

## APPLICATION NOTE

# Determination of Peracetic Acid (PAA) and Hydrogen Peroxide (H<sub>2</sub>O<sub>2</sub>) in Water

## Concentration Range of 0.1 to 10 mg/L

### Equipment and Reagents:

MR and HR Chlorine Pocket Colorimeter (PCII) – Hach PN 5870062 (Use HR program)

DR800 (Program 12)

DR900, DR1900, DR2800, DR3800, DR3900, DR5000, DR6000 (Program 88)

10-mL/1-cm Sample Cell – Hach PN 4864302

DPD Total Chlorine Reagent Powder Pillow, 25-mL, 100/pkg – Hach PN 1406499; **Do Not** use Free DPD Reagents

Ammonium Molybdate 100-mL Dropper Bottle – Hach PN 193332

20% Potassium Iodide 100-mL Solution – Hach PN 1456842

### Test Procedure for PAA:

When using the PCII, make sure that the program is in the HR mode, use program 12 for the DR800 series colorimeters, and for all other Hach colorimeters and spectrophotometers use program 88 for HR Total Chlorine, Hach Method 10070.

- (1) Fill both 10 mL sample cells with the water sample. One of these cells will be the blank and the other will be the prepared sample.
- (2) Place the blank into the instrument and press the 'zero' key.
- (3) Add the contents of one DPD TOTAL 25-mL Chlorine powder pillow to the prepared sample cell.
- (4) Cap the prepared sample cell and shake gently to mix the DPD powder. A pink color will develop indicating the presence of PAA.
- (5) After 15 to 20 seconds after adding the DPD powder to the prepared sample cell, ensure that the DPD powder has dissolved and there are no air bubbles present (invert lightly to dislodge the air bubbles), use a lab wipe to clean off the 10-mL/1-cm cell. Between 45 and 60 seconds of reaction time, place the sample cell into the cell compartment and then press 'read'. Do not wait more than 60 seconds to read the sample.
- (6) The results are in mg/L as total Cl<sub>2</sub>. Convert the mg/L Cl<sub>2</sub> value to mg/L of PAA by multiplying the value by 1.07. If you instrument has the built in dilution factor function, you can input the 1.07 with this option.

$$\text{mg/L PAA} = 1.07 \times \text{mg/L Total Cl}_2 \text{ PAA}$$

### Test Procedure for Hydrogen Peroxide:

- (1) Fill both 10 mL sample cells with the water sample. One of these cells will be the blank and the other will be the prepared sample.
- (2) Add 3 drops of the 20% KI solution and 3 drops of the Ammonium Molybdate solution to the prepared sample. Cap the cell and invert to mix. Allow the sample to react with the reagents for 6 minutes.
- (3) Place the blank into the instrument and press the 'zero' key.
- (4) Add the contents of one DPD TOTAL 25-mL Chlorine powder pillow to the prepared sample cell.
- (5) Cap the prepared sample cell and shake gently to mix the DPD powder. A pink color will develop indicating the presence of PAA and H<sub>2</sub>O<sub>2</sub>.

- (6) Ensure that the DPD powder has dissolved and there are no air bubbles present (invert lightly to dislodge the air bubbles), use a lab wipe to clean off the 10-mL/1-cm cell. After about 30 seconds of reaction time, place the sample cell into the cell compartment and then press 'read'. Do not wait more than 60 seconds to read the sample.
- (7) The results are in mg/L as total Cl<sub>2</sub>. Convert the mg/L Cl<sub>2</sub> value to mg/L of H<sub>2</sub>O<sub>2</sub> by subtracting the PAA value from the total Cl<sub>2</sub> peroxygen value and multiply this value by 0.478.

$$\text{mg/L H}_2\text{O}_2 = (\text{Total Cl}_2 \text{ as Peroxygen} - \text{Total Cl}_2 \text{ as PAA}) \times 0.478$$

**FOR TECHNICAL ASSISTANCE, PRICE INFORMATION AND ORDERING:**

**Tel: 800-227-4224 | E-Mail: [techhelp@hach.com](mailto:techhelp@hach.com)**

**To locate the HACH office or distributor serving you, visit: [www.hach.com](http://www.hach.com)**

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