# **Taylor's Test for Bleach Solutions**

## **INTRODUCTION**

hlorine or chlorine compounds are routinely used as sanitizers, oxidizers, and bleaching agents in commercial, industrial, and water-utility operations. The treatment may be applied as a gas or as a dry formulation such as a tablet or granules, but for many purposes the liquid bleach **sodium hypochlorite (NaOCI)** is best. Sodium hypochlorite is formed by reacting chlorine with sodium hydroxide. It is sold based on the strength of the product typically, in these markets, 12–15% available chlorine content.

Liquid, gas, and dry forms of chlorine are used to treat pool water too, so it is sparkling clean and pathogen-free for safe swimming. The most common treatment for regulated pools is also sodium hypochlorite, called **"pool bleach"** by the trade. It's popular because of the convenience of feeding a liquid and because it costs less than other options. The available chlorine content of full-strength pool bleach should be 10–12%, roughly double the strength of household laundry bleach.

However, sodium hypochlorite is not chemically stable and decomposes while in transit and storage. It degrades even faster when exposed to heat and light. As it loses its strength, more has to be applied to achieve the desired residual, thus negating the economy of buying the liquid disinfectant. If you **buy bleach in bulk**, use Taylor's Chlorine Bleach Drop Test (K-1579) at the time of delivery to verify the available chlorine content meets the labeled concentration. Make sure you're getting the full strength you're paying for! As part of routine maintenance, also test stored bleach periodically.

A fieldwork-friendly drop test, the K-1579 is an iodine/starch titration with a distinct endpoint signaled by a color change in the test solution from blue to colorless. Note: Other oxidizers in the test sample such as bromine or ozone will cause positive interference.

The K-1579 is the only single-analyte kit in Taylor's product line designed for measuring the high chlorine concentrations found in sodium hypochlorite bleach solutions. Two of our color-matching tests that utilize orthotolidine will go as high as 250 parts per million (ppm) of total chlorine, the K-1151 and K-1401. A wide-range test paper, part #6023 made by Precision Laboratories, can be used to



When you buy bleach solutions in bulk, test to be sure you're getting the full strength you're paying for with Taylor's Chlorine Bleach Drop Test (K-1579).

approximate total chlorine at 10, 50, 100, and 200 ppm; and an FAS-DPD drop-count titration, K-1515, can measure up to 20 ppm of free or combined chlorine when 1 drop = 0.5 ppm. By comparison, in this bleach kit, **instructions are provided for chlorine concentrations in the range of 10–100 ppm.** 1 drop = 10 or 100 ppm/0.05 or 0.5% available chlorine (Cl<sub>2</sub>).

This same bleach test is also included in two combination kits designed for professional laundries. See details on reverse.

This kit is not appropriate for testing the chlorine residual in pool or spa water. Taylor offers tests for this purpose in combination with other routine analyses in our 2000 Series<sup>™</sup>, Commercial Series<sup>™</sup>, and Professional Series<sup>™</sup> kits for the trade and in our Residential Series<sup>™</sup> for consumers.

## **CHLORINE BLEACH KIT**

#### K-1579

Drop test (**iodometric** method); 1 drop = 10 or 100 ppm/ 1 drop = 0.05 or 0.5% available chlorine (Cl<sub>2</sub>)

tay or the most trusted name in water testing

**Taylor Technologies, Inc.** 410-472-4340 800-TEST KIT (837-8548) www.taylortechnologies.com

ISO 9001:2008 Certified

### **USER BENEFITS**

• Titrations do not require the ability to match colors, only the ability to see the **permanent color change** at the endpoint of the reaction.

• Test kit **comes complete** with all necessary reagents and equipment.

• **Waterproof instructions** are printed on plasticimpregnated paper that resists fading and tearing.

• Custom-molded, durable plastic case provides safe storage.

• Proven chemistries are based on *Standard Methods for the Examination of Water and Wastewater*, APHA, Washington, DC, and/or *American Society for Testing and Materials*, ASTM, Philadelphia, PA. Some methods use proprietary chemistry developed by Taylor Technologies.

## **ALSO AVAILABLE**

• The same bleach test in two combination kits designed for use by **professional laundries:** K-1615 (P/T alkalinity, bleach, total hardness, long-range pH with Color Card) and K-1616 (P/T alkalinity, chlorine spot test with OT plus the iodometric bleach test, total hardness, total iron, long-range pH with test papers in three ranges).

• Chlorine tests for more **dilute solutions**—your choice of OT, DPD, or FAS-DPD method. Taylor is also a reseller of Precision Laboratories' Chlorine Test Paper.

• Tests for **other sanitizers/oxidizers** such as bromine, chlorine dioxide, hydrogen peroxide, iodine, ozone, biguanide, and potassium monopersulfate.

- A wide array of single- and multiparameter kits featuring color-matching and/or drop-count tests.
- Taylor's **TTI**<sup>®</sup> **Colorimeter** (M-3000); test 30+ parameters commonly encountered in commercial and industrial settings and transfer results to a PC database.
- Myron L Company portable instruments and calibration solutions (sold separately).

• Video demonstrations for new users posted on our website.

• Toll-free technical assistance at 800-TEST KIT.

## REPRESENTATIVE TEST PROCEDURE

Reproduced from K-1579 instruction:

<ul> <li>COMPONENTS: 1 × 4026 1 × 4027 1 × 4026 1 × 4078 1 × 4026 1 × 4078 1 × 6084 1 × 60854C 1 × 606654C 1 × 600000 1 × 7 × 7 × 7 × 7 × 7 × 7 × 7 × 7 × 7 ×</li></ul>	DROP TEST CHLORINE BLEACH (1 drop = 10 or 100 ppm, 0.05 or 0.5%)		
<ul> <li>For Bleach Solutions of 10 to 1000 ppm</li> <li>1. Select sample size.</li> <li>For 1 drop = 10 ppm, 25 mL sample</li> <li>2. Using a 3 mL pipet (#4078) or 25 mL sample tube (#9198Y), add desired sample size (Step 1) to 25 mL sample tube (#9198Y), add desired sample size (Step 1) to 25 mL sample tube (#9198Y), add desired sample size (Step 1) to 25 mL sample tube (#9198Y), add desired sample size (Step 1) to 25 mL sample tube (#9198Y), add desired sample size (Step 1) to 25 mL sample tube (#9198Y), add desired sample size (Step 1) to 25 mL sample tube (#9198Y), add desired sample size (Step 1) to 25 mL sample tube (#9198Y), add desired sample size (Step 1) to 25 mL sample tube (#9198Y), add desired sample size (Step 1) to 25 mL sample tube (#9198Y), add desired sample size (Step 1) to 25 mL sample tube (#9198Y) (Fig. 1). Dilute 2.5 mL sample to 10</li> <li>M. Using a 1.0 mL pipet (#9009), add 1 pipetful (as much as can be drawn up with the bulb) R-0664 Bleach Reagent #1. Swirl to mix.</li> <li>J. Using a 1.0 mL pipet (#4020), add 1 livel dipper R-0665S Bleach Reagent #2. Swirl until cloor changes from deep yellow or brown to pale yellow (Fig. 4). Always hold bottle in vertical position.</li> <li>Fig. 3</li> </ul>	VTS:       Dipper, plastic, large       5.         Pipet, Graduated, 3 mL (0.5 mL div.), plastic       Instruction         Pipet, Calibrated 0.5 & 1.0 mL, plastic w/gellow cap       6.         Sample Tube, Graduated, 25 mL, plastic w/gellow cap       6.         Sample Tube, Graduated, 25 mL, plastic w/gellow cap       7.         14-C Bleach Reagent #1, 2 oz, DB       7.         16-C Bleach Reagent #2, 50 g       6.         16-C Thiosulfate Reagent #2, 20 g       8.         10-C Thiosulfate Reagent, 2 oz, DB       8.         11 (800-837-8548).       7.         12:       Y READ AND FOLLOW PRECAUTIONS ON REAGENT LABELS.         KEEP REAGENTS AWAY FROM CHILDREN.       2.         Solutions of 10 to 1000 ppm       9.         mple size.       3.         0 = 100 ppm, 25 mL sample       3.         mL pipet (#4078) or 25 mL sample tube (#9198Y), add desired sample       1.         11 bipst (#4078) or 25 mL sample tube (#9198Y), add desired sample to 10       5.         .0 mL pipet (#4009), add 1 pipetful (as much as can be drawn up with R-0664 Bleach Reagent #1. Swirl to mix.       5.         .0 mL pipet (#0028), add 1 pipetful (as much as can be drawn up with R-0664 Bleach Reagent #1. Swirl to mix.       5.         .0 mL pipet (#026), add 1 pipetful (as much as can be drawn up with R-0664 Bleach Reagent #1. Swirl to mix.	<ul> <li>did R-0700 Thiosulfate Reagent dropwise, swirling and counting after each drop, intil color changes from deep yellow or brown to pale yellow (Fig. 4). Always hold tottle in vertical position.</li> <li>did 10 drops R-0636 Starch Indicator Solution. Swirl to mix. Sample should turn lue (Fig. 5).</li> <li>Dontinue adding R-0700 Thiosulfate Reagent dropwise, swirling and counting fifer each drop, until color changes from blue to colorless.</li> <li>Autiply total drops of R-0700 Thiosulfate Reagent (Steps 5 and 7) by desired quivalence factor (Step 1). Record as parts per million (ppm) available horine.</li> <li>Bleach Solutions of 0.1 to 15%</li> <li>Beter tage the size.</li> <li>for 1 drop = 0.05%, 5 mL sample</li> <li>Sing a 3 mL pipet (#4078), add desired sample size (Step 1) to 25 mL sample tube 49198Y) (Fig. 1). Dilute to 10 mL mark with distilled, deionized, or tap water.</li> <li>Ising a 1.0 mL pipet (#4026), add 1 pipetful (as much as can be drawn up with be bub) R-0664 Bleach Reagent #1. Swirl to mix.</li> <li>Ising a large dipper (#4026), add 1 evel dipper R-06655 Bleach Reagent #2. Swirl ntil disolved. Sample will turn deep yellow (Fig. 2) or brown (Fig. 3) if chlorine s present.</li> <li>did R-0666 Bleach Reagent #3 dropwise, swirling and counting after each drop, ntil color changes from deep yellow or brown to pale yellow (Fig. 4). Always hold ottel in vertical position.</li> </ul>	Fig. 1         Fig. 2         Fig. 2         Fig. 3