete: ACI #403, 300 psi minimum (2.07 MPa) (100% concrete failure).
			5. Coefficient of Friction: ASTM D 2047, 0.60 to 0.90, Varies by resin and use of non-skid aggregates
			6. Water Absorption: ASTM D 570, Nil.
			7. Thermal Shock Resistance: ASTM C 884, Passes.
			8. Abrasion Resistance: ASTM C 501, 32 mg typical, Varies by topcoat.
			9. Impact Resistance: MIL-D-3134F, Varies by system.
1. EXECUTION
	1. EXAMINATION
		1. Examine areas to receive coatings for:
			1. Concrete surfaces shall be in sound condition and properly prepared prior to flooring system installation.

\*\* NOTE TO SPECIFIER \*\* Cracks in substrate will usually be transmitted through topping to surface.

* + - 1. Defects in existing work that affect proper execution of coating work.

\*\* NOTE TO SPECIFIER \*\* Subfloor shall not vary more that 1/4 inch (6 mm) from true plane in 10 feet (3048 mm). Coating is not intended to level substrate and will only follow the contour of the concrete slab. If for any reason the subcontractor questions the suitability of the substrate, any work required to eliminate nonconformity of subsurface specifications is the responsibility of others. Any materials used to correct nonconformity must be compatible with coating system selected and be approved by the contractor.

* + - 1. Deviations beyond allowable tolerances for the concrete slab work.
		1. Do not begin installation until substrates have been properly prepared.
		2. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
	1. PREPARATION
		1. Prepare substrate to receive coating in accordance with manufacturer's recommendations.
		2. Substrate shall be free of dirt, waxes, curing agents, and other foreign materials.
		3. Objectionable substrate irregularities that will transmit through coating system shall be removed.
		4. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
		5. Acceptable Substrates:
			1. Level tolerance: Concrete sub-floor shall be level with a maximum variation from level of 1/4 inch (6 mm) in 10 feet (3048 mm). Any irregularity of the surface requiring patching and/or leveling shall be done using material approved by the manufacturer.
			2. Concrete floor shall have a steel trowel finish.
			3. Concrete shall be cured a minimum of 28 days. No curing agents shall be used in areas to receive coating.
			4. Concrete slab shall have an efficient moisture barrier of minimum 10 mils (.2540 mm) placed directly under the concrete slab. Do not use vapor barrier manufactured with recycled content. Testing shall 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 epoxy coating flooring. Moisture vapor emission and moisture content testing shall conform with the requirements of ASTM F 1869 (Calcium Chloride Test) and ASTM F 2170 (Relative Humidity Probe Test). If test results show excessive levels of moisture content or vapor emission rate above that recommended by the manufacturer, apply manufacturer's recommended moisture vapor emission control material.

\*\* NOTE TO SPECIFIER \*\* Consider specifying a 15 mil or 20 mil reinforced puncture resistant vapor barrier.

* + - 1. Saw cutting of control joints shall be done between 12 and 24 hours after placement of the structural concrete.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Cast-in-Place Concrete:
			1. Shotblast or rough grind area to receive coating according to manufacturer's recommendations.

\*\* NOTE TO SPECIFIER \*\* Cracks in substrate will usually be transmitted through topping to surface. Crack Isolation membrane Key #580 can only be used under Key Traffic Coating, Key Grip or other aggregate filled system minimum of 40 mils thickness.

* + - 1. Route out all cracks larger than 1/32 inch (9.5 mm) width and fill with rigid epoxy such as Key #502 or similar. Apply Key #580 Flexible Epoxy across the crack a minimum width of 24 inches (610 mm) at a spread rate of 50 square feet (4.6 square meters) per gallon to achieve 25-30 mils (.6350-.7620 mm) dry over the crack and allow to cure. Apply Key #502 Primer to cured membrane. Imbed fiberglass mesh into wet primer and saturate with additional Key #502 Primer.
			2. Apply Key #580 Flexible Epoxy over entire floor surface as a crack isolation membrane if cracks are numerous.
	1. INSTALLATION
		1. Install in accordance with manufacturer's instructions.
		2. Locate all flexible joints required.
		3. Provide accessories necessary for complete installation.
	2. CLEANING
		1. Wash all surfaces with a neutral cleaner.
	3. PROTECTION
		1. Upon completion, the work shall be ready for final inspection and acceptance by the owner or his agent.
	4. PROTECTION
		1. The Contractor shall protect the finished floor from the time that the coating installer completes the work.
		2. Protect installed products until completion of project.
		3. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION