

PAPER 7 TEST

Your Name _____

THE CHEMICAL BALANCE OF CONCRETE POOL WATER (Background Information)

Since it is rare to find water which is in perfect equilibrium with the pool's interior,

1. WHAT _____ is required to correct the imbalance in the solids content of the water.

We have to bring the water to the point of WHAT 2. _____ by adding certain substances in the right proportion, rather than wait until this state is achieved naturally.

3. _____ means the adding of specified quantities of chemicals to the pool water to achieve equilibrium between the pool water and the internal (often plaster) surface of the pool.

The correct chemical balance is very important as it has an effect on:

4. _____

5. _____

6. _____

7. _____

The chemical balance of the pool water is the combined effect of:

8. _____

9. _____

10. _____

11. _____

12. _____

Why is the pH of the pool water important?

13. _____

SATURATION INDEX (SI)

What does this Index measure?

14. _____

Why is it important?

15. _____

Why is it not used as much as in the past?
16. _____

It was pointed out that one of the roles of the chemical treatment is to make the water compatible with the pool's finish, fittings, and equipment. Also it was mentioned that different pool finishes require different treatments.

Please expand on the above statement

17. _____

It was also stated that the water which is out of chemical balance etched the plaster finish finish or it formed a deposit on it. In other words ...

WHAT happens? 18. _____

In the case of the vinyl lined pool, however, such etching is impossible by the unsaturated water as there is no plaster to etch and the vinyl is insoluble in the water. Also it is difficult to form a hard scale on the smooth surface of the vinyl lining. In other words, there was:

19. _____ between the water and the vinyl lining.

In the case of the over-saturation the excess is not held by the water, and it is likely to become

20. _____ and 21. _____

This situation may also apply to moulded fiberglass pools.

Pool finishes can be classified into two categories:

22. _____ FINISHES like marblesheen, exposed aggregate, the grouting around the tiles, slates etc.

23. _____ FINISHES like vinyl lining, paint, fibreglass, any that does not contain cement or plaster.

NOTE: If there are a couple of rows of tiles at the water line of a fibreglass pool with cement-based grouting between the tiles, the water should be treated as if the pool were fully tiled i.e. the pool's interior should be judged by its weakest point (the grouting, not the tiles) where the unbalanced water may cause damage.

How do you lower the calcium hardness of pool water?

This is a difficult process, and it should be attempted if there are no alternatives, like replacing part of the water with softer water.

Procedure:

24. _____
25. _____
26. _____
27. _____
28. _____

TOTAL ALKALINITY

It is easy to increase or decrease the level of total alkalinity and it is recommended that this is used when adjustments are made to achieve the desirable saturation index. The total alkalinity must be established with sodium bicarbonate.

Is Soda ash suitable to use in this instance YES NO.

The pH of the water will vary according to the concentration of the sodium bicarbonate. The higher the total alkalinity the higher the pH is. Also the pH is more stable when the total alkalinity is above 100 mg/L.

The approximate pH values –vs - total alkalinity are listed below:

Total Alkalinity - mg/L	pH
20	7.0
50	7.4
100	7.7
125	7.8
160	7.9
200	8.0
240	8.2

7.6 – 7.8 ideal for most residential pools

How do you increase the total alkalinity of the pool water?

29. _____ should be used..

How do you lower the total alkalinity of the pool water?

30. _____

31. _____

Either may be used.

NOTE: After adding the above products to the water the pH will be lower than expected, however, the final pH will be reached within a few days.

pH

The value of the pH is dependant on the amounts of acidic or alkaline chemicals present in the water. It cannot be altered without changing the acidity or the total alkalinity. Irrespective of the pool's finish the pH of the water should be maintained above 7 at all times. The only exception to this rule is in the case of **older fibreglass pools** which, due to potential damage by osmosis, may develop unsightly black spots. The recommended pH in that case is about 6.8.

What may occur when the pH of the pool water is below 7:

32. _____

33. _____

34. _____

35. _____

36. _____

37. _____

When the pH of the pool water is 7.0.

38. - the pH _____ and even small amounts of acids or alkaline materials cause significant changes.

39. - the _____ of the water changes with the pH.

When the pH of the pool water is between 7.2 and 8.0

40. - this level is _____ IS or IS NOT the recommended pH range for all pools;

41. - as the total alkalinity increases the pH becomes _____

42. - chlorine and bromine sanitisers are _____

43. - people can stay in the water for long periods without _____.

When the pH of the pool water is above 8.0.

44. _____ is ineffective with the increasing pH and much higher levels are required to maintain efficient sanitisation;

45. - the likelihood of "miliness" and _____ increases especially above pH 8.4;

46. - the water depletes the skin of _____ especially in the warmer waters.

When the pH has to be altered it is carried out by increasing or decreasing the

47. _____.

TOTAL DISSOLVED SOLIDS

As it was mentioned earlier the dissolved solids cannot be filtered out and they can be reduced only by

48. _____ and 49. _____

RECOMMENDED STARTING-UP PROCEDURES

- end -