

INFO SHEET

Understanding Surface Defects in Swimming Pools

Introduction

Often when you look at a pool to be upgraded there are areas missing from the existing surface finish. In the case of mineral based pool surfaces such as Marcite, Pebble Tec concrete and plastered surfaces these may have been painted as well. Are you are seeing the paint coming off? So, what does this mean?

Coatings that come away from the surface:

Generally, if a paint film or coating comes away from the underlying surface there are only a few causes.

They can be summerised as follows:

- Unclean surface before paint applied.
- A very smooth surface.
- Water pressure (hydrostatic) underneath the coating.
- Failure of the substrate.

1 An unclean surface is usually the result of insufficient surface preparation and coatings will not adhere well (or at all) to such surfaces. Oils are especially bad as they tend to prevent adhesion as does a silicone treated surface. The coating will tend to come away cleanly leaving a smooth bright surface on the underside. It may also have some mold or dirt attached, showing how poorly the surface was prepared. There may be a few particles of the surface attached as well, but in generally not many. (See pic 1). A thoroughly clean, oil, dirt and grease free surface is the only answer.

2 Very smooth surfaces may be too smooth to allow a good mechanical bond to the surface such as getting paint to adhere to glass. It can also happen with highly polished mineral surfaces, though usually by their very nature they are still quite rough at a microscopic scale and allow for adequate if not good adhesion. It is far better to roughen (etch) such surfaces before coating. (See pic 1)



Pic 1. Paint sample showing a “clean” underside indicating insufficient adhesion due to poor surface preparation and also mold present.

- 3 Water pressure (Hydrostatic) can be an issue when a coating is applied to any porous or semi porous surface. Such as when water is behind or underneath the coating, as in ground water outside a swimming pool shell. This includes concrete (which is generally not completely water or vapour proof), Marcite, Pebble Tec and plastered - rendered surfaces. A surface that has a worn coating or one with a thin coating may be subject to hydrostatic water pressure yet show no symptoms of such. This is because the coating is so in- effective and worn that any water pressure simply causes the water to slowly pass through the coating without damage to it. However, when a new coating is applied such as and Epoxy or Fluoropolymer it presents a waterproof coating and also one with a very low ability to pass water vapour through it. Thus, the water pressure may now exert sufficient pressure to cause the new coating to blister or bubble and there by fail. Such results are often seen within 6 months of the pool being refilled and more often than not on walls that face the west or north. (See pic 2) The coating may fail at the surface as in pic 1 or cause the substrate to fail internally as in pic 3. Picture 1 is essentially an adhesion failure and picture 2 a cohesion failure within the substrate. Determining if a pool will be subject to hydrostatic pressure is not always easy, but by considering location, its environment and testing for hydrostatic pressure or trapped water (see Application Notes and below) this can be usually determined in advance and measures taken to reduce the prospect.



Pic 2, showing blisters (broken) as the result of Hydrostatic pressure.

- 4 Failure of the substrate can happen if the substrate is in a poor or weakened condition. This is usually not always apparent at the time of application as one cannot see into the substrate, nor know about its application conditions or life history. This may include incorrect application conditions, mixing or curing of the substrate, poor chemical balance of the pool water and many other unknown factors during the life of the pool. All of these can determine how well the substrate performs after the coating is applied. If there is any weakness in the substrate, then it may fail within (Cohesive failure) and the coating will come away with some of the mineral substrate still attached (See pic 3). For areas of the substrate that are drummy, one can tell these before any coating applications, they need to be repaired before painting. Thus, only the surface presented at time of application can be seen and any internal weakness cannot be foreseen, nor be accepted by the coating contractor.



Pic 3. Showing underside of paint sample with, in this case Marcite attached. Here we see a weakness, basically a cohesive failure of the Marcite to the substrate. Bottom right sample is edge on, showing cross section.

Checking to see if surface really dry

Some areas can seem dry on the surface, such as concrete and Marcite/Pebble Tec yet in cooler (winter) weather may be quite wet inside. So do check for Hydrostatic pressure issues. If too wet, once painted with PAINTNFORGET V 790 it will draw moisture under the coating and may cause blisters to develop. This will be more likely with darker PAINTNFORGET V 790 colors. Such blisters will break when pool full and require recoating. Best deal with it when pool empty and they show up after first coat. Cut back, allow to dry out for several days and recoat.

To check if sufficiently dry, tape a piece of clear polythene sheet (15 ins x 15 ins) and leave for at least 16 hours. Do this over several areas of the surface. If there is moisture (droplets) on the underside of the plastic sheet, then it indicates there is too much moisture for good adhesion. Allow pool to dry out before application.



Pic 4 Checking the substrate to see if moisture present, which in this case is. You can see the dark moist surface. Also, there is likely moisture droplets on underside of the plastic sheet. Allow substrate to dry completely if in doubt.