

THE CONCRETE EVIDENCE PROGRAM

DEFINITION OF TERMS

Aggregate - Filler material such as sand and stone mixed with cement and water to form concrete.

Ambient Temperature - Temperature in the room at time of testing. Floor temperature can vary considerably from the ambient temperature and should always be checked before proceeding with sealing job. Ambient temperature will affect the pot-life of the material in the pail. Floor temperature will affect dry/cure time. Pigmented, water-based epoxies should never be applied to a floor below 55°F because the pigment may settle out before cure is achieved. Two component products should not be mixed if ambient temperature is above 95°F because material may thicken and harden in the pail before it can be used.

Amine - Class of organic chemical compounds containing nitrogen. Cycloaliphatic type amines are used as highest quality curing agents. They impart high durability, gloss, wear, color retention, chemical resistance and other important characteristics in the final coating.

Blush - Formation of salts which cause cloudiness or whitening of clear coatings. In some coatings and paints, certain ingredients combine with moisture in the air to form these salts which cause permanent clouding or whitening of the dried film.

Bonding - Adhesion of the concrete seal to the concrete. Water-based concrete seals are formulated to give excellent adhesion ("bonding") to clean, dry concrete. Old seals, paint, grease and laitance will interfere with this bonding and therefore, must be removed prior to seal application.

Broadcast - Evenly scattering sand over wet coating to create a non-slip surface. This can be done with a fine sieve or screen.

Cure - Conversion of a material from a plastic (flowable) state to a thermoset (hard) state.

Curing Agent - They initiate the cure and harden the epoxy. They combine (or polymerize) the epoxy to become part of the coating itself. The two parts must be carefully and completely mixed before application.

Curing Membrane - Thin, light-duty covering applied to prevent rapid evaporation of water from the newly placed concrete.

Emulsion - A stabilized mixture of two or more immiscible (insoluble) liquids held in suspension by small amounts of emulsifiers. Polymer emulsions are usually white, but dry clear. Emulsions can be broken (destroyed) by chemical shock (eg: large change in pH) and by thermal shock (e.g.: freezing).

Expansion Joint - Sawed, tooled or formed joints to accommodate slab expansion and contraction due to initial shrinkage and changes in moisture and temperature.

Fiber-Reinforced Concrete - Concrete with an aggregate including inert plastic, polymer, often fiber-glass strands which can increase strength and flex. Such strands, which may be exposed and lifted up by acid etching, can detract from the appearance and smoothness of floor coatings. To remove them after etching, allow to dry and burn off with propane gas torch (a propane weed burner works well).

Filler - Inert material added to a reactive material (the binder) in order to extend (increase volume, reduce cost). The material increases the viscosity (thickness), durability or otherwise changes properties of the neat material. Fillers such as sand, alumina, plastic beads, walnut shells, pebbles, marble chips, rubber pellets, graphite flake and iron fiber (iron-plate) have been used with 100% epoxy binders.

Fish Eyes - Small circular voids or depressions in a coating caused by spot contamination from the floor (the substrate), or from contamination falling down onto a still-wet coating. Contaminates include silicones, oils, greases, waxes, metal particles and water.

Grout - Cementations or polymeric material used to bond and fill gaps between precast flatwork (brick, tile, block, etc.) Modern polymer grout is replacing the more traditional concrete grout because of its superior bonding strength, faster set time, superior resistance to soiling and ease of clean-up.

High-Build Topping - Thicker coatings, usually at least 10-20 mils (20 thousandths of an inch) or even several inches thick; as opposed to "thin coats" provided by solvent-based products. All other things being equal, the thicker the coating, the longer it will last.

Hi-Pro Pad - Trademark of 3M. Very aggressive pad; more aggressive than standard black pad.

HMIS (Hazardous Material Identification System) -- System using numbers from 0 to 4 to indicate relative Health, Flammability and Reactivity Hazard of material. The final designation in letter form gives a code for recommended personal protective equipment.

Induction Time - Time required to initiate or activate curing reaction. An induction time can improve gloss and help insure uniform cure.

Inert - Does not react or chemically modify the system.

Isolation Joint - Separation of structural elements such as posts, columns, wall joints, machine foundations, sumps, and stairways from main slab to accommodate horizontal and vertical movement.

Jiffy Mixer - Brand name for a propeller-type stirrer with a protective ring.

Laitance - Weak surface layer generally present on new and old concrete. It is caused by lighter components rising to the surface as a result of vibration and trowelling when the concrete is first placed. Laitance gives the concrete a smooth appearance but, unless removed, can cause adhesion failures of seals and coatings.

Lid Puller - Tool used to remove lid from 5-gallon pail. Easier and safer than using a knife.

Mil - One-one thousandth of an inch. Used by coating specialists and architects to measure specific thickness of coating. One gallon of water, poured into a 1 sq. ft. tank, would be 1.604 inches or 1604 mils deep. Of course, as the water evaporates, the depth would get less and less. If we pour one gallon of a 50% solids product into our tank, we can assume that 0.50 will evaporate, and we will be left with 0.50×1604 or 802 mils. If we pour one gallon of 50% product over 2 sq. ft., the depth or coating thickness will be cut in half again $802/2 = 401$ mils. See "Concrete Evidence Info/Tech Bulletin MIL Thickness" for more information.

Neat - Reactive material, resin, polymer or coating containing no filler or extender. Neat concrete is simply cement and water.

Outgassing - Release of gas, usually air, from pores of concrete. Outgassing can cause bubbles in a coating.

Patch Recoat - Repairing by adding coats to selected areas without special preparation

and without recoating the entire floor.

Pigment - Substance that imparts color to another material. Most pigments are insoluble in organic solvents and water; hence, highly pigmented materials may require special stirring procedures.

Pinholes - Holes in a coating which extend entirely through the film. They can be caused by outgassing after applying one thick coating to an unprimed floor. Pinholes can cause early coating failure because the concrete is still exposed to the environment.

Plaster Mixer - High torque, low speed mixing unit which rotates the container against a fixed paddle (a.k.a. KOL mixal, paddle mixer, mortar mixer).

Polymer Grout - see "Grout".

Pot-Life - Time before product is no longer usable; work-life. If applied after the recommended pot-life, the final coating will be deficient in abrasion and solvent resistance.

Reactive - Functional reagent; material which causes chemical change and takes part in the reaction.

Relative Humidity - Roughly, the amount of water vapor in the air. High relative humidity will retard the cure of water-based sealers. Water-based products should never be applied if relative humidity is higher than 85% because the final coating could blush or haze.

Screed - Tool, usually long metal or wooden strip, to guide leveling and thickness of plaster, polymer mortars, concrete and other thick coatings.

Seamless Glaze - Tile-like thin, high-gloss top coating without grout, joints or edges which accumulate dirt and are often difficult to clean.

Serrated Squeegee - Squeegee (spreader) with notches or grooves used to apply even coating of thick products. Also called "gauge rake".

Shot-Blasting - Mechanical stripping or cleaning by special machines which fire round iron shot or other abrasive material onto the surface. Shot size and blasting power can be adjusted to remove very light coatings or up to 3/8" of concrete. Shot-blasting and other mechanical preparation methods is replacing chemical stripping where old epoxies or urethanes are involved because the strippers required are usually hazardous and the wastes generated require expensive hazardous-waste disposal.

Silicate Treatment - Post-cured surface treatment of concrete with sodium silicate or fluorosilicates. When these compounds penetrate into the floor, it becomes much less porous and may not accept seals and coatings without extraordinary etching or mechanical preparation.

Spalling - Deep holes in the surface of concrete often extending to the rebar (reinforcing steel). Spalls not only impair serviceability, but seriously reduce the strength of the slab and should be repaired immediately.

Substrate - The underlying surface to which a coating is applied.

Temperature Strip - Strip used to obtain temperature of the floor, rather than the air, prior to sealing, as floor temperature can vary considerably from air temperature.

ALWAYS MEASURE FLOOR TEMPERATURE. DO NOT GUESS.

Viscosity - The thickness or fluidity of a material; commonly measured in centipoises (cps). Viscosity is dependent on temperature and, for most common materials, viscosity increases with decreasing temperature.

VOC Compliant - VOC, or Volatile Organic Compound, means all vapors caused by solvents other than water.

Void - Holes in a coating or in concrete, especially under the surface.

Water-Based Acrylic - An emulsion of acrylic polymers dispersed and stabilized in water.

Water-Based Epoxy - An emulsion of epoxy dispersed and stabilized in water. Epoxy emulsions are sensitive to temperature and will not withstand a freeze/thaw cycle.

Water Reducible - Capable of being diluted, thinned and/or cleaned up with water.