



Technical Bulletin #19-D

Application of Key Resin Flooring Systems over Dry Pack Mortar, Setting Beds, Proprietary Cement Underlayments, Key Resin-Supplied Isocrete Cement Underlayments

Key Resin Company provides the following information pertaining to the application of Key Resin Flooring Systems over dry pack mortar, cement setting beds, proprietary cement underlayments supplied by others and Key Resin-supplied FlowResin Isocrete cement underlayments.

1. Key Resin's primary recommendation is to use Key Resin epoxy fill, FlowResin Isocrete 1500P or FlowResin Isocrete 4000 versus cement-based underlayments supplied by other manufacturers, due to high physical properties, rapid cure time, ease of installation and guaranteed compatibility including a total systems warranty available with the Key Resin Flooring System materials and the FlowResin Isocrete underlayments.
2. Various proprietary cement-based underlayments have been proposed by installers and general contractors for leveling and sloping a concrete slab underneath Key Resin Flooring Systems. Key Resin's requirement for an acceptable proprietary cement-based underlayment is that it must contain no gypsum content (calcium sulphate hemihydrate) and have minimum physical properties comparable with standard strength concrete pertaining to the following specific properties: Minimum 3000 psi compressive strength and 225 psi surface tensile pull-off strength. The tensile pull-off strength is the most critical property to ensure polymer resin floor toppings do not disbond in the future due to fracturing failure of a weak cement underlayment. The surface tensile pull-off strength should be tested with a meter such as Elcometer 106/6 or DeFelsko-Posi Test AT, using 50 mm diameter dollies, as outlined in ASTM D7234, or other similar tensile pull-off test methods. The dollies should be bonded to the prepared substrate using epoxy, and the cement underlayment must be scored around each dolly.
3. Key Resin does not perform field testing or approval of substrates, this is the responsibility of others. A 3rd party testing firm is recommended to ensure proper test procedures are used, or the manufacturer of the proprietary cement material must confirm these minimum physical property requirements are met.
4. If the substrate in question meets the minimum requirements, the surface must be prepared the same as the original concrete slab would be, followed with installation of the Key Resin Flooring System or Key Resin Moisture Mitigation System.
5. Key Resin recommends using epoxy fill or Isocrete cement toppings supplied by Key Resin, because Key Resin supplied materials will be warrantied for acceptable strength. When using epoxy, the resin plus aggregate mix design must be resin rich not "dry pack" consistency, using a recommended gradation of approved aggregates. The following mix design is a suggested guideline, however the aggregate type, gradation and overall mix design may need adjustment depending on the installed thickness, contact Key Resin Technical Service to review mix design:
 - a. 6 gallons epoxy (no solvent added) + 400 lbs of properly graded aggregates
 - b. Aggregate blend options
 - i. Key Blended Mortar Aggregate (for 1/8" up to maximum 1/2" thickness)

- ii. Marble chips, dry pea gravel (for 1/4"+ thickness), with or without Key Blended Mortar Aggregate
6. If the decision is made by the facility owner or general contractor that an epoxy-based fill (underlayment) cannot be used, there are various self-leveling and trowel-grade cement toppings available which exceed 225 psi tensile pull-off strength. Key Resin Company does not guarantee, warranty, endorse or recommend any materials not manufactured or otherwise supplied by Key Resin. Only FlowResin Isocrete cement underlayments or epoxy fill materials supplied by Key Resin will receive a Key Resin guarantee or warranty. If the decision is made to use any cement underlayment supplied by other suppliers, it is advised that the contractor confirm application recommendations and warranty details with the supplier of the material and test the material after placement to confirm minimum required physical properties are achieved.

Key Resin-supplied FlowResin Isocrete cement toppings:

1. Isocrete 1500P Self-Leveling Grade (1/4"-2" per lift, up to 3" extended with pea gravel)
 - a. May be installed in multiple lifts
2. Isocrete 4000 Trowel Grade (1/4"-4" per lift, up to 6" extended with pea gravel)
 - a. May be installed in multiple lifts

Contact Key Resin Technical Service if further clarification is required.