

Subfloor Examination and Preparation

FAILURE to read and follow all instructions will lead to the **FAILURE** of the epoxy or flooring installation. This is not a **FAILURE** of the product but insufficient subfloor preparation.

Any product will only stick as well as the substrate it is applied to. Meaning BEFORE installation, an examination of the concrete subfloor for moisture content, color, cleanliness, porosity, and pre-existing residues must be completed. STAUF strongly recommends several tests including, but not limited to the STAUF Epoxy Test Kit, Calcium Chloride and RH moisture test, and core drilling for a general understanding and determination of the concrete slab condition. Only after completing these tests can the proper subfloor preparation be determined.

New Concrete

Suppose a new slab was poured less than six months before the intended installation and has never received any surface treatment or had any flooring installed over it. If the slab is in contact with the ground, it will need an approved vapor barrier directly underneath the slab. Confirm that there is no hydrostatic pressure. The slab should be free of all construction contaminants such as mud, dirt, curing compounds, paint overspray, drywall mud, oil, grease, etc. Ensure only water-based sweeping compounds have been used since oil-based or chemically treated sweeping compounds will contaminate the slab.

Use a diamabrush or similar device to remove all contaminants and create a concrete surface profile 2/3 (CSP). Unlike a sander or grinder, the diamabrush does not push the dust back into the pores of the concrete. Use a HEPA filter vacuum attached to the machine and to collect all concrete dust. Deep vacuum and damp tack the entire floor until completely clean. Do not flood the slab with water, as this will create a slurry that will penetrate the pores.

Perform both CaCl and RH moisture tests according to ASTM standards F1869-10 and F2170-11, before or after the described surface preparation. Additionally, perform epoxy bond tests using the STAUF Epoxy Test Kit on all slabs over 5,000 SF. Record all test results and submit with the application for the STAUF Warranty. After installation of primer or sealer, the appearance may not be uniform due to varying degrees of porosity in the slab, which does not affect the subsequent installation.

Existing Concrete

If an existing concrete was poured over six months ago and/or has received a prior surface treatment or floor covering. In this case, it is essential to understand what contaminants might be present and how deep they might have penetrated the slab. This will determine the necessary mechanical treatment of the concrete before the installation of the epoxy sealer. Take core samples by following ASTM C42M-13 procedures for obtaining cores and test for contaminants according to Technical Information #16.

In addition, any slab poured over ten years ago might or might not have an intact vapor barrier underneath. Verify with the building owner or representative whether or not a vapor barrier was installed, what type, and when. Then perform CaCl and RH moisture tests according to ASTM standards. RH readings over 90% and/or CaCl readings over 12# in some or all areas of an existing slab strongly indicate a missing or compromised vapor barrier.

Depending on the results of the before-mentioned core test, it will be necessary to either diamabrush, shot blast, or shave the concrete before the installation of primer or sealer. Examples of proper surface preparation are discussed below but are only a guideline. Additional work might be necessary. Only the installer at the job site can determine the extent of the required subfloor preparation.

a. Core Drill Test

The results from the core drill tests will reveal the amount of organic and inorganic contaminants in the slab and how deep these contaminants reach. Shot blasting can take up to 1/8" off the concrete; grinding and subsequent shot blasting will reach up to 3/16". Anything deeper will have to be removed using a shaver, grind to smooth out the surface, then shot blast to create the required CSP3 surface profile.



b. Extremely High Moisture and/or Missing Vapor Barrier

RH Moisture meters generally have a +/- 2% variance that elevates to +/- 3% once readings over 90% are acquired. A reading of 97% or higher means the slab is saturated with water and could be subject to hydrostatic pressure. Collect information from the building owner or operator to determine whether or not there is a vapor barrier underneath the concrete slab and if there have been signs of hydrostatic pressure or a compromised vapor barrier.



c. High Moisture without Hydrostatic Pressure

RH readings of 97% or less, CaCl readings of 18# or less, and the absence of organic and inorganic contaminants require only shot blasting to CSP3. This will create a surface profile that gives the primer or sealer a mechanical bond in addition to a chemical bond.

d. Sealers and Curing Compounds

Place a drop of water on the concrete. If it beads and does not absorb, that means there is either a compound on top of the concrete or a densified layer that should be removed. Diamond grinding to CSP2 or shot blasting to a CSP3 will usually remove enough concrete surface to open up the pores. Removal will create a surface profile that gives the primer or sealer a mechanical bond in addition to a chemical bond.



After the above-described surface preparations, use only water-based sweeping compounds since oil-based or chemically treated sweeping compounds will contaminate the slab. Deep vacuum and damp-tack the entire floor until completely clean. Do not flood the slab with water, as this will create a slurry that will penetrate the pores.

Visit www.staufusa.com for more information, or call Technical Services at (901) 820-0007.