

The onBalance

Chemical Method of Determining Pool Volume

- Take a water sample from the pool.
- Add acid, soda ash, or another chemical which alters total alkalinity to the pool. Add enough to make a noticeable shift in TA – at least 10 to 20 ppm. Write down exactly how much you used.
- Wait for the chemical to completely blend throughout the water. (This time will vary from minutes to hours depending on the method of addition, the circulation, etc.)
- Take a second water sample from the pool.
- Test the total alkalinity of the two samples. For sufficient accuracy, use a test method which is accurate within 1 or 2 ppm. For example, if your test kit is 10 ppm per drop of titrant, use 10 times as much pool water as a test sample. Then each drop is 1 ppm.
- Find the formula number for the chemical you used off the “Simplified Formula Numbers” chart
- Apply the following formula (using the appropriate formula number depending on which chemical was used):

$$\frac{(\text{formula number})(\text{amount of chemical used in quarts or pounds})}{(\text{Number in ppm that the TA changed})} = \text{Pool Volume}$$

Example – you add 4 pounds of sodium bicarbonate to a pool. The starting TA was 100 ppm and the ending TA was 115 ppm.

$$\frac{(71,400)(4)}{(115 - 100, \text{ or } 15 \text{ ppm})} = 19,000$$

(Actually the volume came out to be 19,040, but of course that is too precise – round off to the nearest 1000 gallons. The margin of error should be around 5%)