

INFO SHEET

*Performance Through
Technology and Service*

PLUNGE POOLS and WATER INGRESS

Plunge pools are becoming popular as a more economic answer to the high cost of a full-size concrete or fibreglass pool. And the limited space available on many blocks.

The plunge pool, if made of concrete and / or plaster, needs to be treated in the same manner as a full-size concrete pool. (If there is a steel Plunge pool, contact us for further details).

The concrete will generally be of less strength overall and therefore less waterproof. The floor may be cast and of high(er) strength, but the walls are often plastered around a wire core. As a result, these are thinner and less waterproof compared to full size concrete pool walls. The pool below was filled only a week before the images were taken.

These concrete plunge pools are made in a yard, cured, and then craned and transported to site.

Note that some damage can occur during transport and craning. So, look out for this, inc cracks.



Fig 1: Typical concrete plunge pool. Cast concrete floor and plastered wired sides. Also note partially buried in the ground.

Fig 2: Cracks due to craning issues and also water seepage from the pool. **Note:** no waterproofing on outside. Wall thickness about 50 – 75 mm.



Fig 3: Leakage around skimmer box, probably due relative movement between pool and pipework as pool filled.



Fig 4: (right) Blisters forming in pool paint due to the leakages in #3 and the effects of “wicking” and hydrostatic pressure.



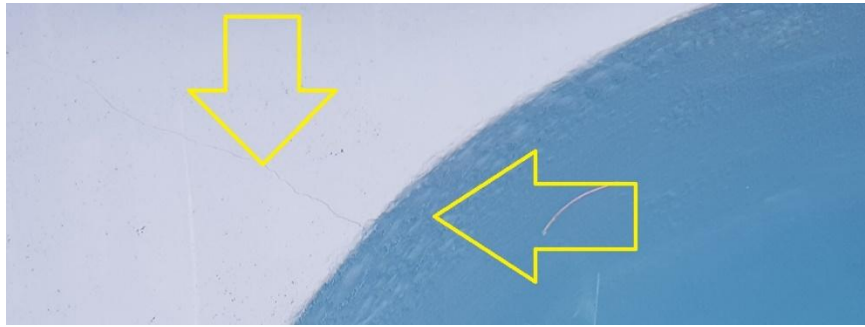


Fig 5: Structural crack on step inside and resulting blisters in the riser below.

Fig 6: General view inside the plunge pool showing blisters above and below the water line. See discussion below for reasons why and how to prevent it happening.



Reasons why blisters occur:

1. No waterproof membrane on outside of the pool or its base.
2. The plastered walls on mesh are thin (50 – 75 mm) and not waterproof.
3. The pool is partially buried into the ground, allowing ground moisture to enter concrete shell.
4. There is a thermal gradient between the lower areas and the top of the walls when in hot sun. This causes moisture to move upward in the walls, which acts like a wick.
5. Hydrostatic pressure is also at work, pushing moisture from within the walls, towards the water, on the inside.
6. As the coating is highly vapour impermeable the relative pressures and gradients are enough to create blisters, with moisture trapped inside the blister, till broken.

How to Prevent Blisters Occurring:

1. All water retaining structures should have a waterproof membrane on the outside and underside as a matter of course. This is not always specified or indeed carried out, leading to the issues seen in the images above.
2. It is often acceptable to have a waterproof membrane on the inside of the water containing vessel, providing it is designed as a negative pressure coating. (meaning used on the inside)
3. A high build epoxy (300 microns dft, plus) when applied to a correctly prepared surface, will usually be successful in resisting these issues, within reason. Though a proper WPM in #2 is preferred.

Summary:

Water on the outside of water containing structures can create issues and permeate the substrate and “blow off” the internal finish. **It’s always best to seal the outside 100% first.** Remedial work can be undertaken if blisters appear and this work will be specific to the situation, as there is no blanket answer.