



HOW TO USE YOUR TEST KIT

A Guide to Cookbook Chemistry

How to use your test kit – A guide to cookbook chemistry



Easy Step-By-Step Instructions

- Color coded
- Free and total chlorine
- Calcium hardness
- Total alkalinity
- Cyanuric acid
- pH
- Base demand
- Acid demand



There are step-by-step instructions inside your test kit. They are color coded to the bottles so you can test easily. Your kit will test for free and total chlorine, calcium hardness, total alkalinity, cyanuric acid and pH. There are also base and acid demand tests that can be performed.



TEST BLOCK

- Color scale for chlorine, bromine and pH
- Small and Large comparator tubes



. Your test block has a color scale to test for chlorine, bromine and pH. The smaller comparator tube is for chlorine and bromine, the larger tube is for pH.



TEST BLOCK COLORS

- Chlorine scale 0.5 to 5 ppm (mg/L)
- Bromine scale 1 to 10 ppm
- pH scale 7.0 to 8.0

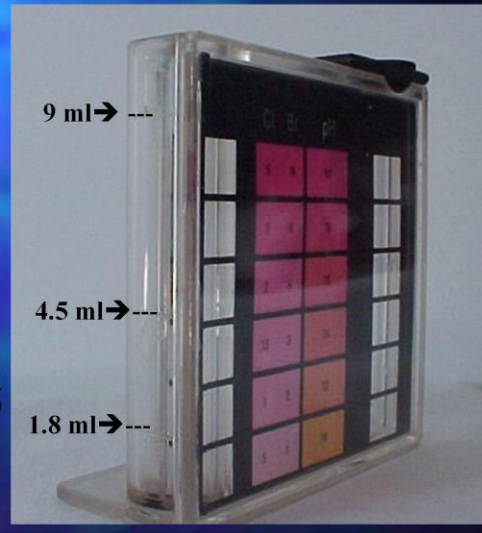
| Cl | Br | pH |
|-----|----|-----|
| 5 | 10 | 8.0 |
| 3 | 6 | 7.8 |
| 2 | 4 | 7.6 |
| 1.5 | 3 | 7.4 |
| 1 | 2 | 7.2 |
| 0.5 | 1 | 7.0 |

The chlorine scale measures from 0.5 to 5ppm, the bromine scale measures 1 to 10ppm, and the pH scale measures 7.0 to 8.0.

TEST BLOCK CHLORINE WATER LINES



- Small tube has 3 marks on left side (outside) used in standard chlorine test and dilution test
- Each mark shows milliliters of pool water to use
- If chlorine test bleaches out use 1:1 dilution (4.5 ml mark) or 1:5 dilution (1.8 ml mark)

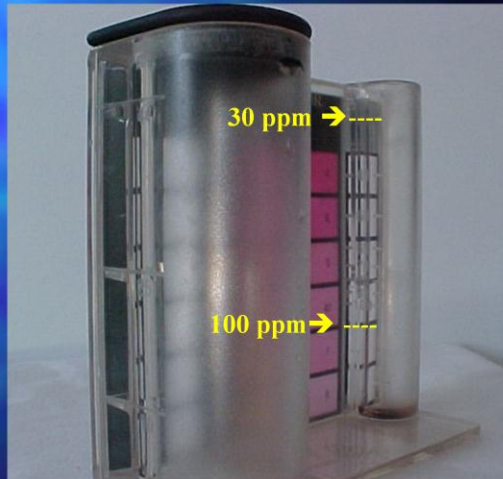


The small tube has three marks on the outside that are used in the standard chlorine test and dilution test. Each mark shows how many milliliters of pool water to use. If your chlorine test bleaches out you can use a one-to-one dilution using the 4.5ml mark, or a one-to-five dilution using the 1.8ml mark.

TEST BLOCK STABILIZER SCALE

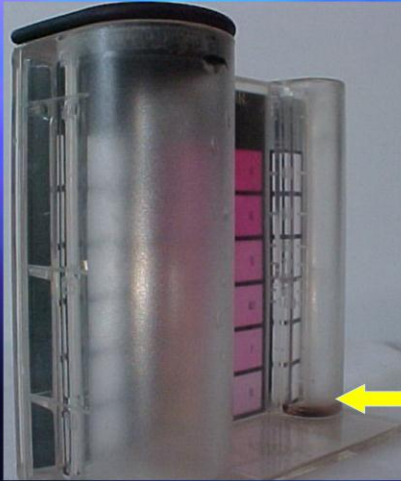


- Backside of small tube has raised marks reading from 100 ppm to 30 ppm.
- Use to read stabilizer level (cyanuric acid) in pool water



The inside of the small tube has raised marks reading from 100ppm to 30ppm. These are used to read the stabilizer level in the pool water.

SMALL TUBE STABILIZER DOT



Inside small tube there is a black dot on the bottom also used in stabilizer reading test



Inside the small tube there is a black dot on the bottom that is also used to read the stabilizer level.

CHLORINE TEST REAGENTS

- DPD #1 and #2 used for free active chlorine
- DPD #3 used for total chlorine
- DPD #2 is light sensitive, check for color change



DPD reagents #1 and #2 are used to measure free active chlorine, and DPD #3 is used to measure total chlorine. DPD #2 is light sensitive, which is why it comes in a darker bottle. Keep an eye on your #2 for color changes, meaning the reagent is no longer good.

FREE ACTIVE CHLORINE

- Fill small tube to 9 ml mark
- Add 5 drops each DPD #1 and #2
- Use a dilution technique if chlorine reads higher than 5 ppm or if reading bleaches out from pink to clear (flashes)

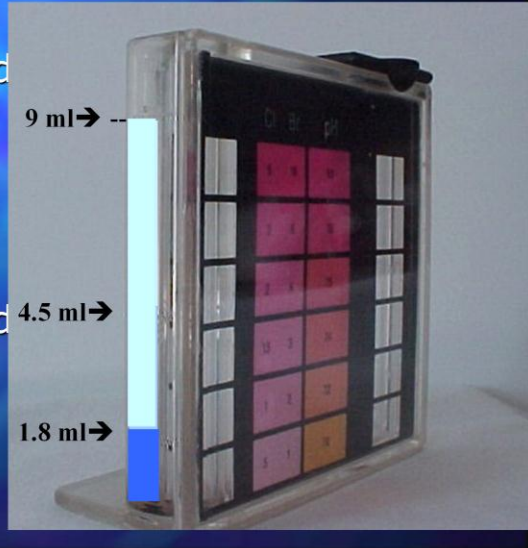


To test for free active chlorine, first fill the small comparator tube to the 9ml mark. Next, add 5 drops each of #1 and then #2. You can use a dilution technique if your chlorine reading is higher than 5ppm or if the reading flashes out from pink to clear.



DILUTION TEST FOR CHLORINE

- For 2-fold dilution use 4.5 mls pool water, add distilled water to 9 ml line. Add DPD #1 and #2 and multiply results by 2
- For 5-fold dilution use 1.8 mls pool water, add distilled water to 9 ml line. Add DPD #1 and #2, read color and multiply results by 5



For a two-fold dilution, use 4.5mls of pool water and add distilled water to the 9ml mark. Add DPD #1 and #2, read the color and multiply the results by 2. For a five-fold dilution, use 1.8mls of pool water; add distilled water to the 9ml mark. Add DPD #1 and #2, read the color and multiply the results by 5.



STABILIZER (CYA) TEST

- Fill dispensing bottle to halfway mark with pool water
- Fill other half with R-0013 Cyanuric acid reagent
- Shake 30 seconds
- Keep a big stock of R-0013 on hand!

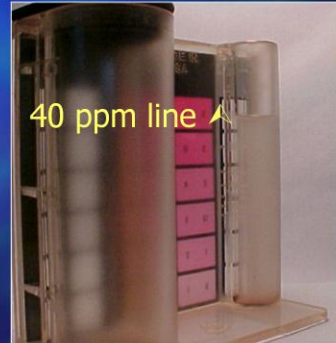


For the stabilizer test fill the small bottle to the halfway mark with pool water, then fill the rest of the bottle with R-0013 (cyanuric acid reagent). Put on the lid and shake the bottle for 30 seconds. You should always keep a big supply of R-0013 with you.



STABILIZER READING

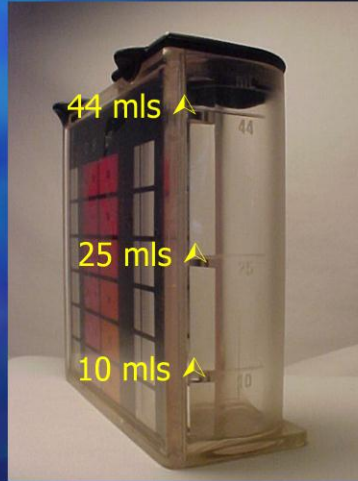
- Dribble mixture into small tube until black dot is clouded over.
- The higher the CYA, the cloudier the mix will be, the faster the dot disappears
- Once dot is gone, read backside of tube to get ppm Stabilizer.



To read your stabilizer, dribble the mixture from the small bottle into the smaller comparator tube until the black dot in the bottom is clouded over. Once the dot is gone you can read the inside of the tube to get your stabilizer reading. The more cyanuric acid there is in the water the faster the dot will disappear.

pH, TOTAL ALKALINITY and CALCIUM HARDNESS TESTS

- Three marks on outside edge of large tube
- Top mark for pH test only
- Middle mark for total alkalinity and calcium hardness test
- Bottom mark for extreme highs in alkalinity and calcium (rarely used)

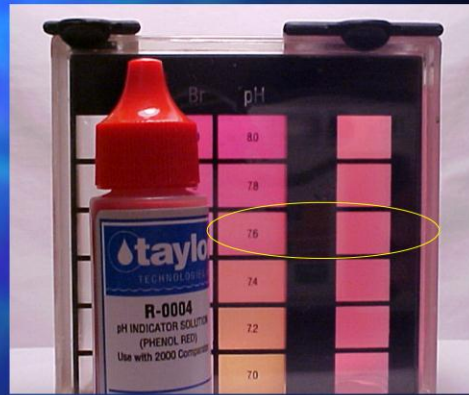


For the pH, total alkalinity and calcium hardness tests there are three marks on the outside edge of the larger comparator tube. The top mark is used for pH testing only. The middle mark is used for the total alkalinity and calcium hardness tests and the bottom mark is used for cases where you may have extreme highs in the total alkalinity or calcium hardness.



pH TEST

- Fill large tube to 44 ml mark (top)
- Add 5 drops of R-0004 (red stuff)
- If pH too high use acid demand test, pH too low, use base demand test



To perform the pH test fill the large comparator tube to the 44ml mark with pool water add 5 drops of R-0004 and mix. To read your pH, compare the color in the tube with the color block to determine the correct pH. If your pH is high you can perform an acid demand test, or a base demand test if it's low.



BASE OR ACID DEMAND

- pH reagents come with a bottle of acid and a bottle of soda ash
- If pH too low, it “demands” or requires base
- Count drops of base demand needed to bring color up to desired pH



Use table provided (click on resources above) to convert drops to amount needed for your pool

The pH reagents in your test kit come with a bottle of acid and a bottle of soda ash. If your pH is too low, like in this picture, it's too acidic and requires base. Use the base demand and add drops to the large tube until the pH becomes the desired color. Count the drops as you add them and use the table provided under "resources" to convert the drops added to the comparator to the amount you need for your pool to bring the pH up. The same works for the acid demand test.

Table 4-9: Raising pH using soda ash (sodium carbonate)

| Drops of Base Demand | Volume of water (gallons) | | | | | | |
|----------------------|---------------------------|---------|---------|---------|---------|---------|---------|
| | 250 | 400 | 1000 | 5000 | 20000 | 50000 | 100000 |
| Reagent | | | | | | | |
| 1 | 0.13oz | 0.21 oz | 0.52 oz | 2.60 oz | 10.4 oz | 1.63 lb | 3.25 lb |
| 2 | 0.26 oz | 0.42 oz | 1.04 oz | 5.20 oz | 1.30 lb | 3.25 lb | 6.50 lb |
| 3 | 0.39 oz | 0.62 oz | 1.56 oz | 7.80 oz | 1.95 lb | 4.88 lb | 9.75 lb |
| 4 | 0.52 oz | 0.83 oz | 2.08 oz | 10.4 oz | 2.60 lb | 6.50 lb | 13.0 lb |
| 5 | 0.65 oz | 1.04 oz | 2.60 oz | 13.0 oz | 3.25 lb | 8.13 lb | 16.3 lb |
| 6 | 0.78 oz | 1.25 oz | 3.12 oz | 15.6 oz | 3.90 lb | 9.75 lb | 19.5 lb |
| 7 | 0.91 oz | 1.46 oz | 3.64 oz | 18.2 oz | 4.55 lb | 11.4 lb | 22.8 lb |
| 8 | 1.04 oz | 1.66 oz | 4.16 oz | 20.8 oz | 5.20 lb | 13.0 lb | 26.0 lb |
| 9 | 1.17 oz | 1.87 oz | 4.68 oz | 23.4 oz | 5.85 lb | 14.6 lb | 29.2 lb |
| 10 | 1.30 oz | 2.08 oz | 5.20 oz | 26.0 oz | 6.50 lb | 16.3 lb | 32.6 lb |

This table is similar to the one you will find in your book to determine how much sodium bicarbonate, or soda ash, is needed to bring your pH up to the proper level. In this example we added 5 drops of base demand to our comparator and since we have a 20,000 gal pool we can determine that 3.25 pounds of sodium bicarb should be added to the pool.



TOTAL ALKALINITY

- A titration (measuring amount of chemical needed to create a reaction.)
- 2 drops R-0007
- 5 drops R-0008 turns it green
- Count drops of R-0009 needed to turn it red
- Multiply result by 10



The total alkalinity test is a titration test, which is measuring an amount of a chemical needed to create a reaction. Fill the larger comparator tube to the middle line, and add 2 drops of R-0007. Add 5 drops of R-0008 to turn the liquid green. Add drops of R-0009 and count how many are needed to turn the liquid red. Multiply that number by 10 to determine the total alkalinity of the pool.

If it took 6 drops of R-0009 to turn green to red, TA is $6 \times 10 = 60$ ppm.

Use bicarb table on [page 46](#) to raise the total alkalinity to desired level

. In this example, if it took 6 drops of R-0009 to turn the liquid from green to red, then the total alkalinity of the pool would be 60ppm. You can use the bicarb table in your book to determine how to raise the total alkalinity to the desired level.



CALCIUM HARDNESS

- A titration test similar to total alkalinity test
- Fill large tube halfway (25 ml mark)
- Add 20 drops R-0010, then 5 drops R-0011L (solution will turn red)
- Add R-0012 drop wise, count drops needed to turn it blue
- Multiply results by 10= ppm calcium hardness



The calcium hardness test is a titration test like total alkalinity. Fill the larger comparator tube to the middle line, and add 20 drops of R-0010, then add 5 drops of R-0011L to turn the liquid red. Add R-0012 and count how many drops are needed to turn the liquid blue. Multiply the number by 10 to determine the calcium hardness of the pool.

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Questions?



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(941) 861-6675.

If you have any questions about anything that was discussed, please give us a call.