Taylor's FAS-DPD Drop Test Kits

INTRODUCTION

In recent years, professionals in the pool and spa industry have progressed from using OT (orthotolidine) to DPD (N,N-diethyl-p-phenylene-diamine) when determining chlorine levels with color-matching tests.

The OT method only measures total chlorine—the sum of active and spent sanitizer—which makes maintaining the correct residual a guessing game. Because of this, **regulatory authorities do not permit OT testing in commercial pools**. In addition, orthotolidine contains hydrochloric acid, making it more costly to ship than DPD and therefore more costly to buy.

Unlike OT, the DPD method will distinguish between free available chlorine and total chlorine. By subtracting the free chlorine reading from the total chlorine reading, the amount of combined chlorine in the water can be known. Combined chlorine is not an effective sanitizer. Its presence causes eye and mucous membrane irritation and the characteristic "chlorine" odor of a poorly maintained pool.

Combined chlorine is eliminated by superchlorination. Calculations for the breakpoint dosage depend on knowing the level of combined chlorine in the water, which is why the DPD method is superior to the OT method for testing chlorine-sanitized pools.

(However, bromine is an effective sanitizer in all its forms. Because of this, both OT and DPD may be used to determine the need for water treatment in bromine pools and spas.)

The latest trend in commercial pools with chlorine sanitizer has been to the FAS-DPD titration method, which allows users to measure **both free and combined chlorine at increments as low as 0.2 ppm**—the maximum allowable level for combined chlorine according to most technical standards—**and as high as 20 ppm**.



Taylor's FAS-DPD drop-test kit K-1515-A measures free and combined chlorine precisely without color matching.

To get the free chlorine reading, a buffered DPD indicator powder is added to the water sample. It reacts with the chlorine to produce the pink color characteristic of the standard DPD test. Ferrous ammonium sulfate (FAS) titrating reagent is then added until the pink color permanently disappears, signaling the endpoint.

The distinct change from a vibrant pink to no color at all eliminates the need for color matching. This feature comes in handy when testing samples with high levels of sanitizer because the user does not have to distinguish between relatively close printed-color gradations. This test is also a boon for colorblind users.

The second half of the FAS-DPD test determines the amount of combined chlorine present. It too involves turning the sample from a vibrant pink to a colorless endpoint.

FAS-DPD is available in stand-alone kits to measure chlorine or bromine, and in combination with other common tests. Supplement this test with **Deox Reagent** when testing chlorine in the presence of monopersulfate shocks or interference will cause a false-high combined chlorine reading.

FAS-DPD KITS

K-1515-A
Drop test measuring free & combined chlorine; 1 drop = 0.2 or 0.5 ppm; .75 oz. bottles

K-1515-C
Same as above but with 2 oz. bottles

K-1517-A
Drop test measuring bromine; 1 drop = 0.5 or 1.25 ppm; .75 oz. bottles

K-1517-C
Same as above but with 2 oz. bottles

K-1518
Drop test measuring free & combined chlorine accurately in the presence of monopersulfate shocks; 1 drop = 0.2 ppm chlorine, 1 drop = 0.2 ppm monopersulfate as chlorine

K-2006
***Complete*™ with FAS-DPD Chlorine:**
FAS-DPD chlorine 1 drop = 0.2 or 0.5 ppm, pH 7.0-8.0, acid & base demand, total alkalinity, calcium hardness, cyanuric acid; .75 oz. bottles (6-pack is K-2006-6)

the most trusted name in water testing

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K-2006C
Service Complete™ with FAS-DPD Chlorine: Same as above with 2 oz. bottles (8-pack is K-2006C-8)

K-2106
Complete™ with FAS-DPD Bromine: FAS-DPD bromine 1 drop = 0.5 or 1.25 ppm, pH 7.0-8.0, acid & base demand, total alkalinity, calcium hardness; .75 oz. bottles (6-pack is K-2106-6)

K-2009
Pool Inspector™ with FAS-DPD Chlorine: FAS-DPD chlorine 1 drop = 0.2 or 0.5 ppm, pH 7.0-8.0, cyanuric acid; .75 oz. bottles (contains 6 bottles of CYA reagent, four more than the K-2006)

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.
- These test kits are practical for both **on- and off-site** testing.
- Test kits **come complete** with all necessary reagents and equipment.
- **Waterproof instructions** are printed on plastic-impregnated paper that resists fading and tearing.
- Custom-molded, durable plastic cases provide **safe storage** for all tests.
- **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

- **Deox Reagent** to eliminate interference with the FAS-DPD chlorine test from monopersulfate (non-chlorine) shock treatments in the water; K-2041 (.75 oz.) or K-2042 (2 oz.).
- Individual replacement reagents.
- More than 500 single-parameter and multi-parameter kits covering a wide range of water-testing requirements.
- Testing supplies and kit replacement parts (e.g., burets, flasks, test tubes, and test cells).
- Toll-free technical assistance.
- Computerized water analysis at www.taylortechnologies.com.

REPRESENTATIVE TEST PROCEDURE

Reproduced from K-1515-A instruction:

DROP TEST **Instr. #5217**
FAS-DPD CHLORINE (1 drop = 0.2 or 0.5 ppm)

COMPONENTS:

1 x 5217	Instruction
1 x 9198	Sample Tube, Graduated, 25 mL, plastic w/cap
1 x R-0003	DPD Reagent #3, DB
1 x R-0870	DPD Powder
1 x R-0871	FAS-DPD Titrating Reagent (chlorine), DB

TO ORDER REPLACEMENT PARTS AND REAGENTS CALL TOLL-FREE 800-837-8548.

PROCEDURE:
CAREFULLY READ AND FOLLOW PRECAUTIONS ON REAGENT LABELS.
KEEP REAGENTS AWAY FROM CHILDREN.

Chlorine Tests (Free & Combined)

1. Rinse and fill sample tube to desired mark with water to be tested.

NOTE: For 1 drop = 0.2 ppm, use 25 mL sample.
For 1 drop = 0.5 ppm, use 10 mL sample.

2. Add 2 dippers R-0870 DPD Powder. Swirl until dissolved. Sample will turn pink if free chlorine is present.

NOTE: If pink color disappears, add R-0870 DPD Powder until color turns pink.

3. Add R-0871 FAS-DPD Titrating Reagent (chlorine) dropwise, swirling and counting after each drop, until color changes from pink to colorless. Always hold bottle in vertical position.

4. Multiply drops in Step 3 by drop equivalence (Step 1). Record as parts per million (ppm) free chlorine (FC).

(OVER)

Instr. #5217

5. Add 5 drops R-0003 DPD Reagent #3. Swirl to mix. Sample will turn pink if combined chlorine is present.

6. Add R-0871 FAS-DPD Titrating Reagent (chlorine) dropwise, swirling and counting after each drop, until color changes from pink to colorless. Always hold bottle in vertical position.

7. Multiply drops in Step 6 by drop equivalence (Step 1). Record as ppm combined chlorine (CC).

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