

# Richard Hourigan, Inc.

---

Responding to the needs of industry since 1973

## Instructions

---

### Instruction Number: 5510

POOL & SPA  
WATER TESTS

For questions or replacement reagents call us at 877-7WATER6 (877-792-8376) or [email us](#) with your requirements.

1. Keep test kit out of reach of children.
2. Read precautions on all labels.
3. Store test kit in cool, dark place.
4. Replace solutions once each year.
5. Do not dispose of solutions in pool or spa.
6. Rinse tubes before and after each test.
7. Obtain samples 18" below water surface.
8. Hold bottle vertically when dispensing.

#### Chlorine (Free, Combined, Total) Test

1. Rinse and fill test cells to mark with water to be tested.

NOTE: For low chlorine Slide™ (#9082), 0-3.0 ppm, use 11.5 mL test cell (#4024).  
For high chlorine Slide™ (#9083), 1.0-10 ppm, use 5 mL test cell (#4025).

2. Wipe dry and place in three center slots of comparator base WITH FROSTED SIDE FACING OPERATOR.
3. Add 5 drops R-0001 DPD Reagent #1 and 5 drops R-0002 DPD Reagent #2 to center test cell. Cap and invert to mix.
4. Wipe dry and place in center slot of comparator base.
5. Match color with color standard. Record as parts per million (ppm) free chlorine (FC).
6. Add 5 drops R-0003 DPD Reagent #3. Cap and invert to mix.

7. Wipe dry and place in center slot of comparator base.
8. Match color immediately. Record as ppm total chlorine (TC).
9. Subtract FC from TC. Record as ppm combined chlorine (CC).  
Formula:  $TC - FC = CC$ .

#### Total Bromine Test

1. Rinse and fill test cells to mark with water to be tested.

NOTE: For low bromine Slide™ (#9079), 0-3.0 ppm, use 11.5 mL test cell (#4024).  
For high bromine Slide™ (#9236), 2.0-10 ppm, use 5 mL test cell (#4025).

2. Wipe dry and place in three center slots of comparator base WITH FROSTED SIDE FACING OPERATOR.
3. Add 5 drops R-0001 DPD Reagent #1 and 5 drops R-0002 DPD Reagent #2 to center test cell. Cap and invert to mix.
4. Wipe dry and place in center slot of comparator base.
5. Match color with color standard. Record as parts per million (ppm) total bromine.

#### pH Test

1. Rinse and fill 11.5 mL test cells (#4024) to 11.5 mL mark with water to be tested.
2. Wipe dry and place in three center slots of comparator base WITH FROSTED SIDE FACING OPERATOR.
3. Using a 1.0 mL pipet (#4030), add 0.5 mL R-1003J pH Indicator to center test cell. Cap and invert to mix.
4. Wipe dry and place in center slot of comparator base.
5. Match color with color standard. Record as pH units and save sample if pH needs adjustment.  
If sample color is between two values, pH is average of the two.  
To LOWER pH: See acid demand test.  
To RAISE pH: See base demand test.

#### Acid Demand Test

1. Use treated sample from pH test.
2. Add R-0853 Acid Demand Reagent dropwise. After each drop, count, mix, and compare with color standards until desired pH is matched. See treatment tables to continue.

#### Base Demand Test

1. Use treated sample from pH test.
2. Add R-0862 Base Demand Reagent dropwise. After each drop, count, mix, and compare with color standards until desired pH is matched. See treatment tables to continue.

NOTE: pH Indicator, Acid Demand Reagent, and Base Demand Reagent used for Midget™ and Slide™ comparators are not interchangeable with 2000 Series™ comparators. That is, reagents R-0004, R-0005, and R-0006 cannot be substituted for reagents R-1003J, R-0853, and R-0862.

#### Total Alkalinity Test

1. Rinse and fill sample tube (#9198) to 25 mL mark with water to be tested.\*
2. Add 2 drops R-0007 Thiosulfate N/10. Swirl to mix.
3. Add 5 drops R-0008 Total Alkalinity Indicator. Swirl to mix. Sample should turn green.
4. Add R-0009 Sulfuric Acid .12N dropwise. After each drop, count and swirl to mix until color changes from green to red.
5. Multiply drops in Step 4 by 10. Record as parts per million (ppm) total alkalinity as calcium carbonate.

\*When high TA is anticipated, use this procedure: Use 10 mL sample, 1 drop R-0007, 3 drops R-0008, and multiply drops in Step 4 by 25.

#### Calcium Hardness Test

1. Rinse and fill sample tube (#9198) to 25 mL mark with water to be tested.\*
2. Add 20 drops R-0010 Calcium Buffer. Swirl to mix.
3. Add 5 drops R-0011L Calcium Indicator Liquid. Swirl to mix. If calcium hardness is present, sample will turn red.
4. Add R-0012 Hardness Reagent dropwise. After each drop, count and swirl to mix until color changes from red to blue.
5. Multiply drops in Step 4 by 10. Record as parts per million (ppm) calcium hardness (CH) as calcium carbonate.

\*When high CH is anticipated, use this procedure: Use 10 mL sample, 10 drops R-0010, 3 drops R-0011L, and multiply drops in

Step 4 by 25.

#### Total Hardness Test

1. Rinse and fill sample tube (#9198) to 25 mL mark with water to be tested.
2. Add 10 drops R-0854 Total Hardness Reagent. Swirl to mix. If total hardness is present, sample will turn red.
3. Add R-0012 Hardness Reagent dropwise. After each drop, count and swirl to mix until color changes from red to blue.
4. Multiply drops in Step 3 by 10. Record as parts per million (ppm) total hardness (TH) as calcium carbonate.

#### Magnesium Hardness Test

1. Subtract CH from TH. Record as ppm magnesium hardness (MH) as calcium carbonate. Formula:  $TH - CH = MH$ .

#### Cyanuric Acid Test

1. Rinse and fill CYA dispensing bottle (#9194) to 15 mL mark with water to be tested.
2. Add R-0013 Cyanuric Acid Reagent to neck. Cap and mix for 30 seconds.
3. Slowly transfer cloudy solution to CYA view tube (#9193) until black dot on bottom just disappears when viewed from top.
4. Read CYA view tube at liquid level. Record reading as parts per million (ppm) cyanuric acid.

#### Copper Test

1. Rinse and fill 11.5 mL test cells (#4024) to 11.5 mL mark with water to be tested.
2. Wipe dry and place in three center slots of comparator base WITH FROSTED SIDE FACING OPERATOR.
3. Using a 1.0 mL pipet (#4030), add 0.5 mL R-0860 Copper Reagent #1 to center test cell. Using a different 1.0 mL pipet, add 0.5 mL R-0861 Copper Reagent #2. Cap and invert to mix.
4. Wipe dry and place in center slot of comparator base. WAIT 5 MINUTES.
5. Match color with color standard. Record as parts per million (ppm) copper.

#### Iron Test

1. Rinse and fill 11.5 mL test cells (#4024) to 11.5 mL mark with water to be tested.
2. Wipe dry and place in three center slots of comparator base WITH FROSTED SIDE FACING OPERATOR.
3. Using a 1.0 mL pipet (#4030), add 0.5 mL R-0851 Iron Reagent #1 to center test cell. Cap and invert to mix. WAIT 2 MINUTES.
4. Using a different 1.0 mL pipet, add 1.0 mL R-0852 Iron Reagent #2. Cap and invert to mix.
5. Wipe dry and place in center slot of comparator base.
6. Match color with color standard. Record as parts per million (ppm) iron.

7/07