KEY RESIN COMPANY

Installation Instructions

Key Vinyl Ester 125-150 mil Vertical Lining

I. GENERAL INFORMATION

KEY VINYL ESTER VERTICAL LINING is a high performance lining system that consists of **KEY VINYL ESTER** resin. **KEY VINYL ESTER VERTICAL LINING** produces a finish that will minimize chemical penetration and provide maximum protection from chemical attack.

II. SURFACE PREPARATION

Surface Preparation is the most critical portion of any successful resinous flooring or lining system application. All substrates must be properly prepared to a minimum CSP-5 surface profile (or 40-60 grit sandpaper) as outlined in **KEY RESIN COMPANY'S TECHNICAL BULLETIN #1.** Specific attention should be paid to the following:

A. Concrete placement
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 and humidity conditions of the area to receive the lining system should be checked. DO NOT ATTEMPT APPLICATION IF SUBSTRATE TEMPERATURE IS WITHIN 5ºF OF DEW POINT OR IF RELATIVE HUMIDITY IS GREATER THAN 85%. An optimum room temperature of 75ºF with a minimum slab temperature of 50ºF is required for proper cure of the resin lining system.

III. MATERIAL QUANTITIES

A. Guideline System Requirements for 1000 ft²

	Key Vinyl Ester Vertical Lining System	*Qty./ 1000 ft²*	*Coverage*
1.	*Key Vinyl Ester Primer*	5-6 gallons	160-200 ft²/gallon
2.	*Key Vinyl Ester Binder/Coating (clear)*	25 gallons	40 ft²/batch
3.	*Key Vertical Filler Powder (+ oxide pig. pack)*	500 pounds	
4.	*Fiberglass Chopped Strand Mat (1.5 oz.)*	1000 ft²	
5.	*Key Vinyl Ester Binder/Coating (clear)* (Saturant)	10-12 gallons	80-100 ft²/gallon
6.	*Key Vinyl Ester Binder/Coating (clear)*	25 gallons	40 ft²/batch
7.	*Key Vertical Filler Powder (+ oxide pig. pack)*	500 pounds	
8.	*Key Vinyl Ester Smoothing Liquid* (styrene)*	1-2 gallons	
9.	*Key Vinyl Ester Binder/Coating* (pigmented)	10-12 gallons	80-100 ft²/gallon

*Note: During placement of the second mortar lift, steps #6 & #7, after each batch is placed while mortar is still wet, smooth trowel marks and close pinholes with a roller saturated with Smoothing Liquid (styrene).

Note: Fiberglass 1.5 oz chopped strand mat roll = 1200 ft², 240'x5' roll, for additional fee may be sawed in half. Special order only with additional lead time. Fiberglass 24 oz woven roving also available, call for details. Special order only.

IV. INSTALLATION

IMPORTANT: Make absolutely certain that the substrate and all mixing vessels and equipment are free of any epoxy contamination (cured or uncured) and free of moisture. If the substrate has existing cured epoxy that cannot be removed, sand thoroughly and apply two pinhole-free coats of ***Key Universal Primer*** as a barrier.

A. Priming

Key Vinyl Ester Primer must be used prior to applying the **Key Vinyl Ester Vertical Lining System**. Before priming, make sure the substrate has been properly prepared and is thoroughly dry. Any patching or filling should be done at this time. When patching an area to be covered with Vinyl Ester, it is best to use a patching mix consisting of Key Vinyl Ester Resin (catalyzed) and blended aggregate or **Key Vertical Filler Powder**.

1. Mixing
   a. Thoroughly mix each component prior to combining.
   b. Mix 3.0 to 4.0 ounces of Part B (Catalyst) per gallon of Part A (Resin) with a low speed electric drill mixing paddle. This ratio can be varied slightly to suit temperature and cure conditions.
2. Application
   Spread primer thinly but evenly on substrate or on base area with a paint roller or brush. Do not puddle on horizontal areas.
3. Apply first mortar coat while primer is still tacky, otherwise a light sand broadcast is recommend to aid troweling. If more than 48 hours pass before recoating unbroadcasted primer, lightly sand and solvent wipe area before topping. ***Important:*** *If application occurs in direct sunlight, the primer, mortar coats and subsequent topcoat(s) must each be applied within 6 hours or sanding/solvent wipe must be performed.*

Caution! ***Key Vinyl Ester Binder/Coating*** **emits fumes, which are non-toxic but can be irritating to the eyes and nose. To prevent this irritation, any working area should be well ventilated.**

Note: As specified in the general specifications to the architect, the general contractor is responsible for providing ventilation and he should have made certain that such fumes will not enter any air conditioning ducts and that any food stuffs or other absorbent materials are removed. If this has not been done, it is the applicator's responsibility to insure that the general contractor has followed the architect's specifications.

B. First Mortar Coat

1. Mixing ***Key Vinyl Ester Binder/Coating (clear)***
   a. Thoroughly mix each component prior to combining.
   b. Mix 3.0 to 4.0 ounces of Part B (Catalyst) per gallon of Part A (Resin) with a low speed electric drill mixing paddle. This ratio can be varied slightly to suit temperature and cure conditions. Add oxide pigment pack and continue mixing to thoroughly blend.
   c. Add 20 lbs. ***Key Vertical Filler Powder*** per gallon of ***Key Vinyl Ester Binder/Coating (clear)*** and continue mixing until thoroughly blended. Quantity of powder can be varied as needed. Mortar should have the consistency of creamy peanut butter.

2. Application

   a. Use a 3”x14” cement finishing trowel or plasterer’s trowel. Apply a 1/16” (65 mil) thick mortar coat to a smooth, even finish. Press one layer of ***Key Chopped Strand Mat*** (1½ ounce weight) into the wet basecoat. Lap edges by 1 inch. Use a dry short/medium nap roller and press the mat firmly into the mortar coat to remove all air pockets and wrinkles. Saturate the fiberglass with Key Vinyl Ester Binder/Coating (Clear), using “dip and roll” method with a short/medium nap roller. Roll thoroughly until the mat has lost its white color and turns translucent. Use enough resin to wet out the mat, but do not allow the saturant to puddle on horizontal areas. Immediately roll the wet fiberglass with a ribbed roller to remove any trapped air or wrinkles.

      Note: Ribbed rollers available from Key Resin as special order

   b. Allow basecoat mortar to cure firm, typically 12 hours at 75 degrees F.

Note: Should any patching be required because of failure of initial adhesion (due to earlier undetected moisture or contaminates), this can be readily accomplished. The area to be repaired should be “cut-out”. If the required patch is made because of lack of adhesion, the basic reason should be determined and corrected at this time. After proper preparation, new material is placed in the area and troweled using the procedure above. Before applying the second mortar coat, examine the fiberglass for any air bubbles or blisters. These must be cut out and repaired, using the procedure above. All overlapped seams should be sanded flat, removing any protruding fiberglass strands. The second mortar coat may emphasize any imperfections in the fiberglass. If excessive blistering of the basecoat mortar/reinforcement has occurred, it may have been caused by inadequate rolling with a ribbed roller.

B. Second Mortar Coat

1. Mixing ***Key Vinyl Ester Binder/Coating (clear)***
   a. Thoroughly mix each component prior to combining.
   b. Mix 3.0 to 4.0 ounces of Part B (Catalyst) per gallon of Part A (Resin) with a low speed electric drill mixing paddle. This ratio can be varied slightly to suit temperature and cure conditions. Add oxide pigment pack and continue mixing to thoroughly blend.
   c. Add 20 lbs. ***Key Vertical Filler Powder*** per gallon of ***Key Vinyl Ester Binder/Coating (clear)*** and continue mixing until thoroughly blended. Quantity of powder can be varied as needed. Mortar should have the consistency of creamy peanut butter.

2. Application

   a. Use a 3”x14” cement finishing trowel or plasterer’s trowel. Apply a 1/16” (65 mil) thick mortar coat to a smooth, even finish. Immediately after placing each batch, it is optional to use a short/medium nap roller saturated with “Smoothing Liquid” (styrene) to smooth trowel marks and close pinholes.

   b. Allow mortar to cure firm, typically 12 hours at 75 degrees F.

C. Topcoating

1. Mixing ***Key Vinyl Ester Binder/Coating (pigmented)***
   a. Thoroughly mix each component prior to combining.
   b. Mix 3.0 to 4.0 ounces of Part B (Catalyst) per gallon of Part A (Resin) with a low speed electric drill mixing paddle. This ratio can be varied slightly to suit temperature and cure conditions.
   c. ***Material must be applied within 20-30 minutes after mixing, depending on catalyst ratio and temperature.***
2. Application
   a. Use “dip and roll” procedure with a short/medium nap roller and spread at a coverage rate of 80-100 ft² per gallon to match project specifications or approved sample.
   b. Back roll with a short nap roller if necessary.

3. Allow to cure 12 hours at 75 degrees F before applying optional second coat (if needed to match project specifications or approved sample).
4. Allow to cure 36 hours at 75 degrees F before placing into service.

Additional Notes

Application of Key Vinyl Ester Vertical Lining in direct sunlight may lead to blistering, pinholes, or wrinkling due to outgassing of air in the concrete and elevated substrate temperatures. Double priming, shading, or scheduling evening application may be required. In order to prevent curing problems with styrene based products, air movement and/or ventilation must be maintained not only during application but also after application until the system has totally cured. This will prevent high concentrations of styrene causing the inhibiting/retarding of the cure of the system.

If installation is absolutely necessary in temperatures colder than 50ºF, enclose the area with clear polyethylene and heat with ***electric*** heaters as necessary to bring the substrate temperature up to a minimum 50ºF before beginning application work. Do not use heaters with open flame, to avoid risk of igniting styrene fumes. ***Important:*** Be certain that the substrate is completely dry. Also, rising temperature within the concrete may cause a release of air into the resin, causing pinholes or bubbles to form. It is best to wait until the substrate temperature has stabilized before applying resin. Maintain the elevated temperature until full cure is achieved.