

CHLORINE, HARDNESS, IRON AND pH TEST KIT

Model CN-39WR

Cat. No. 2230-02



CHLORINE TEST INSTRUCTIONS

TO ENSURE ACCURATE RESULTS READ CAREFULLY BEFORE PROCEEDING:

Rinse viewing tubes thoroughly before conducting the test. Note that the powder does not have to dissolve completely to obtain correct readings.

1. Place the Chlorine Color Disc in the comparator.
2. Fill a color viewing tube to the 5-mL mark with clear water. Place this tube in the top left opening of the color comparator (Untreated Sample Position in Figure 1).
3. Fill the other viewing tube to the 5-mL mark with the water to be tested.
4. Use the clippers to open one DPD Total Chlorine Reagent Powder Pillow. Add the contents of the pillow to the tube and swirl to mix. Let the sample stand undisturbed for three minutes.

WARNING: The chemicals in this kit may be hazardous to the health and safety of the user if inappropriately handled. Please read all warnings carefully before performing the tests and use appropriate safety equipment.

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5. Place the tube of prepared sample in the right top opening of the color comparator (Prepared Sample Position in Figure 1).
6. Hold the comparator up to a light source such as the sky, a window or lamp and view through the openings in the front. Rotate the disc to obtain a color match. Read the mg/L total chlorine (Cl_2) through the scale window.

HARDNESS TEST INSTRUCTIONS

The titrant reagent dropper should be held vertically slightly above the top of the mixing bottle. The dropper should not come in contact with the sides of the bottle. Drops must be dispensed at a rate no faster than one drop per second.

1. Fill the plastic measuring tube level full of the water to be tested. Pour the contents of the tube into the mixing bottle.
2. Add three drops of Buffer Solution, Hardness 1, to the mixing bottle. Swirl to mix as shown in Figure 2.
3. Add one drop of ManVer® Hardness Indicator Solution, Hardness 2, to the mixing bottle. Swirl to mix.
4. Add Titrant Reagent, Hardness 3, drop by drop. Swirl the bottle to mix and count each drop as it is added. Continue to add drops until the solution color changes from pink to blue.
5. The hardness, in grains per gallon as calcium carbonate (CaCO_3), is equal to the number of drops of Titrant Reagent, Hardness 3, used to bring about the color change in Step 4.

IRON TEST INSTRUCTIONS

Copper can interfere with the results of this test by forming yellow, blue or violet color. If copper interference is suspected, add a 0.05-g scoop of RoVer® Rust Remover to the viewing tube before adding the FerroVer® Iron Reagent Powder.

Excess iron also will inhibit full color development in this test. A diluted sample should be used as the test sample if high concentrations of iron are present.

RoVer Rust Remover, Cat. No. 300-20, and the scoop, Cat. No. 492-00, are not included as part of this kit but may be ordered from Hach Company. *See Replacements.*

1. Fill one color viewing tube to the 5-mL mark with clear water. Place this tube in the top left opening of the color comparator (Untreated Sample Position in Figure 1).
2. Fill the other viewing tube to the 5-mL mark with the water to be tested.
3. Use the clippers to open one FerroVer Iron Reagent Powder Pillow. Add the contents of the pillow to the tube, and swirl to mix. An orange color will develop if iron is present in the sample.
4. Place the tube of prepared sample in the right top opening of the color comparator (Prepared Sample Position in Figure 1).
5. Place the Iron Color Disc in the comparator.
6. Hold the comparator up to a light source such as the sky, a window or a lamp, and view through the openings in front. Rotate the disc to obtain a color match. Read the mg/L iron (Fe) through the scale window.

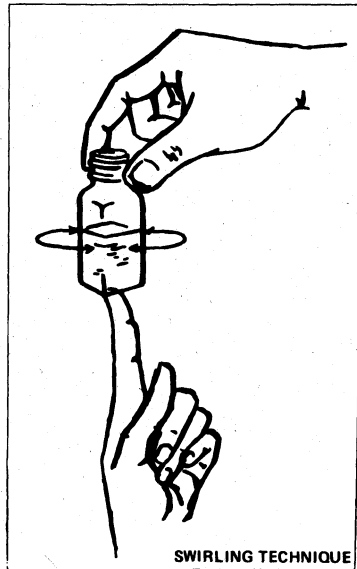


Figure 1

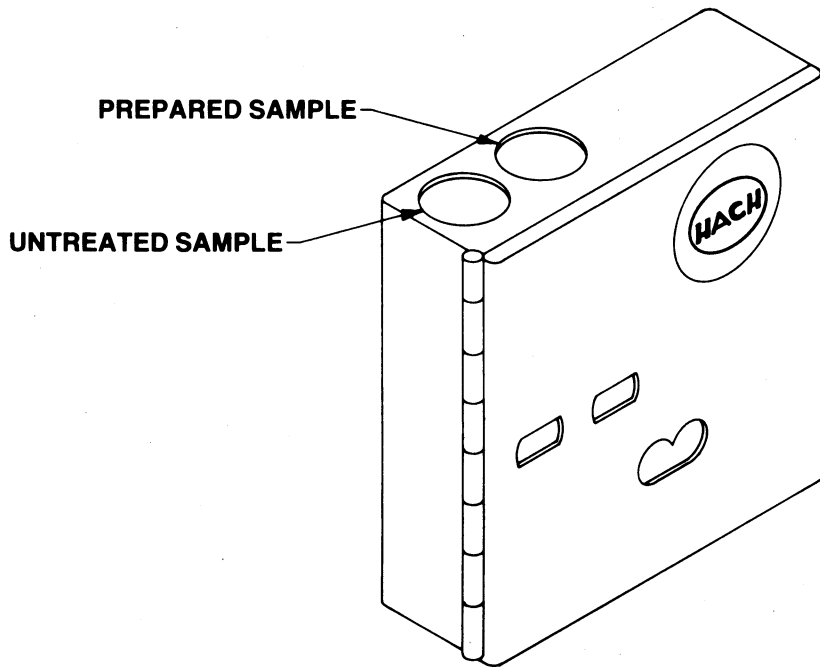


Figure 2

pH TEST INSTRUCTIONS

Chlorine interferes with the results of this test when present in concentrations of 1 mg/L or more. Up to 50 mg/L of chlorine may be removed using Sodium Thiosulfate Solution 0.1N, Cat. No. 323-27. This solution is not included in this kit but may be ordered from Hach Company. *See Replacements.* To remove chlorine add one drop of Sodium Thiosulfate Solution to the water sample before adding the pH indicator.

Reagent accuracy should be checked periodically using a reliable buffer solution such as Buffer Solution, pH 7.00, Cat. No. 12222-11. Follow test instructions, using the buffer as the sample to be tested. This buffer is not included in this kit but may be ordered from Hach Company. *See Replacements.*

1. Repeatedly rinse a color viewing tube with the water to be tested to remove any residue from previous tests. Fill the color viewing tube to the 5-mL mark with the water sample.
2. Add six drops of Wide Range 4 pH Indicator Solution to the tube. Swirl to mix.
3. Place the tube of prepared sample in the right top opening of the color comparator (Prepared Sample Position in Figure 1).
4. Fill the other color viewing tube with a clear water sample, and place it in the left top opening of the color comparator (Untreated Sample Position in Figure 1).
5. Place the pH Color Disc in the comparator.
6. Hold the comparator up to a light source such as the sky, a window or lamp and view through the openings in front. Rotate the disc to obtain a color match. Read the pH through the scale window.

REPLACEMENTS

Cat. No.	Description	Unit
424-37	Buffer Solution, Hardness 1	118 mL (4 oz) DB*
927-99	FerroVer Iron Reagent Powder Pillows	pkg/100
425-37	ManVer Hardness Indicator Solution, Hardness 2	118 mL (4 oz) DB*
14076-99	DPD Total Chlorine Powder Pillows	pkg/100
426-37	Titrant Reagent, Hardness 3	118 mL (4 oz) DB*
23293-37	Wide Range 4 pH Indicator Solution	118 mL (4 oz) DB*
439-06	Bottle, mixing	pkg/6
936-00	Clippers	each
1732-00	Color Comparator	each
21988-00	Chlorine Color Disc, 0-3.5 mg/L	each
1713-00	Iron (Phenanthroline) Color Disc	each
1919-00	Wide Range pH Color Disc	each
1730-00	Color Viewing Tube	each
438-00	Measuring Tube, 5.83 mL	each
1731-00	Stopper for color viewing tube	each
492-00	Scoop for RoVer (not included in kit)	each
300-20	RoVer Rust Remover (not included in kit)	28g (oz)
323-37	Sodium Thiosulfate Solution 0.1N (not included in kit)	118 mL (4 oz) DB*
12222-11	Buffer Solution pH 7.00 (not included in kit)	473 mL (pt)

*Dropping Bottle

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