

PAPER 11

TROUBLE SHOOTING POOL WATER

CLOUDY WATER

Possible causes: 1. Insufficient filtration.

Remedy: Extend filtration time (24/7 for a few days may be required), use flocculating agent if necessary, check the filter for leakage or bypass which may indicate the water is bypassing filtration. Check the chemical balance of the water and adjust as required. Do the pH last, as adding compounds may alter the correct pH value of 7.6.

Remember that pH is measured on a scale of 0 to 14. Zero is ACID and 14 is ALKALINE. Residential swimming pools should be kept as close to 7.6 as possible, remembering that 7.5 is TEN TIMES LESS than 7.6 as the scale is logarithmic, just like the Richter scale for measuring earthquakes. Each increment is of a magnitude of 10 greater (or less)

COLOURED WATER (i.e. NOT CLEAR AND SPARKLING)

Well-maintained pool water is clear and colourless and as such it may reflect its surrounding. If discolouration is a problem the colour of a sample of the pool water should be compared to the same volume of distilled water (not tapwater) to be sure that it is not caused by reflections.

Colouration may be caused by metal ions or plant material or algae.

1. Metal ions.

Most coloured metal ions are insoluble in alkaline and well-chlorinated water and they impart a green, milky appearance to the water. The water should be filtered immediately as the green haze will soon discolour the interior of the pool. Flocculation of the contaminates will accelerate the removal.

The contamination by metal ions can be prevented by:

- a. the pH of the pool water must always be above 7
- b. the make-up water should be added through the skimmer box while the filter is operating.
- c. do not use steel tools or equipment in the pool water.
- d. prevent nails and metal filings drop into the pool.

2. Tannins

This type of colouration is found in water which is drawn from rivers, lakes or dams. Also it may be leached out from the timber of new hot tubs.

Remedy: Tannins are destroyed by chlorine. Superchlorination will accelerate the process.

3. Algae

It is rare that algae cause colouration of the water as the common algae are found clinging to the walls. However, they are easily destroyed by superchlorination.

STAINING OF THE WALLS AND FLOOR

Possible cause: metal ions like iron, copper, manganese, silver etc. tannins and pigments from plants.

Remedy:

1. Prevention: the pH of the pool water should always be greater than 7.

- Filter the make-up water instead of adding it directly into the pool.
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- Remove leaves and twigs as soon as possible.

2. Removal of metal ion stains.

2.1 In pools with non-reactive finish.

- a. Make the water acid with hydrochloric acid
- b. Circulate the water until the stain is removed.
If stain does not fade check acidity. Add more acid as required.
- c. If stain does not fade it is likely to be organic tannin and it should be treated as such (see below).
- d. When stain is completely removed add soda ash. Mix the water thoroughly and check that the water is alkaline (pH about 9).
- e. Filter the water until clear. The filter may have to be cleaned as the solids are usually slimy.
- f. When water is clear - and not before - Clean the filter thoroughly and add hydrochloric acid to pH7.
- g. Add sodium bicarbonate to achieve about 80 mg/L of total alkalinity.
- h. Add chlorine as required. Consider prevention to avoid recurrence.

2.2. Removal: in pools with reactive finish.

The treatment carried out in 2. is not satisfactory in these pools. If the stain is in small spots they may be removed by rubbing with abrasives. To remove larger stains the water has to be drained and the stain removed by water blasting, grinding or acid washing. The latter leaves a very rough finish and it should be used if other methods are not available.

If acid washing is used care should be taken to remove the excess liquid as soon as possible to prevent the staining of the floor or the lower parts of the wall.

3. Removal of organic stains.

Chlorine destroys the organic stains. If necessary superchlorination may be applied or even dropping small amounts of granular chlorine on the stain. Care should be taken not to bleach the interior, especially the coloured or printed vinyl lining. If in doubt about fading do NOT add solid chlorine to the pool.

'BLACK SPOT' ALGAE

Small black spots which can be removed relatively easily by strapping. They consist of millions of various algae covered by a slimy layer. The black spot algae are usually found in concrete pools with marblesheen or other cement-type finishes. The vinyl and fibreglass walls are too smooth for the algae to be able to attach themselves and these algae are rarely if ever found in these pools. Chlorine is not effective provided the layer is not very thick.

Remedy:

- a. Scrape the colonies of the black spot algae of the walls as thoroughly as possible. It is a tedious job, however, it is necessary.
- b. Vacuum the pool to remove the clusters of algae from the pool and back-wash or clean the filter to eliminate the algae from the filter and to prevent re-infestation.
- c. Add the recommended dose of an approved algaecide and mix it in the water thoroughly. Maintain the algaecide concentration in the water by regular weekly dosing.
- d. Sanitize the water as usual.
- e. Remove any algae that may appear as soon as possible.

EYE IRRITATION, STRONG CHLORINE ODOUR

These are the result of low pH, insufficient chlorination (i.e. the presence of chloramines) or high pH.

Remedy:

- a. Superchlorinate the pool water.
- b. Maintain the chlorine concentration at 1-2 mg/L minimum. (1 to 2 ppm)
- c. Combined chlorine should be less than 0.5 mg/L at all times. (½ a ppm)
- d. Adjust the pH to 7.6

RAPID CONSUMPTION OF CHLORINE

Chlorine (and bromine) is rapidly destroyed by ultraviolet rays of the sun, by heat and organic contaminants. The loss can be minimized although it cannot be avoided altogether.

Remedy:

- a. add a stabilizer to the water and maintain it between 30-50 mg/L. This will greatly reduce the loss of chlorine by the UV rays (bromine cannot be stabilized against UV rays and it is destroyed rapidly).
- b. do not heat the water unnecessarily as this will minimize loss of chlorine due to heating.
- c. avoid contaminating the water unnecessarily. Have a shower before a swim, keep the family pets out of the water, remove leaves, branches of trees from the water as soon as possible, use a blanket during holidays and during the off-season.

GREEN ALGAE ON THE WALLS

It is due to insufficient chlorination and the lack of algaecides.

Remedy:

Maintain a minimum of 1-2 mg/L of chlorine (2-4 mg/L of bromine) and the recommended level of an approved algaecide, usually 3-5 mg/L at all times.

Brushing the walls may help in case of a heavy infestation. The most important point to remember is not to neglect the pool and to maintain it in a sanitary condition all the time. It takes much less time and it is less frustrating than try to clean up a green soupy mess.

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