



Problem Prevention, and Solutions

Sealers continue to be an issue at all levels of the decorative concrete industry. The discomfort comes from new regulations, use of incorrect products, lack of knowledge, willingness to learn new methods, and unrealistic expectations. Blame can be placed on everyone: the manufacturer, the distributor, the contractor, and even the homeowner. VOC laws keep changing from region to region throughout the United States, forcing manufacturers to make changes that are not always communicated to the end user. This section is a short guide to sealer troubleshooting, prevention, and solution, to be used primarily by contractors who are encountering the problems first hand.

Pictures of each type of problem have been included to define the issues. You will find the answers to many sealer problems come from more than one solution. The options for correction are somewhat limited, and the ultimate answer is frequently not pleasant to perform (stripping sealer). We hope this information will guide contractors and owners to make better choices in sealer selection, application methods, and owner expectations will be correctly set.

Sealer Troubleshooting Glossary -

- Mil – Sealer thickness is measured in mils. For reference a credit card is over 100 mils thick and standard copy paper is over 10 mils thick. Acrylic sealers should be applied around 5 mils thick wet, which will be 1-2 mils thick when dry.
- Acid Wash – A mixture of 10 parts water to 1 part muriatic acid used to clean release off a stamped surface. Wet the surface and spray the acid / water mixture on the surface, using a standard push broom in a circular motion. The release will be removed from the high spots of the stamped concrete, leaving release in the lower areas as desired.
- Acid Rinse – A mixture of 20 or more parts water to 1 part muriatic acid is effective in cleaning colored concrete prior to sealing. Following the acid rinse, thoroughly neutralize and rinse the entire surface, allow surface to dry, and then apply sealer.
- Solvent Wash – Solvents such as xylene or Aromatic 100 are used to soften and emulsify an existing sealed surface. Apply the solvents using a sprayer or roller, and liberally spread around the surface. Solvent washing will help thin and level existing sealer while opening it up to expel any moisture.

BUBBLES OR BLISTERING

DEFINITION

Finished surface has small bubbles that pop or shatter when stepped on. Can be found on the top of the surface but are typically more prevalent in lower spots or joints on stamped concrete projects.



PROBABLE CAUSE 1 - Product was applied too thick.

PREVENTION

Take time to fully understand coverage rates and place a uniform coating over the entire surface, removing any puddles from low areas.

SOLUTION

Solvent wash and allow to dry, do not apply additional sealer.



PROBABLE CAUSE 2 – Product was applied in temperatures outside of manufacturer's recommendation.

Sealer placed on a hot surface will bubble or crack shortly after installation. Sealer placed on a cold surface will not dry properly and can become a sticky or powdery mess.

PREVENTION

Follow manufacturer's recommendations for the air and ambient temperatures. If possible, apply sealer during the coolest part of the day, when the concrete is not in direct sun.

SOLUTION

Solvent wash and allow to dry, do not apply additional sealer.



EFFLORESCENCE OR BLUSHING

DEFINITION

Efflorescence is the white powdery substance on the surface of unsealed concrete and the white blush seen with sealed floors. Efflorescence is caused by water in the concrete evaporating from the slab and leaving behind soluble salts on the concrete surface. Colder temperatures, coupled with increased bleed water in cold weather, increases the likelihood of efflorescence showing up after winter concrete placement. Efflorescence and sealer whitening are commonly mistaken for each other.



PROBABLE CAUSE 1 - Concrete was placed with a high water to cement (w/c) ratio.

PREVENTION

Start with a concrete mix that uses well-graded aggregates, a low w/c ratio, and fly ash or other pozzolan as a partial cement replacement. Water reducers can be used to increase workability without adding extra water to the mix.

SOLUTION

Although a solvent wash may temporarily fix the problem, efflorescence will likely return during moist or cooler conditions. A permanent fix involves stripping the sealer, followed by a light acid wash (20-40 parts water to 1 part muriatic acid), or the use of an efflorescence remover. Let the surface dry thoroughly prior to proper reapplication of sealer.



PROBABLE CAUSE 2 – Moisture is migrating from below the slab to the surface.

PREVENTION

Create a base with proper dry materials and complete drainage, ensuring no extra moisture is introduced below the slab once it is placed. In decorative applications ensure that cleaning steps do not leave behind excessive moisture on the slab.

SOLUTION

Although a solvent wash may temporarily fix the problem, efflorescence will likely return during moist or cooler conditions. A permanent fix involves stripping the sealer, followed by a light acid wash (20-40 parts water to 1 part muriatic acid), or the use of an efflorescence remover. Let the surface dry thoroughly prior to proper reapplication of sealer.



WHITENING



DEFINITION

Commonly mistaken for efflorescence or blushing, sealer whitening occurs when moisture (water vapor or solvent) is trapped in the layers of sealer. Can also be a result of sealer application taking place in cool or damp conditions resulting in poor film coalescence.

PROBABLE CAUSE 1 - Initial sealer coat placed with excessive moisture on the surface.

PREVENTION

Do not place sealer over a wet or damp surface and utilize an ASTM 1315 Cure and Seal, Class A, breathable decorative concrete sealer with a lower solid content.

SOLUTION

A solvent wash will typically take care of this problem if the solvent can leave the sealer open long enough for the moisture to dissipate. Otherwise, stripping and sealer re-application will be necessary.



PROBABLE CAUSE 2 – Incompatible sealers have been used, causing trapped solvents between sealer layers

PREVENTION

Use the same sealer that was originally applied. Re-sealing always poses a risk because the original sealer used is typically unknown, not only the manufacturer, but the type (water or solvent).

SOLUTION

A solvent wash will typically take care of this problem if the solvent can leave the sealer open long enough for the moisture to dissipate. Otherwise, stripping and sealer re-application will be necessary.



PROBABLE CAUSE 3 – Water based acrylic was used that was either not mixed properly or applied too thick.

PREVENTION

Water based sealers require thorough mixing throughout the application, and applying the sealer in thin coats is even more important when compared to the use of solvent sealers.

SOLUTION

Solvent washes will sometimes work in correcting some of the problems related to whitening of a water based sealer, but it is likely that sanding or stripping the sealer will be the correct course of action.

ADHESION FAILURE



DEFINITION

Sealer begins to flake off or wear off causing light spots. Usually appears like dots across the surface.

PROBABLE CAUSE 1 - Excessive release was left on the surface prior to sealing a stamped project.

PREVENTION

This is one of the biggest reported sealer problems, which in reality is an application error. When cleaning release off the surface it is imperative that 75% or more of the release be removed. It is highly recommended that a mixture of 15-20 parts water to 1 part muriatic acid be used to clean powdered release off the stamped concrete surface. This will not only remove the release but also create porosity in the surface to which the sealer can adhere. Be sure to thoroughly rinse the cleaning solution.

SOLUTION

Sealer must be stripped, then acid wash the surface to remove the bulk of the release (80% or more). Use antiquing to recolor if necessary, and re-apply two thin sealer coats.

PROBABLE CAUSE 2 – Simple wear and tear.

PREVENTION

When initially sealing be sure to provide the owner with the ASCC Sealer Expectations & Maintenance Guide. Acrylic sealer will realistically last somewhere between 2-3 years on a surface experiencing minimal traffic or UV rays.

SOLUTION

Clean the surface using soap and water, then thoroughly rinse. A solvent wash is also a good practice prior to resealing. Apply two thin coats of sealer while the surface is clean and dry.

PROBABLE CAUSE 3 – A high solids sealer was used on the initial sealer application.

PREVENTION

Sometimes high solid sealers cannot penetrate into the surface sufficiently, causing a weak bond and eventual adhesion failure.

SOLUTION

Even if a higher gloss or sheen is desired, use a low solid sealer for the first thin coat, then apply a thin coat of a higher gloss sealer to obtain the desired sheen.





PROBABLE CAUSE 4 –Too many coats of sealer.

PREVENTION

Be sure the surface is thoroughly clean and dry prior to resealing to ensure moisture is not trapped between layers causing adhesion failures.

SOLUTION

After years of resealing and building up layers of sealer, sometimes just a good solvent wash will provide the same look of a new coat of sealer. Wet the surface with the solvent and move it around with a roller to allow for even coverage.

RIGHT CHOICE COATINGS & SEALERS

YELLOWING



DEFINITION

Sealer turns yellow in areas exposed to UV rays.

PROBABLE CAUSE 1 - A non-yellowing Class A sealer was not used or the Class A sealer was defective.

PREVENTION

Decorative contractors should always use a non-yellowing, Class A, breathable sealer. Buying sealer products from distributors or manufacturers who stand behind their product is essential.

SOLUTION

Once a sealer has yellowed the only proper fix is to strip and reseal, otherwise the yellow coating will be trapped under the new sealer.



PROBABLE CAUSE 2 – Separation has occurred between the layers of sealer. This will act and appear almost identically to some of the adhesion issues.

PREVENTION

Be sure the surface is thoroughly clean and dry prior to resealing to ensure moisture is not trapped between layers, causing adhesion failures.

SOLUTION

Once a sealer has yellowed the only proper fix is to strip and reseal, otherwise the yellow coating will be trapped under the new sealer.



PROBABLE CAUSE 3 – The sealer's UV inhibitors have a life span.

PREVENTION

Sealer maintenance is an ongoing process that cannot be ignored. Sealer older than 3 years can lose its effectiveness as the UV inhibitors lose strength.

SOLUTION

Once a sealer has yellowed the only proper fix is to strip and reseal, otherwise the yellow coating will be trapped under the new sealer.

STREAKS OR ROLLER MARKS



DEFINITION

Distinguishable marks are visible from roller or sprayer.

PROBABLE CAUSE 1 – The sealer has been applied unevenly without keeping a wet edge.

PREVENTION

As sealer is applied, keeping a wet edge will help maintain a uniform thickness and reduce the occurrence of roller marks.

SOLUTION

Use a solvent wash to redistribute the sealer evenly and apply an additional coat if necessary.

PROBABLE CAUSE 2 – Sealer was applied in hot conditions and flash dried on the hot surface.

PREVENTION

Seal when conditions are more favorable, in the morning or evening.

SOLUTION

Use a solvent wash to redistribute the sealer evenly and apply an additional coat if necessary.

PROBABLE CAUSE 3 – The sealer has been applied by an inexperienced applicator.

PREVENTION

Sealing should not be left to the least experienced person on the crew, as it is a very important step in the overall project.

SOLUTION

Use a solvent wash to redistribute the sealer evenly and apply an additional coat if necessary.

SURFACE STAINS



DEFINITION

Oil, fertilizer, leaves, debris, or animals have left stains on the surface.

PROBABLE CAUSE 1 – Sealer has worn away, or has not been maintained properly.

PREVENTION

Sealers will help prevent but not eliminate stains. Removing sources of stains such as automotive oil, fertilizer granules, or leaves as quickly as possible, will reduce the likelihood of permanent stains.

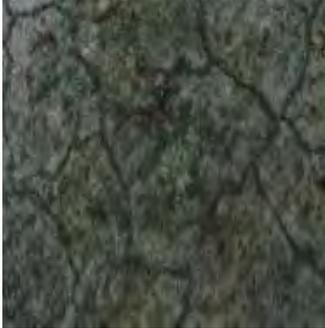
SOLUTION

Many manufacturers offer specific rust or stain removers for concrete. Consider reapplication of sealer after the surface has been thoroughly cleaned. Additional information on surface stains and maintenance can be found in Section 3.

BLOTCHY AREAS

DEFINITION

Sealed surface has areas of dark and light spots, along with some appearance of crazing.



PROBABLE CAUSE 1 - Sealer has been unevenly applied or had only one coat applied.

PREVENTION

Follow the application methods provided by the manufacturer and use experienced installers.

SOLUTION

Use a solvent wash to redistribute the sealer evenly and apply an additional coat if necessary.

PROBABLE CAUSE 2 – Incorrect sealer was chosen for the project.

PREVENTION

Utilize a sealer made specifically for decorative concrete. Standard CS 309 curing sealers are not recommended and will be detrimental to decorative concrete.

SOLUTION

Allow the curing agent to wear away, clean the entire surface with a light acid wash, rinse, dry, and utilize a Class A, breathable decorative concrete sealer.



DISCOLORATION



DEFINITION

Carpets, mats, or weather stripping have stuck to the concrete.

PROBABLE CAUSE 1 - Sealer was not allowed to fully cure prior to being covered.

PREVENTION

Although most sealers can be walked on within hours of application, full curing can take 72 hours or more. Mats, carpets, patio furniture, etc., should remain off the surface as long as possible after it has been sealed.

SOLUTION

Use non-rubber backed mats and delay placement as long as possible. If the surface is discolored, solvent wash to redistribute the product around the affected area. Be aware that some mats contain a backer with plasticizers that can migrate together with the sealer even in older applications.

SCRATCHES



DEFINITION

Sealer shows signs of scratching from furniture, scuff marks, or other heavy wear.

PROBABLE CAUSE 1 – The chosen sealer is not durable enough to withstand the demands on that particular floor.

PREVENTION

Concrete waxes can be used to improve durability to acrylic sealers, but products such as epoxy or urethanes should be used in certain situations.

SOLUTION

If the scratches are minimal, solvents can be wiped over the affected areas. Larger areas can be solvent washed and resealed.

RIGHT CHOICE COATINGS & SEALERS

STRINGING & FOAMING



DEFINITION

Sealer starts to dry and “spider web” or foam on the roller during application.

PROBABLE CAUSE 1 – Over rolling or aggressively rolling sealer injects extra air into the material, creating a foam in the sealer. Use of a large (>3/8”) nap roller can make this more prevalent.

PREVENTION

Use ¼” to 3/8” nap rollers, spray and lightly back roll during application for even coverage.

SOLUTION

A solvent wash is unlikely to take care of this. If the solvent wash does not work, stripping and sealer re-application will be necessary.



PROBABLE CAUSE 2 – Using sealer outside the manufacturer’s recommended temperature range. High temperatures will cause the sealer to dry while rolling. Low temperatures will cause the sealer to not form a film, leaving a sticky, powdery mess when it eventually dries.

PREVENTION

Always follow manufacturer’s temperature range listings, and install during the coolest part of the day.

SOLUTION

A solvent wash will typically take care of this problem if the solvent can leave the sealer open long enough for the moisture to dissipate. If the solvent wash does not work, stripping and sealer re-application will be necessary.

GLOSSARY

- Abrasion ResistanceThe extent to which a concrete surface or decorative coating resists being worn away by friction or mechanical wear.
- Abrasive Blasting.....Propelling an abrasive medium (such as sand or steel shot) at high velocity against concrete to roughen, clean, or profile the surface in preparation for decorative coatings or overlays. Methods include sandblasting, shot blasting, bead blasting, and sand brushing.
- AcetoneCommon solvent often used as a carrier for solvent based sealers. Considered exempt from most VOC regulations.
- Acid Etching.....Application of muriatic or phosphoric acid to clean or profile a concrete surface. Used as a less effective alternative to abrasive blasting for surface preparation. Must be neutralized and rinsed prior to final coating application.
- Acrylic ResinA synthetic resin that dries transparent and is resistant to discoloration, moisture, alcohol, acids, alkalis and mineral oils. It is usually made by polymerization of acrylic acid and methacrylic acid.
- Acrylic Sealer.....A simple, single-component polymer that is either water or solvent based. Acrylic sealers can allow moisture penetration, scratch more easily than others, and provide moderate stain protection.
- AdhesionThe property that causes one material to stick to another. Adhesion is affected by the condition of the surface to be coated and by the closeness of contact, as well as by the molecular forces of the unlike substances. Thus, the surface should allow a certain amount of penetration, should be chemically clean and not too smooth, hard or nonporous for good adhesion.
- AgingExposure of materials to an environment for an interval of time. The change of a material with time under defined environmental conditions, leading to improvement or deterioration of properties (see weathering).
- Air BubblesTrapped air or gases below the dried surface sealer. Can be caused by sealer drying too fast due to extreme temperatures or material applied too thickly or incorrectly.

- Alkaline SaltsDiluted salts carried to the surface of a concrete subfloor by water coming up from the ground below. There is no guarantee any treatment will keep the surface free of alkali, but washing the surface with clear water or soda water will lower the alkalinity. Traditionally, muriatic acid has been used, but it too may leave behind residue.
- AlligatoringSurface imperfections in a coating resulting in a wrinkled appearance. Usually caused by incompatibility of a newly applied coating with an existing surface coating or sealer. Also known as orange peel or fish eyeing.
- Ambient Environment (Temperature)The surrounding environment; can refer to ambient air, ambient water, or ambient soil. Ambient temperature refers to the temperature in a room, or the temperature that surrounds an object under discussion.
- BleedingUndesired migration of materials in a coating to the surface of the floor through construction joints or saw cuts. May be caused by moisture in subbase, not enough open dry time, or the use of no-rinse strippers within the first two years of the installation.
- BlisterA raised spot on the surface of a floor similar in shape to a blister on human skin. How soon after installation a blister develops can help determine the cause. Blisters that occur within a few hours are usually due to a concentration of trapped air. Blisters that occur at a later time often indicate the presence of moisture in the substrate.
- BlisteringThe formation of blisters in toppings or coatings and the loss of adhesion with the underlying substrate. On concrete surfaces, this is often caused by moisture or moisture vapor transmission problems.
- Blush/Blushing.....Commonly used to describe a sealer or cure & seal that has turned milky-white in appearance.
- BondThe degree of adhesion or grip of a material (such as coatings, toppings, repair mortars, or sealers) to an existing surface.
- Bond BreakerA material that prevents adhesion of materials to a concrete substrate. Common sealer bond breakers include release agents and environmental debris.

- BubblingThe appearance of bubbles in the finish film while a finishing material is being applied. It is caused by any condition that causes air, vapors or gases to be trapped in the film while it's soft, but after it has hardened sufficiently to prevent the gas from escaping.
- BuildThe wet or dry thickness of a coating or topping. (Also see high-build coating). Typically measured in mils. (Also see mil)
- Build CoatA finishing material, usually of a transparent nature, used over the sealer or color coats and under the finishing coats to increase the fullness and sometimes glossiness of the finished work.
- Chalking.....Loose, powdery substance caused by deterioration of a concrete surface or degradation of a coating or overlay.
- Chemical Resistance.....Resistance to softening, bleaching or discoloration from common chemicals that may be spilled on the floor. Chemical resistance is most dependent on the composition of the product, the existence and chemistry of the surface coating and the susceptibility of the seams to failure in chemical spills.
- ChippingThe condition that occurs when a dried film of finishing material separates from the surface underneath in the form of flakes or chips. It is usually caused by insufficient elasticity or improper adhesion to the base material.
- CombustibleHaving a flash point of 80-150 degrees F.
- Coverage RateThe area that a specified volume of coating will cover to a specified thickness upon drying.
- Crazing.....The appearance of minute, interlacing cracks or checks on the surface of a dried film of finishing material. Not complete product failure but can be caused by high weathering or elongation.
- Crosshatching.....Sealer application method completed by rolling in alternate directions within a single coat. Crosshatching ensures complete coverage of the base surface.
- Cure TimeTime required to complete the cure process, before the material exhibits maximum physical, thermal, and chemical properties.

- Curing.....Action taken to maintain favorable moisture and temperature conditions of freshly placed concrete or cementitious materials during a defined period of time following placement. Helps to ensure adequate hydration and proper hardening.
- Curing Compound.....A liquid that, when applied to the surface of newly placed concrete, forms a membrane on the concrete or penetrates the concrete to retard the evaporation of water.
- Degreaser.....A chemical solution for removing grease, oils, and other contaminants from concrete surfaces.
- Delamination.....Separation of a coating or topping from a substrate or the layers of a coating from each other due to poor adhesion.
- Densifier.....A penetrating liquid chemical hardener applied to concrete to help solidify and densify the surface and provide extra protection from water penetration and staining. Often recommended for polished concrete, because hard concrete produces a better polish.
- Dew Point.....Dew point temperature is defined as: "the temperature at which dew begins to form." Dew is the water you find on your grass or car early in the morning. Some things to know about dew point: The current dew point will never be higher than the current temperature. If the temperature is at the dew point and the temperature falls, the dew point must follow. The higher the dew point temperature, the more moisture is in the air. Sealers being applied over a dew covered surface can fail to properly adhere.
- Dry Film Thickness (DFT).....The final thickness of a cured coating. It is directly proportional to the volume solids of the coating. Therefore if you apply a wet film of 2.0 mils and the coating has a solids volume of 50%, you can expect the dry film thickness to be 1.0 mils. $\text{Dry Film Thickness (DFT)} = \text{Wet Film Thickness (mils)} \times \% \text{Volume Solids}$
- Dry Tack-Free.....The stage of solidification of a film of finishing coating when it doesn't feel sticky or tacky when a finger is drawn lightly across it in a quick continuous motion.
- Dry to Sand.....The stage of solidification of an applied film of finishing material when it can be sanded without undue softening, sticking or clogging of the sandpaper.
- Dry to Touch.....The stage of drying of a film of finishing material when it has solidified sufficiently that it can be touched lightly without any of the finishing material adhering to the fingers.

- Drying.....The act of changing from a liquid film to a solid film by the evaporation of solvents, oxidation, and polymerization or by a combination of these phenomena.
- Dusting.....Appearance of powdery material on the surface of newly hardened concrete. Sometimes caused by allowing the surface to dry too rapidly without curing.
- Efflorescence.....A crystalline deposit of salts (usually white in color) that forms on a concrete surface when soluble calcium hydroxide leaches from the concrete and combines with carbon dioxide in the atmosphere. On colored concrete, especially darker tones, these white deposits can be particularly unsightly. Prior to sealer application these areas can be treated with an acid washing and thorough rinsing.
- Epoxy Sealer.....A dual component system that reacts when mixed to form a hard, durable surface over the concrete. Epoxy sealers are excellent for high gloss surfaces but can be very UV sensitive and are not heat resistant.
- Film Forming Sealer.....A type of sealer that forms a surface film to block the penetration of water and contaminants. Film forming sealers are available in various gloss levels ranging from dull up to gloss, and typically enhance the color intensity of the finished concrete surface.
- Film Thickness.....The depth of the film when wet (wet film thickness) and the final depth when dry (dry film thickness). Typically measured in mils (1 mil = .001 inches), typical piece of paper = 10 mils, typical credit card = 120 mils.
- Fish Eyes.....Also called cratering, crawling, holes, spots or flow marks. When caused by surface contaminants the finish is applied over areas in which the wetting agents cannot perform their function. The finish then recedes away from this area reforming into the film. This "crawling" creates round or elliptical areas lacking adequate finish.
- Gauge.....The nominal thickness of a layer within the material.
- Gauge Rake.....A rake (or squeegee) with either feet (or notches) used to apply a coating to a pre-determined uniform thickness (aka Pin Rake).
- Gloss Meter.....An instrument for measuring the luster or gloss of a finished surface.

Grinding.....A mechanical surface preparation method using rotating abrasive stones or discs to remove thin coatings and mastics or slight flaws and protrusions.

HardnessThat property of the dried film of finishing material that causes it to withstand denting or being marked when pressure is exerted on its surface by an outside object or force.

High Build Coating.....A protective or decorative coating that produces a thick film (usually greater than 10 mils) in a single coat.

High Pressure Water BlastingA process for cleaning or roughening concrete surfaces using a stream of water delivered at high pressure, typically above 2,500 psi.

High Solids.....A general term used to denote the presence of a higher than average percentage of solid ingredients and thus a lower percentage of solvents.

Humidity.....The amount of water vapors in the air. See Relative Humidity.

Hydrostatic Pressure.....Pressure which forces water up through a below-grade slab, generally causing installation problems due to moisture. This occurs when the water table is higher than the slab. Hydrostatic pressure is caused by the weight of the water pressing down on itself.

Hygrometer.....An instrument for measuring the degree of humidity or relative humidity of the atmosphere.

Impact Test.....A test for determining the resistance to shattering of a dried film by dropping a weight onto the finish.

IncompatibleNot capable of being mixed together without impairing the original properties of the materials being mixed. Mixing incompatible materials usually results in a separation of solid particles, cloudiness or turbidity.

Joint Sealant.....A material that minimizes both infiltration of surface water and incompressible material into the joint system.

LaitanceA thin layer of fine, loosely bonded particles on the surface of fresh concrete, caused by the upward movement of water. Laitance must be removed before application of a decorative coating or topping.

Lap.....To lay or place one coat so its edge extends over and covers the edge of a previous coat, causing an increased thickness where the two coats are present, as compared to the single thickness on either side of the lap.

Light Reflectivity.....The characteristics of a material, which determines the degree or amount of light which will be reflected from its surface from any given angle.

MembraneFormed over a concrete surface to provide protection and enhance color. Typically clear plastic like acrylic, polyurethane or epoxy.

MilA measurement equal to 1/1,000 (0.001) inch. Commonly used to denote coating thickness.

Milky.....Having the appearance of milk or showing whiteness. Can be caused by over application of water-based sealers or when a dried transparent film starts to turn white from moisture.

Mineral Spirits.....A solvent product used as a thinner and/or cleaner.

Moisture Resistance.....The measure of concrete floors directly in contact with the ground that are never completely dry.
Note: The moisture content of new concrete is high, regardless of grade levels.

Moisture Vapor Transmission.....The migration of moisture vapor to the surface of a concrete slab, caused by vapor pressure differentials in the concrete and the surrounding atmosphere. Can contribute to the failure of impermeable coatings or other floor toppings that do not permit moisture to escape. (See calcium chloride vapor-emission test.)

Nap.....The raised hairs or threads on the surface of a roller, in terms of the direction in which they naturally lie. Typically measured in thickness (e.g., 3/8" nap roller)

Neutral Cleaner.....A mild (pH of 6 to 8) detergent that does not contain strongly alkaline materials and is designed to remove soil.

Neutralize.....To return concrete to the proper pH after acid etching, generally by washing the surface with a mixture of water and ammonia or sodium carbonate. Ideal pH is 7.0 (neutral), but a pH range of 6.0-9.0 is acceptable for most coatings. ASTM D 4262, "Standard Test Method for pH of Chemically Cleaned or Etched Concrete Surfaces," covers the procedure for determining the acidity or alkalinity of concrete surfaces prepared by chemical cleaning or etching prior to coating application. (See pH test)

Non-Skid Coating.....A surface coating designed to prevent or reduce the slipperiness of a surface.

Nonvolatile.....That portion of a material which doesn't evaporate at ordinary temperatures; the solid substances left behind after the volatiles have evaporated.

Orange Peel.....A finish that exhibits a surface texture resembling the surface of an orange. Normally caused by rolling a finish that has cured excessively which freezes the roller pattern in the film. May also be caused by excessive airflow, the velocity of which freezes waves in the film when it sets.

Outgassing.....The release of absorbed or occluded gases or water vapor.

Peeling.....A defect in a dried film manifested by large pieces becoming detached from the under surface and coming loose in sheets or large flakes.

Penetrating Sealer.....A sealer with the ability to penetrate into the concrete surface to increase water repellency and resist stains. Often used on decorative concrete to provide invisible protection without changing the surface appearance.

Percent Solids.....Also referred to as Solids Content, it is the relative weight content of the total product which is not water or other volatiles.

Permeability.....The degree to which a membrane or coating will allow the passage or penetration of a liquid or gas.

pH PencilWill indicate the acidity/alkalinity level of a slab for subsequent procedures. Water based stains and some sealers are pH sensitive.

pH TestA test performed on the concrete surface to determine the level of acidity or alkalinity. Typically performed prior to applying sealers or coatings.

pH Value.....The concentration of the hydrogen ion in a material. A pH value of 7 is considered neutral. Lower values are acidic; higher values are alkaline.

- Pin HolingA defect in a coating characterized by pinhead-sized holes that expose the underlying substrate.
- Polymer Flooring.....A system where individual components are combined to achieve a high grade surface. Usually consists of surface preparation, priming, coating, and finish sealing of a surface. The coating thickness and the selection of the system depends on the surface to be applied to.
- PorosityA matter which is porous or contains pores which are able to absorb liquid. Subfloors, which are porous, are normally concrete and wood. If there is any doubt as to the porosity of a subfloor, put a few drops of water on the surface. If the water is quickly absorbed, the surface is porous. If the water remains on the surface, the surface is not porous.
- Primer.....The first coat of material applied to a concrete surface to improve bonding or adherence of subsequent coats. (See bond coat)
- Profile.....The act of preparing a concrete surface to achieve the necessary degree of roughness. (See surface profile)
- PsychrometerA simple form of hygrometer, an instrument which measures relative humidity. The psychrometer compares the dry-bulb and wet-bulb air temperatures.
- Pump Up SprayerAn airless sprayer often used to apply sealers and liquid release agents.
- RecoatabilityThe application characteristics of a polish and the appearance of the film after successive coatings to a surface.
- Recoat Window.....Manufacturer directed time in which successive coats of material must be applied to the previous coat. When materials are applied outside the recoat window, adhesion failures typically occur.
- Relative Humidity.....Ratio of the amount of water vapor present in the air to that which the air would hold at saturation at the same temperature. It is usually considered on the basis of the weight of the vapor, but for accuracy should be considered on the basis of vapor pressures.
- Sacrificial Coating.....A final floor finish or wax designed to protect the sealer or topcoat from wear. Usually applied by mop or floor buffer in several coats to act as a shock absorber to scuffs, scratches, and grime.
- ScarifierMilling equipment used to clean and profile concrete surfaces or to remove existing coatings. Uses rotary impact cutters held at a right angle to the surface.

- ScrubbingWashing a floor by wetting it with detergent solution, then using a moderately abrasive non-woven pad or appropriate brush, either by hand or attached to a low-speed floor machine, to vigorously agitate the wet surface. This procedure is used when a floor is heavily soiled, and less-aggressive cleaning methods have been unsuccessful. Always rinse thoroughly after scrubbing.
- SealerSealers are normally a finish coating used to protect concrete floors from traffic and surface cleaning and should not be used when the slab is intended as a substrate for resilient flooring. They are designed to prevent water and dirt from getting into the concrete from the surface and render the concrete less porous. Sealing is a recommended step for enhancing and protecting decorative concrete colors. Sealing decorative concrete reduces maintenance requirements and helps prevent unwanted staining. Both water-based and solvent-based formulations can be purchased. Some sealers are available in finishes such as gloss, semi-gloss and matte.
- Shot BlastingAn abrasive blasting method using round iron shot to clean and profile concrete surfaces.
- SolventLiquid typically used as a carrier for sealers and curing compounds.
- Solvent Based ProductsSome stains, sealers and coatings are manufactured using solvents as the carrier for the liquid mixtures. During application, solvents evaporate into the air. Therefore, solvents are considered "volatile organic compounds," or VOCs, and it is vital to adhere to the manufacturer's health and safety recommendations during application of any solvent-based product. An MSDS (Materials Safety Data Sheet) will document the percentage of VOCs in a specific product. Please note: The specific percentage of VOCs permitted is regulated in most areas of the United States and Canada. The use of solvent-based products is prohibited in some states. Where environmental considerations prohibit use of solvent-based materials, water-based alternatives are readily available.
- Spall.....Concrete spalling, also known as concrete scaling, is the name used for flaking and chipping of concrete that sometimes occurs in new construction. Often caused by a combination of freezing temperatures and improper mixing and creaming of concrete during placement.
- Spiked RollerPin needle type of textured roller used in application of high build coatings, relieves surface tension by eliminating gas bubbles.
- Sprayer (HVLP)A high volume low pressure spraying device that applies high-solids paints and coatings at low pressure and low velocity, to reduce overspray.

Sprayer Nozzles.....Fitting designed for use with sprayers made from various materials, plastic, steel, brass and more. Nozzle can be made to spray in many different patterns such as fan, cone, flat. Choice of the nozzle type and spray pattern should be based on the manufacturer's recommendation.

Squeegee.....A tool with a flat, smooth rubber blade, that is used to remove or control the flow of liquid on a flat surface. Can also be notched to function as a gauge tool.

Substrate.....An existing concrete surface that receives an overlay, decorative or protective coating, repair procedure, or other resurfacing treatment.

Surface Profile.....The degree of roughness of a concrete surface achievable with various surface preparation methods. The International Concrete Repair Institute has identified nine distinct roughness profiles considered to be suitable for the application of sealers, coatings, and polymer-modified overlays.

TackThe stickiness or adhesiveness of a material.

Technical Data Sheet.....Contains important specifications and manufacturer guidelines for product usage. Includes such data as coverage rates, recommended applications, product limitations, surface preparation guidelines, mix ratios and required mixing times, pot life, application procedures, cure times, performance data, and precautions.

UltravioletLight rays that are outside the visible spectrum at its violet end. These rays have a chemical effect upon the dried film of finishing materials. Ultraviolet light is commonly used in curing finishes at the factory for prefinished flooring.

ViscosityA measure of the fluidity of a liquid material. The more viscosity a material such as a sealer or coating has, the less it flows.

Volatile Organic Compounds (VOCs)Organic chemicals that readily vaporize at normal room temperatures. Concrete coatings, sealers, or cleaning materials that are solvent-based generally have higher VOC contents than water-based materials. Some VOCs can be hazardous when inhaled.

Water-Based FinishesThis large family of finishes has the common trait of having the solids suspended in water, which is used as the solvent. A clear, color free finish that is easy to apply with low odor and good stain resistance, fast drying and easy to recoat.

Wet Film Thickness (WFT).....The thickness of an uncured coating material.

Xylene.....A common solvent. Used as a carrier for solvent based sealers. High in odor and flammability.