



Arizona Polymer Flooring

Performance and Maintenance Considerations



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The use of protective, polymer-based floor coatings can add years of extended service to most concrete floor surfaces which are subjected to traffic, abrasion, aggressive chemicals, soiling and other elements that can diminish the appearance or reduce the durability of an otherwise properly constructed slab. Proper surface preparation and profiling is essential to a floor coatings full adhesion. So is the selection of the right coating or combination of coating materials.

Corrosive chemicals, abrasive traffic, U.V. exposure, freeze thaw cycles and other forces can vary greatly from installation to installation. Once the floor coating installation has been completed and the flooring area is returned to normal service, performance expectations will be met when an appropriate set of materials have been selected and the installation process has been executed correctly. For this reason, prior to the installation of any floor coating, careful consideration should be given to the product installation design. Proper use and maintenance of the floor coating during its service life will also contribute to meeting the desired performance results.

Preexisting Conditions

Sometimes, unknown to the owner, manufacturer, installation professional or other professionals involved in the installation process, latent conditions may be present which can negatively affect the coating's performance. In these cases, the existence of these elements may be out of the practical possibility of awareness of the parties involved. Some, like moisture, pH levels and the slab's structural integrity at the time of installation can be relatively inexpensively tested for prior to installation. However, others would require more extensive and costly testing to determine their presence and are typically not performed unless there is sufficient reason to suspect their presence. Some of these include:



- Interior concrete contamination from previously applied reactive silicate materials or organic hydrocarbon materials that interfere with the bonding of flooring materials.
- Weakening of the concrete over time caused by conditions beyond the control of the product manufacturer or the installation contractor. If the concrete deteriorates sufficiently, it will no longer support the bond of the coating system. Such conditions are detailed in “Guide to Durable Concrete” ACI Committee 201 published by the American Concrete Institute and would include any of the following:
 - Attack from sulfates of sodium, potassium, calcium, magnesium, or Ettringite, sometimes found in soil or dissolved ground water.
 - Deterioration caused by the physical action of salts from ground water containing sodium sulfate, sodium carbonate and sodium chloride.
 - Cracks that develop in the concrete or joints after the application of the system. This includes cracks and damage to the concrete caused by Alkali Silica Reaction (ASR).
 - Failure of the concrete due to expansive contaminants in the concrete mix.
 - Established habits of misuse or abuse of the floor surface.
 - Alkali Silica Reaction (ASR) and its variations
 - Failures caused by high concrete moisture. The limits of moisture for all Arizona Polymer Flooring systems are 3 pounds, per 1000 square feet, per 24 hours, measured in accordance with ASTM-F1869. Or 75% relative humidity measured in accordance with ASTM-F2170.



The Need for Concrete Floor Surface Protection

Flooring surfaces are exposed to stress, load and often, different types of chemicals. Over the course of time, unprotected concrete will suffer from these stressors and can eventually require extensive and costly repair or even replacement. A concrete substrate is porous in nature which makes it susceptible to the effects of water and other fluids as they enter the concrete. As this occurs, the reinforcing steel can begin to corrode and degrade the concrete from within. To ensure years of service and to maintain the floors integrity a topical floor coating is often a necessary and cost effective choice.

Unprotected concrete floors will erode, become stained by oils and other fluids and suffer damage by the corrosive effects of snow and ice melting chemicals such as rock salt. A well formulated, manufactured and installed floor coating system will protect the concrete slab from the rigors and wear brought on by its use because they are often harder and more durable than the concrete itself.

Maintenance and Repair of Polymer Based Floor Coatings

It can sometimes be difficult for a material supplier and/or an installation professional to precisely define the lifetime or longevity of a polymer floor coating. Polymer based floor coatings, like all construction and building materials, are not indestructible and should be used and treated within their limits of tolerance. Proper use and maintenance of a well applied floor coating will add longevity to the coating's service life.

There are many use factors that can and do affect the service life of a floor coating. Some of these include:

1. Traffic
Light, moderate or heavy foot or vehicle pneumatic or solid tired industrial such as dolly, pallet jack or forklift, etc.

2. Use, Misuse or Abuse
Dragging of skids, pallets, containers, hoses, furniture, machines, coils, etc.



3. Impact/Shock
Dropping of tools, parts, machinery, etc.
4. Chemical Exposure/Corrosive Spills
Prolonged contact with corrosive chemicals or inadvertent spills or splashes of chemicals not contemplated in the original coating design
5. Thermal Shock or prolonged exposure to extreme temperatures
Immediate coating and slab contact with an element of much higher or lower temperature
6. Cleanliness of Coated Surface
Dirt, debris, glass, metal parts or shavings, mineral aggregates like sand or pebbles and/or other abrasive particles left on floor surface in conjunction with traffic.
7. Exposure to Natural Elements
Freeze thaw fluctuations, deicing products, salts, U.V. Sunlight, rain, snow, hail, etc.
8. Cleaning Methods
Types of cleaners and cleansers or tools like scrubbers, brushes or pads used to clean the coated surface.

General Cleaning

- Sweep or dust mop daily for high traffic areas and weekly for low traffic areas. Remove rugs and sweep beneath furniture to remove as much grit as possible. It is important to remove abrasives that can scratch or wear the surface as people, vehicles or objects are move across the coated surface.
- Use a neutral non-alkaline, non-acidic floor cleaner or a cleaner specifically formulated to clean epoxy floors. More cleaning solution is not always better. Cleaning materials that are neutral or, at most, with a pH factor between 7 and



10 are recommended. We recommend that all-purpose cleaners be avoided or soaps containing water soluble, inorganic or crystallizing salts, harmful high alkali or acid ingredients. Many sweeping compounds contain oils, which may be a fire hazard or cause smooth surfaces to become slippery. Other sweeping compounds may contain sand which is hard to sweep, and can abrade the floor surface as well as dull it. Allow cleaning solution to dwell on the surface for about 5 minutes. Mop up the cleaning solution with clear, clean water before the solution dries.

- Before cleaning the polymer floor coating for the first time, it is recommended that the cleaning solution and method be tested on a small area of the floor coating, wherever it may be located (residential, commercial, industrial, interior or exterior) floor to determine its ability to clean and not leave a film on the surface of the floor coating. A cleaning solution should not gum up on a mop or soft pad when cleaning the floor. The cleaning solution can be removed using a foam squeegee or mop and then rinsed using sufficient, clean water. It is important to keep the floor wet during this entire cleaning process so the dirt does not dry up on the floor. Tap water may cause a foggy effect on the cleaned surface depending on the amount of minerals and soluble salts that it may contain. Additionally, the quality of the water may change from different geographic locations, and therefore, the same cleaning product may not produce the same results from one location to another.
- Follow regular coating compatible cleaning procedures and schedules or clean the floor as needed. In the absence of other maintenance schedules, it is recommended that the surface be cleaned at least once a week. High traffic areas may need to be cleaned more frequently depending on spills, soil buildup, traffic, etc.
- We recommend that a high-quality microfiber type mop be used to clean the coated surface. Regular mop heads tend to leave streaks on the surface. Microfiber mop heads tend to eliminate surface streaking.



- Dry the floor with a dry microfiber mop or large towel. Drying the floor prevents streaks and dust lines on the surface of the polymer floor coating.
- A soft pad, similar to those used to apply wax finishes, can also be used. Do not use abrasive pads. Using a blue or more aggressive pads will reduce gloss or prematurely mar the surface.
- Ensure that chair legs or shelving legs have rubber caps on them before using. The metal ends can cut and scratch the coating's surface and cause permanent immediate damage or allow damage to the floor coating over time.
- When moving objects across the coating, do not drag them across the floor. Hard, sharp ends can scratch, gouge and mar the floor surface permanently.
- Clean up spills as soon as possible. Two component polymer floor coatings typically have good to excellent chemical resistance but resistance capabilities vary depending upon the coating's formulation. As a general rule, spills that are allowed to remain on the coating surface can diminish the surface appearance or integrity. Arizona Polymer Flooring maintains published and public chemical resistance guides on its website (apfepoxy.com). Thorough review of the chemical resistance guides is important. Varying degrees of exposure exist which a particular polymer floor coating may withstand. Some products will withstand complete immersion in the certain chemicals and not be effected. Others may require immediate cleanup of the spill to minimize chemical attack (staining or decomposition).
- No drums or containers should be stored directly on the floor. Any spills or leaks may penetrate under the containers and remain for extended periods of time before being noticed. Given the right set of unfortunate circumstances, this can result in failure of the polymer flooring material.



Cleaners and Scrubbers

- Different types of cleaners are used depending on the type of element being cleaned or eliminated. The function of a cleaner is to solubilize the existing dirt, oils or chemicals in such a way that they can be effectively eliminated from the flooring surface. The function of a scrubber is to agitate the cleaning solution onto the flooring surface to more easily remove the dirt, oils, chemicals, etc.
- If the correct type of cleaner is being used, soft bristles, pads or cloth attached to the scrubbing mechanism will be enough to clean the surface. A high solids urethane coating is typically around 60% solids and is applied at 5 to 6 wet mils. That means there are only 3 to 4 dry mils on the floor. If a very stiff or aggressive pad is used the urethane can be abraded from the floor over the course of time with regular cleaning timetables.
- Organic fats typically require a saponifying (decomposing soap) type of cleaner in conjunction with warm to hot water. Industrial hydrocarbon oils will require an emulsifying type cleaner. The recommendations for the use of the cleaner must be followed. If the recommended procedure is to dilute the cleaner 20 to 30 parts with water this should be followed. The use of the cleaner diluted less than the recommended amount will typically leave a soap scum making the floor appear dirty and dull. Personnel responsible for the cleaning of the floor may then attempt to clean the floor again using stronger cleaners and pads or brushes which may be too aggressive. Remember – the cleaner should do the work to remove the dirt /oil/ grease/ etc. and not the scrubbing brush or pad.
- Some cleaners contain solvents. These solvents may be listed as co-solvents. Cleaners containing co-solvents are typically multi-purpose (food and hydrocarbon oil) cleaners. The co-solvent is required to allow the cleaner to mix with different types of oil. These co-solvents can attack the polymer coating. They can potentially soften the polymer floor coating allowing the polymer to be stained or removed. A test area should always be done with a cleaner before use on larger areas.



Spot Patching

Water can trigger delamination of a polymer floor coating. Scratches and deep gouges should be repaired as soon as possible. Water can penetrate into the concrete on deep scratches and cause debonding of the polymer floor coating. Troweled, aggregate filled polymer floor coatings will be less likely to debond due to water migration into superficial scratches because most surface scratches will not penetrate the trowel applied coating.

Repair of small scratches should be lightly sanded and lateral areas should be protected with masking tape. The coating repair material can be applied to the scratch and the prepared area around the scratch. If a primer is being used, it should be allowed to cure and then sealed with the desired topcoat. Most repairs will be noticeable but repairing them will minimize the potential for a larger failed area.

Polymer Floor Coating Renewal

The protective coatings manufactured by Arizona Polymer Flooring are designed to withstand heavy traffic and other contact elements. However, all floor coatings are susceptible to the rigors of use and, over time, normal floor use may cause the coating system to lose its gloss or show signs of wear, even if the coating is still in place and functioning properly.

If a visual restoration of the floor coating is desired, recoating the existing surface is usually a relatively inexpensive, quick and effective procedure. Before recoating the original floor coating, all waxes, oils, greases and other contaminants must be fully removed from the surface. The surface should then be thoroughly deglossed using an appropriate abrading method and it should then be completely cleaned and dried. When in doubt, consult with a qualified Arizona Polymer Flooring representative or with the Arizona Polymer Flooring technical service department. In some cases, planned and periodic recoating may be less expensive than a regular, ongoing maintenance program.



Additional Protective Option - Wax

Waxing is not usually necessary for Arizona Polymer Flooring coating products. However, if maintaining a high standard of aesthetics is desired, periodic waxing can be an effective option. When choosing this option, the following simple steps should be observed:

- Remove old wax and any embedded dirt using an appropriate liquid wax stripper. Use of a stripper capable of dissolving multiple layers of wax are recommended.
- Apply the floor wax according to the manufacturers recommendations.
- Follow the wax manufacturer's maintenance and rewaxing recommendations.