



KOSTER VAP I® 2000 FAQs

KOSTER VAP I® 2000 BASICS

What is KOSTER VAP I® 2000 Moisture Control Coating?

KOSTER VAP I® 2000 is a one-coat, membrane-forming, moisture vapor control system consisting of a unique combination of epoxy resins and other compounds formulated to prevent floor covering failures on concrete slabs with elevated levels of moisture.

How do KOSTER VAP I® 2000 epoxy coatings block moisture from concrete?

KOSTER VAP I® 2000 epoxy coatings form a thin, continuous, dense layer on an abraded concrete floor surface. The KOSTER VAP I® 2000 coating has very low moisture permeability and is strongly bonded to the concrete. Moisture can only diffuse very slightly through the coating, so adhered floor coverings and decorative coatings are protected from high moisture in the concrete.

Do KOSTER VAP I® 2000 coatings meet any nationally-recognized performance standards?

KOSTER VAP I® 2000 coatings meet or exceed the performance requirements in ASTM F3010-13 *Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings*. Due to their unique formulations, KOSTER VAP I® 2000 coatings are extremely effective at blocking moisture, providing less than 0.1 perms moisture vapor permeance.

Why are there several KOSTER VAP I® 2000 products?

KOSTER VAP I® 2000 products have different hardening times designed to meet your project schedule:

KOSTER VAP I® 2000 hardens in approximately 12 hrs.

KOSTER VAP I® 2000FS hardens in approximately 4 to 5 hrs.

KOSTER VAP I® 2000UFS hardens in approximately 2 to 4 hrs.

KOSTER VAP I® 2000 Zero VOC hardens in approximately 12 hrs.

Hardening times are affected by temperature of the concrete substrate and ambient conditions – higher jobsite temperatures will cause KOSTER VAP I® 2000 epoxy coatings to harden more quickly and cold temperatures can cause slow hardening.

Are KOSTER VAP I® 2000 coatings VOC compliant?

KOSTER VAP I® 2000 coatings are compliant with all state and federal VOC regulations, having VOC content of <10 g/L, which allows installation in sensitive areas such as hospitals, schools, and grocery stores. LEED Indoor Environmental Quality Credits are available for EQ 4.2 (Low-Emitting Materials, Paints and Coatings). KOSTER VAP I® 2000 FS and KOSTER VAP I® 2000 Zero VOC are specially formulated to meet requirements for 0 g/L VOCs.

Are KOSTER VAP I® 2000 coatings suitable for use under all types of floor finishes?

When installed according to KOSTER installation instructions, KOSTER VAP I® 2000 epoxy coatings provide excellent moisture blocking for virtually all types of flooring. KOSTER VAP I® 2000 coatings have been successfully used under many types and brands of low permeance flooring such as vinyl composition tile, luxury vinyl tile, vinyl sheet goods, rubber tile and sheet, polymer-backed carpet tile and roll goods, wood flooring, and under polymer coatings including epoxies, PMMA, and polyurethanes.

Is concrete moisture testing required? Is there a concrete moisture limit for KOSTER VAP I® 2000 application?

Moisture testing is not required before KOSTER VAP I® 2000 installation. KOSTER VAP I® 2000 coatings have no upper limit for water vapor emission from concrete floor slabs and can be applied to concrete slabs with relative humidity up to 100% RH. KOSTER VAP I® 2000 coatings provide protection from sustained exposure to pH 14.

KOSTER VAP I® 2000 COATINGS AND CONCRETE SLABS

Is KOSTER VAP I® 2000 suitable for all concrete slabs?

KOSTER VAP I® 2000 coatings can be used successfully on slabs-on-ground (above grade and below grade), elevated structural slabs, slabs on steel decks, toppings on precast planks, and other constructions. If true hydrostatic water pressure is present at a slab below grade, contact the KOSTER Technical Team for advice on moisture mitigation in that situation. Concrete must be structurally sound, free of deleterious materials, and capable of withstanding abrasive shot blast surface preparation. Concrete that has been contaminated with grease, oil, solvents or other substances that inhibit bond may require special pre-treatment before KOSTER VAP I® 2000 installation. Some concretes may not be suitable for application of KOSTER VAP I® 2000 coatings including: concrete containing active alkali-silica reactions (ASR); other expansive reactions; excessive contamination; low-strength concrete; aerated cellular lightweight concrete. Concrete with steel fibers is generally not a suitable substrate for direct installation of VAP coatings. Contact the KOSTER Technical Team for assistance before starting the job if steel fibers are known to be in the concrete.

Should concrete be analyzed before deciding on KOSTER VAP I® 2000 treatment to control moisture?

It is the responsibility of the facility owner to provide a suitable concrete substrate for installation of KOSTER VAP I® 2000 moisture control systems. Although not required, KOSTER suggests that concrete cores can be obtained from a floor and evaluated for properties that may indicate if there exist potential problems before installation of KOSTER VAP I® 2000 coatings. Contact the KOSTER Technical Team for a list of suggested tests and evaluations.

What happens to the moisture in the concrete under a KOSTER VAP I® 2000 coating?

Coated concrete that has an effective vapor retarder directly beneath the slab, or concrete in steel deck, can have a high moisture condition within the body of the sealed concrete for many years without deleterious effects. With sufficiently high moisture, cement in the concrete will continue to hydrate and embedded steel reinforcement will remain protected from corrosion due continued high internal concrete pH. (Cracks or carbonation that reaches embedded steel, or excessive soluble salts, can accelerate steel corrosion in concrete. KOSTER VAP I® 2000 is not a treatment designed for corrosion prevention.)

What about elevated structural slabs?

An elevated concrete structural slab that is sealed on top with a KOSTER VAP I® 2000 epoxy coating may continue to dry from the bottom concrete surface depending on environmental conditions in the space below the floor (typically plenum space between the concrete and a suspended ceiling). Over many years, the internal slab moisture condition generally will decrease.

Can KOSTER VAP I® 2000 coatings be used on slabs-on-ground with no vapor retarder beneath the slab?



Yes, KOSTER VAP I® 2000 coatings are effective when properly installed on slabs even without a vapor retarder beneath the slab.

How old must concrete be before applying KOSTER VAP I® 2000 moisture control coating?

Concrete must be seven days old and cured to have sufficient strength at the surface to withstand shotblasting.

What about concrete that contains polymer fibers?

There are many types of fibers that are sometimes used in concrete as secondary reinforcement to control cracking or provide additional structural properties such as increased flexural strength. Short polymer microfibers and longer polymer macrofibers can become exposed after shot blasting. If these fibers stick up from the surface of the concrete, they can cause KOSTER VAP I® 2000 coatings to “tent” or “bubble” at the fibers. Exposed polymer fibers can be removed by burning with a torch, if permitted by jobsite work rules and applicable laws. Heat guns generally are ineffective for removing exposed fibers. Contact the KOSTER Technical Team for assistance if fibers are encountered on a job.

Can KOSTER VAP I® 2000 coatings block moisture from lightweight aggregate concrete slabs in steel deck?

Yes, KOSTER VAP I® 2000 coatings are just as effective on lightweight concrete slabs as they are on normal weight concrete slabs. Special care may be needed to avoid excessive surface roughness when shot blasting lightweight aggregate slabs, but otherwise they can be treated with KOSTER VAP I® 2000 epoxy coatings like normal slabs.

Does trapped moisture increase in untreated areas under walls and cabinets?

Moisture vapor within a slab does not increase in untreated areas. Moisture also does not move much horizontally in most concrete slabs-on-ground and elevated slabs. So, untreated areas adjacent to treated areas do not become “worse” than before application of KOSTER VAP I® 2000 epoxy coatings.

KOSTER VAP I® 2000 COATING INSTALLATION

Does KOSTER offer training for the installation of KOSTER VAP I® 2000 coatings?

Yes, KOSTER American offers intensive classroom and hands-on training for you to become an approved KOSTER VAP I® 2000 applicator. KOSTER VAP I® 2000 products are sold only to trained applicators. Contact KOSTER American Corp. at 757-425-1206 for upcoming training dates.

Why do I need to shot blast concrete before applying KOSTER VAP I® 2000 epoxy coatings?

Steel shot blasting produces rough, fractured surfaces of hardened cement paste and aggregates that provides the best profile for adhesion of KOSTER VAP I® 2000 epoxy coatings. Troweled, sanded, buffed, or ground surfaces do not have the fractured roughness suitable for best adhesion.

Can I profile with a diamond grinder rather than a shot blast machine?

Diamond grinding should only be used in areas not accessible by shot blasting. Grinding produces flat surfaces of aggregates and only slightly roughens the hardened cement paste. KOSTER VAP I® 2000 epoxy coatings do not adhere as well to ground surfaces as to shot blasted surfaces.

Why is ICRI Concrete Surface Profile CSP3 specified? Isn't rougher better?

An ICRI CSP3 profile produced by steel shot blasting has a specific depth profile. Blasting deeper can expose voids in the concrete and create deep pockets where air bubbles are unable to escape completely as KOSTER VAP I® 2000 epoxy hardens. These are places where air bubbles, pinholes, and possible blisters can form, which compromise the effectiveness of the KOSTER VAP I® 2000 coating to block moisture. Also, a rougher surface cannot be coated to the necessary film thickness at the recommended coverage rates of 150 or 100 ft²/gal. There will usually be some variation across a concrete slab as it is shot blasted. However, ICRI CSP3 is the target surface profile for best KOSTER VAP I® 2000 coating performance.

How are KOSTER VAP I® 2000 coatings installed?

KOSTER VAP I® 2000 coatings are provided in metal cans, precisely proportioned in two parts – resin part A and hardener part B. The two parts must be thoroughly mixed in these proportions according to KOSTER installation instructions before spreading on the floor. Mixed KOSTER VAP I® 2000 is spread with a notched squeegee at specific coverage rates, backrolled to a smooth, uniform thickness using an epoxy-rated, non-linting roller, then allowed to harden.

If there are pinholes in an application of KOSTER VAP I® 2000, does it mean that I have to apply a second coat?

Always inspect hardened KOSTER VAP I® 2000 coatings to ensure it is a continuous, adequately thick membrane free of visible defects. A properly applied KOSTER VAP I® 2000 coating should have a glass-like, smooth, glossy surface free of pinholes, bubbles, ridges, or other defects. Repair any defects in accordance with KOSTER installation instructions before proceeding with finish flooring installation.

Can I dilute KOSTER VAP I® 2000 with solvent to get better concrete penetration?

No. Today's KOSTER VAP I® 2000 products are professionally formulated to block moisture by forming an effective barrier on the concrete surface. *Never* dilute KOSTER VAP I® 2000 epoxy with solvent such as xylene, toluene, acetone, or similar substances for several reasons: 1) Solvents increase the permeability of KOSTER VAP I® 2000 and therefore weaken its ability to block moisture; 2) Solvents carry some of the KOSTER VAP I® 2000 into concrete below the surface and therefore dilute what should be a dense epoxy layer designed to block moisture; 3) KOSTER VAP I® 2000 products are sold specifically as Low-VOC or Zero-VOC materials and adding solvent disqualifies their use in these categories; 4) Using solvents increases respiratory hazards that workers may be exposed to during KOSTER VAP I® 2000 application and may contribute to indoor air pollution; 5) Solvents may contribute to coating failure through blister formation.

KOSTER VAP I® 2000 COATINGS AND FLOORING INSTALLATION

Must I put a self-leveling underlayment on KOSTER VAP I® 2000?

Adhered floor coverings most often use adhesives designed to be applied on cementitious surfaces with some absorption for the water or solvents in the adhesives. A thin layer of self-leveling underlayment (SLU) or cementitious skim coat (SC) is usually installed on top of the KOSTER VAP I® 2000 coating to meet this requirement. KOSTER VAP I® 06 Primer must be applied in a thin layer (650-800 ft²/gal) onto the KOSTER VAP I® 2000 coating to adhere cementitious compounds to a cured KOSTER VAP I® 2000 coating. KOSTER VAP I® 2000 coatings can be covered directly with certain types of decorative, colored or functional polymer coatings or with adhesives designed for non-porous surfaces. Consult the KOSTER Technical Team for details.

What about joints and cracks?

Proper treatment of joints and cracks is critical to provide moisture protection for applied floor finishes and to avoid “mole trail bumps” or “reflections” of cracks and joints through applied floor finishes.

How do I treat sawcut control joints when applying KOSTER VAP I® 2000?

Sawcut control joints are designed and located to permit concrete to crack under the straight-line sawcut as the concrete dries and shrinks. Some saw-cuts do not “activate” (they do not actually crack) while others do, controlling where the concrete cracks. Control joints that have activated (cracked) should be checked for vertical displacement: Place a foot-long straightedge on the concrete across the crack—if it rocks up and down, then the crack is vertically displaced and must be repaired before KOSTER VAP I® 2000 application. Consult the KOSTER VAP I® 2000 Installation Instructions for details how to repair the crack before applying KOSTER VAP I® 2000 epoxy coating. Control joints that did not activate (not cracked) can be treated by cleaning then applying a KOSTER VAP I® 2000 coating to the walls of the sawcut joint, followed by filling the joint with thickened KOSTER VAP I® 2000. Follow instructions for use of KOSTER TA Fiber thickening agent for this use.

Do movement joints and non-movement joints get treated differently?

Joints designed to accommodate building movement are called “isolation joints” and are specified by the architect or structural engineer to allow freedom of vertical and/or horizontal movement between the floor and adjoining building members such as walls, columns, footings, or other points of restraint. Isolation joints are typically filled with preformed joint filler. Never attempt to seal over isolation joints with KOSTER VAP I® 2000 coatings because KOSTER VAP I® 2000 is not designed to accommodate movement. Consult KOSTER technical literature and the KOSTER Technical Team for instructions on KOSTER products and methods for treating movement joints.

How are random cracks in concrete treated when applying KOSTER VAP I® 2000?

Thin cracks due to ordinary drying shrinkage that are less than approximately 10 mils (0.010-in.) width and not vertically displaced can simply have normal application of KOSTER VAP I® 2000 epoxy over the concrete and the crack. Spread with the appropriate notched squeegee for the specified coverage rate and backroll. The KOSTER VAP I® 2000 epoxy will fill the upper portion of the crack and provide a continuous membrane. Inspect the hardened KOSTER VAP I® 2000 coating to be sure there are no bubbles or gaps in the coating at the crack. Apply an additional coat of KOSTER VAP I® 2000 where needed to maintain a continuous hardened membrane barrier to moisture.

What about cracks wider than 10 mils?

Drying shrinkage cracks wider than approximately 10 mils (0.010-in.) may be vertically displaced due to curling. Place a foot-long straightedge on the concrete across the crack—if it rocks up and down, then the crack is vertically displaced and must be repaired before KOSTER VAP I® 2000 application. Consult the KOSTER VAP I® 2000 Installation Instructions for details how to repair the crack before applying KOSTER VAP I® 2000 epoxy coating.

Can a KOSTER VAP I® 2000 coating be used over a structural crack?

Cracks can be caused by building structural issues such as negative movement slab bending over beams or from structural movement. Epoxy-filling a structural crack may result in cracking or spalling of adjacent concrete. Consult the KOSTER Technical Team for advice if structural cracks are encountered. A special repair may be necessary in such areas.



Can KOSTER VAP I® 2000 products be used for radon mitigation?

No, KOSTER VAP I® 2000 epoxy coatings are not recommended or approved for radon mitigation. ASTM and EPA Guidelines for radon remediation do not recommend coatings on the surface of concrete slabs. See [ASTM E1465-08a Standard Practice for Radon Control Options for the Design and Construction of New Low-Rise Residential Buildings](#) and [ASTM E2121-13 Standard Practice for Installing Radon Mitigation Systems in Existing Low-Rise Residential Buildings](#) and the EPA *Consumer's Guide to Radon Reduction*.

Can KOSTER VAP I® 2000 coatings be used as a finished floor covering?

KOSTER VAP I® 2000 moisture control coatings are not intended as wearing surfaces. KOSTER manufactures products for use as wearing-surfaces including decorative chip and quartz systems, shop-floor systems, anti-skid, and anti-slip systems. See the KOSTER website pages devoted to our finish floor coatings:

http://www.kosterusa.com/us_en/foa-96-49/floor+coatings.html