KEY RESIN COMPANY

Installation Instructions

KEY MMA SLT QUARTZ

I. GENERAL INFORMATION

KEY MMA SLT QUARTZ is a rapid curing, 100% reactive, decorative methyl methacrylate (MMA) resin flooring system. Thickness ranges from 1/8" to 1/4" or greater depending on project requirements. **KEY MMA SLT QUARTZ** is finished with clear catalyst-cured coats of MMA resin available in several different formulations depending on project requirements. The installed system can be textured or smooth as desired. Easy maintenance minimizes bacterial growth. **KEY COLORED QUARTZ GRANULES** are available in a series of pre-blended patterns or solid colors.

II. 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. In addition, All Key MMA Flooring Systems must be prepared to a minimum surface profile of CSP 4-5**, as outlined in ICRI Guideline 310.2-1997, formerly named G-03732 (available from www.ICRI.org). Specific attention should be paid to the following:

A. Concrete Placement--An efficient vapor barrier should be under slabs on or below grade to prevent moisture migration. Moisture vapor treatment may be necessary, consult with Key Resin for recommendations.
B. Curing and Finishing Techniques of the Concrete Substrate.
C. Age of Concrete.
D. Previous Contamination of the Substrate.
E. Present Condition of the Substrate.

Also, the temperature of the area to receive the flooring system should be checked. Key MMA Systems can be installed from 90 degrees F down to -20 degrees F. Application below 41 degrees F requires cold temperature additive mixed into resin on site.

The temperature of the area to receive the flooring system must be checked. Key MMA Systems can be installed from 90 degrees F down to -20 degrees F. Application below 41 degrees F requires Key #9101 MMA Cold Temperature Additive mixed into each resin component on site. For damp substrates (not excessive moisture vapor emission rate) use Key #9113 MMA Moisture Adhesive Additive mixed into Key 9112 MMA Primer on site.

Application over existing properly bonded MMA floor: The existing MMA floor surface should be cleaned of any dirt or other contaminants followed with a wipe-down using Key #9001 MMA Monomer. This will soften the surface of the existing MMA floor preparing it for application of the new MMA resin. Mechanical surface preparation to create a textured surface profile is not needed when overlaying an existing MMA floor finish.

III. MATERIAL QUANTITIES

A. Guideline System Requirements for 1000 ft²

Key MMA SLT Quartz (1/8" – 1/4")	*Qty./ 1000 ft²*
1. *Key #9112* MMA Primer	10 gallons
(Note: Second coat of primer may be necessary with very porous substrate)	
2. *Key Broadcast Sand* (20/30 mesh sand or quartz)-light broadcast	100 pounds
3. *Key #9418* MMA Binder (clear)	20-40 gallons
4. *Key Self Leveling Filler*	450-900 pounds
5. *Key KBQ-TR Colored Quartz (20-30 mesh)*	600-900 pounds
6. *Key #9526* MMA Sealer (clear)	15 gallons
7. *Key #9526* MMA Sealer (clear)- optional**	8-12 gallons
8. Key #9000 MMA Hardener (for all resins)	Quantity Varies*

* Note: Quantity of Key #9000 MMA Hardener will vary by product, substrate temperature and desired pot life/cure time. Consult with individual product data sheets and Key MMA Hardener Mixing Chart for recommendations. Mix ratios are provided in volume measurements, consult with Key Resin Technical Services to confirm weight formulas. Volumetric mixing may be most convenient if small mix cups with ½-1 ounce markings are carefully used.

** Note: Step #7 may be optional depending on desired finish texture. Stopping at step #6 will yield a coarse texture for constantly wet areas. A lighter texture is recommended for easier cleaning. Confirm finish texture with your customer.

Note: Key MMA SLT Quartz may optionally be installed as a double broadcast, with or without the Key Self-Leveling Filler. Adjust quantities as needed to achieve desired thickness.

IV. MIXING & INSTALLATION

Substrate Repair: After surface preparation, hairline cracks can be filled with Key #9112 MMA during primer application. Route cracks larger than 1/32" and fill with Key #9112 MMA mixed with Key Self-Leveling Filler to create a pourable consistency or Cabosil/Aerosil (fume silica) to create a paste consistency. Reinforcing large cracks with fiberglass cloth will help to reduce the potential for reflective crack propagation. For a badly cracked floor, consider overlaying the surface with Key #9332 MMA Elastomer. Due to the minimum thickness and aggregate broadcast requirements of Key #9332, it should only be used for 100% substrate coverage, not for treating individual cracks or control/contraction joints (sawcuts). Spall repair: Use Key #9510 MMA or Key #9418 MMA mixed with sand or Key BMA-50 Blended Mortar Aggregate to create a resin-rich trowel grade mortar. Refer to product data sheets for mix design. Substrate should be primed with Key #9112 MMA before application of repair mortar.

Moisture Vapor Control System: If using a moisture vapor control system such as Key Epocon SL (Key Epocoat resin), all cracks should be filled with Key Epocoat resin. The Key Epocoat bodycoat must be broadcast to excess with aggregate. Do not apply Key #9112 MMA resin over "neat" Key Epocoat or other epoxies, as the MMA curing process may become inhibited creating tacky uncured areas. If applying Key MMA over "neat" epoxy resin is required, apply Key Universal Primer and allow to cure dry to touch before applying Key #9112.

Ventilation: MMA resin requires negative air movement to ensure proper curing. Blowing air directly across the surface of the MMA (positive air) is not advised as it will reduce the working time of the resin. The MMA odor may need to be vented outside if the project site is occupied by other workers. There should not be any open flames in the vicinity of the work, or in areas where the fumes can concentrate. Review MSDS before working with MMA resin. For exterior work or interior work in large open spaces such as a warehouse or large manufacturing/processing area, negative air movement typically is not necessary to achieve proper cure, assuming the odor does not need to be vented. Smaller rooms will require setting up negative air with explosion-proof fans, and possibly rigging air-tight plastic containment. One recommended supplier of explosion-proof fans is Tempest Technology, 800-346-2143, www.tempest-edge.com.

Key 9112 MMA requires the addition of **Key 9000 MMA Hardener** to start the hardening process. The amount of hardener must be adjusted to the respective surface temperature (see table below). At temperatures below 40°F, **Key 9101 MMA Cold Temperature Accelerator** must be used in addition to the amount of hardener used at the 40°F or 30°F level.

KEY 9112 MMA Primer Resin
Mix Ratios, Pot Life and Hardening/Temperature

Temp. (°F) of Resin, Air & Floor Surface	Hardener by Volume (oz.) Per Gallon of 9112 Resin	Pot Life (min.)	Hardening Time (min.)
+30°F	9-10 vol. oz.	Approx. 10-12	Approx. 30
+40°F	7-9 vol. oz.	Approx. 10-12	Approx. 30
+50°F	5-7 vol. oz.	Approx. 8-10	Approx. 25
+60°F	4-5 vol. oz.	Approx. 8-10	Approx. 25
+70°F	4 vol. oz.	Approx. 8-10	Approx. 20
+80°F - 90°F	4* vol. oz.	Approx. 6-8	Approx. 20

*Do not use less than 4 oz. Key 9000 MMA Hardener by volume unless confirmed with jobsite testing. Consult with Key Resin Technical Services if performing mix ratio by weight instead of by volume.

Key 9113 MMA Moisture Adhesive Additive: Recommended for damp substrates. Add 5% by volume (or 6.5 ounces by volume per gallon) to **Key 9112 MMA** during mixing.

Key 9101 MMA Cold Temperature Accelerator: At temperatures below 40°F, Key 9101 MMA Cold Temperature Accelerator must be used in addition to the amount of hardener used at the 40°F or 30°F level. As a rule of thumb, add about ½ oz by volume per gallon of resin @ 39° to 32°F, up to 2.0 oz by volume per gallon @ -20°F, increasing the quantity gradually in a consistent linear progression as the temperature decreases. **VERY IMPORTANT: Key 9101 MMA Cold Temperature Accelerator** MUST be added to the MMA resin and thoroughly blended BEFORE adding the **Key 9000 MMA Hardener**, or hazardous decomposition may occur (i.e., violent foaming). **Key 9101 MMA Cold Temperature Accelerator** will cause yellowing, it is advised to use pigmented MMA resin versus clear to reduce the appearance of yellowing, darker colors will be less affected than lighter colors.

Key 9110 MMA Primer Adhesive Additive: Recommended for coating glazed tile or stainless steel when adequate surface preparation can not be performed. Add 0.25% by volume (or 0.30 ounces by volume per gallon) to **Key 9112 MMA** during mixing. Note: **Key 9110 MMA Primer Adhesive Additive** will inhibit the cure time by 10-20 minutes or more depending on temperature and amount of **Key 9000 MMA Hardener** used. It is optional to increase amount of **Key 9000 MMA Hardener** to compensate if needed. As a rule of thumb, at 70°F increase amount of **Key 9000 MMA Hardener** approximately 25%, at 40°F and colder increase approximately 100%.

Key 9112 MMA is spread evenly on the surface (no puddles) with notched trowels, and/or squeegees and back rolled with short nap mohair rollers at no less than 100 sq ft/gal. on very absorbent surfaces. Two coats may be necessary to get an even, resin-rich surface to bond with the next layer. It is recommended to broadcast 16-30 mesh sand (approximately 1-2 lbs/100 sq ft) into the wet primer. This will help in the application of the coating or troweled mortar. Apply next application only after the primer is completely hardened.

1. Mixing and Application of **Key #9112 MMA Primer**
    a. Add Key #9000 MMA Hardener to Key #9112 MMA Resin following mix ratio chart above. Mix material for approximately 2-3 minutes using a slow speed drill and “Jiffy” blade.
    b. Pour mixed resin in ribbons and spread evenly (no puddles) with notched squeegee at 100 ft^2/gallon. Back roll with short nap (1/4”-3/8”) mohair roller. Very absorbent surfaces may require two coats to get an even, resin-rich surface to bond with the next layer. Broadcast lightly with 16-30 mesh quartz sand (approximately 1-2 lbs/100 ft^2). Apply next layer only after the primer has completely hardened.

Key #9418 MMA requires the addition of **Key #9000 MMA Hardener** to start the hardening process. The amount of hardener must be adjusted to the respective surface temperature (see table below). At temperatures below 40°F, **Key #9101 MMA Cold Temperature Accelerator** must be used in addition to the amount of hardener used at the 40°F level (about ½ oz by vol./gal. @ 32°F up to 2.0 oz by vol./gal. @ -20°F).

KEY 9418 MMA Resin
Mix Ratios, Pot Life and Hardening/Temperature

Temp. (°F) of Resin, Air & Floor Surface	Hardener by Volume (oz.) Per Gallon of 9418 Resin	Pot Life (min.)	Hardness Time (min.)
+30°F	9-10 vol. oz.	Approx. 30	Approx. 60
+40°F	7-9 vol. oz.	Approx. 30	Approx. 60
+50°F	5-7 vol. oz.	Approx. 25	Approx. 55
+60°F	4-5 vol. oz.	Approx. 20	Approx. 50
+70°F	4 vol. oz.	Approx. 15	Approx. 40
+80°F - 90°F	4* vol. oz.	Approx. 10	Approx. 40

*Do not use less than 4 oz. Key 9000 MMA Hardener by volume unless confirmed with jobsite testing. Consult with Key Resin Technical Services if performing mix ratio by weight instead of by volume.

Typical Batching Size for "SL" Slurry

Material	% Parts by Wt.	Wt.	Volume
Key 9418 MMA	26.7	8.2 lbs.	1.0 gal.
Key Self Leveling Filler	72.0	15-22.0 lbs.	1.0-1.5 gal
Pigment Pack	N/A	N/A	6.4 Vol. oz
Hardener	Varies w/temp.	Varies w/temp.	Varies w/temp.

Yield	2.0 gallons slurry
Coverage: 1/16"	50-52 sq ft
1/8"	24-26 sq ft
3/16"	18 sq ft

2. Mixing and Application of **Key #9418 MMA SL Bodycoat Slurry**
    a. Add Key Self-Leveling Filler to Key #9418 MMA and mix thoroughly 1-2 minutes using a slow speed drill and "Jiffy" blade. Add Key #9000 MMA Hardener to Key #9418 MMA Resin following mix ratio chart above and continue mixing for approximately 1-2 minutes. Refer to Key #9000 Master Mixing Chart for additional mixing information.
    b. Pour mixed resin slurry in ribbons and spread evenly with gauge rake or trowel at specified thickness (1/16"-3/16", or thicker as required). Immediately back roll with loop roller or spiny roller. Immediately broadcast to excess with colored quartz. Be careful not to clump aggregate. It is recommended to use 20-30 mesh quartz to ensure adequate through-curing. If smaller quartz is used, be VERY CAREFUL to broadcast in multiple successive passes for each batch, gradually building up the layer of quartz. CAUTION: Smaller size aggregate is known to result in random areas that do not cure properly, resulting in sticky areas that must be removed and patched before proceeding with the installation process. Key Resin ***strongly advises*** that only the larger size broadcast aggregate be used.
    c. Apply next layer or topcoats only after resin has completely hardened. Sweep and vacuum loose quartz before topcoating.

Key #9526 MMA requires the addition of **Key #9000 MMA Hardener** to start the hardening process. The amount of hardener must be adjusted to the respective surface temperature (see table below). At temperatures below 40°F, **Key 9101 MMA COLD TEMPERATURE ACCELERATOR** must be used in addition to the amount of hardener used at the 40°F or 30°F level.

KEY 9526 MMA Resin
Mix Ratios, Pot Life and Hardening/Temperature

Temp. (°F) of Resin, Air & Floor Surface	Hardener by Volume (oz.) Per Gallon of 9526 Resin	Pot Life (min.)	Hardening Time (min.)
+30°F	4 vol. oz.	Approx. 40 min.	Approx. 60 min.
+40°F	3-4 vol. oz.	Approx. 30 min.	Approx. 50 min.
+50°F	3-4 vol. oz.	Approx. 25 min.	Approx. 40 min.
+60°F	2*-3 vol. oz.	Approx. 20 min.	Approx. 20 min.
+70°F	2*-3 vol. oz.	Approx. 10-15 min.	Approx. 15 min.
+80°F - 90°F	2*-3 vol. oz.	Approx. 8-10 min.	Approx. 15 min.

*Do not use less than 2 oz. Key 9000 MMA Hardener by volume unless confirmed with jobsite testing. Consult with Key Resin Technical Services if performing mix ratio by weight instead of by volume.

KEY 9101 MMA COLD TEMPERATURE ACCELERATOR: At temperatures below 40°F, Key 9101 MMA Cold Temperature Accelerator must be used in addition to the amount of hardener used at the 40°F or 30°F level. As a rule of thumb, add about ½ oz by volume per gallon of resin @ 39° to 32°F, up to 2.0 oz by volume per gallon @ -20°F, increasing the quantity gradually in a consistent linear progression as the temperature decreases. **VERY IMPORTANT: KEY 9101 MMA COLD TEMPERATURE ACCELERATOR** MUST be added to the MMA resin and thoroughly blended BEFORE adding the **KEY 9000 MMA HARDENER**, or hazardous decomposition may occur (i.e., violent foaming). **KEY 9101 MMA COLD TEMPERATURE ACCELERATOR** will cause yellowing, it is advised to use pigmented MMA resin versus clear to reduce the appearance of yellowing, darker colors will be less affected than lighter colors.

3. Mixing and Application of **Key #9526 MMA Topcoat(s)**
    a. Add Key #9000 MMA Hardener to Key #9526 MMA Resin following mix ratio chart above. Mix material for approximately 2-3 minutes using a slow speed drill and "Jiffy" blade.
    b. Pour mixed resin in ribbons and spread with notched squeegee or trowel at 65 ft^2/gallon (or specified coverage rate). Immediately back roll with short-medium nap (1/4"-3/8") mohair roller. Apply next topcoat only after the resin has completely hardened.
    c. Mix Key #9526 as above and pour mixed resin in ribbons and spread with squeegee or trowel at 80-125 ft^2/gallon as required to match approved project sample. Immediately back roll with short nap (1/4"-3/8") mohair roller.
    d. Full chemical cure and maximum resistance are achieved in about two hours.
    e. If a recoat window exceeds 48 hours, lightly wipe down surface with Key #9001 MMA Monomer before application of next topcoat.

Consult with product data sheet or Key Resin Technical Service when using other resins for topcoating: **Key #9522 MMA, Key #9528 MMA.**

Cove Base: Refer to Key MMA Cove Base Installation Instructions.