

Peracetic Acid (PAA) and Hydrogen Peroxide (H₂O₂)

DOC316.53.01523

DPD Method

Method 10290

0.10 to 10.00 mg/L PAA / 0.05 to 5.00 mg/L H₂O₂

Powder Pillows

Scope and application: For testing peracetic acid and hydrogen peroxide in water.



Test preparation

Instrument-specific information

Table 1 shows all of the instruments that have the program for this test. The table also shows requirements that can change between instruments, such as adapter and sample cell requirements.

To use the table, select an instrument, then read across to find the applicable information for this test.

Table 1 Instrument-specific information

Instrument	Adapter	Sample cell orientation	Sample cell
DR 6000	—	The orientation key is toward the arrow on the universal cell adapter.	4864302
DR 5000	A23618	The orientation key is toward the user.	
DR 3900	LZV846 (A)	The orientation key is away from the user.	
DR 1900	9609900 or 9609800 (C)	The 1-cm path is aligned with the arrow on the adapter.	
DR 3800 DR 2800 DR 2700	LZV585 (B)	The 1-cm path is aligned with the arrow on the adapter.	5940506

Before starting

Samples must be analyzed immediately after collection and cannot be preserved for later analysis.

In bright light conditions (e.g., direct sunlight), close the cell compartment, if applicable, with the protective cover during measurements.

Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.

Dispose of reacted solutions according to local, state and federal regulations. Refer to the Safety Data Sheets for disposal information for unused reagents. Refer to the environmental, health and safety staff for your facility and/or local regulatory agencies for further disposal information.

Items to collect

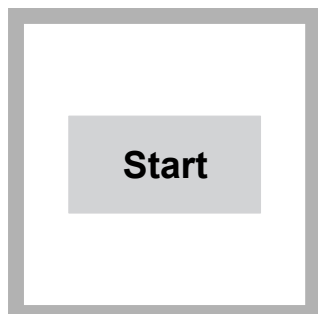
Description	Quantity
DPD Total Chlorine Reagent Powder Pillows, 25-mL	2
Ammonium Molybdate Reagent	3 drops
Potassium Iodide Solution, 20%	3 drops
Sample cells (For information about sample cells, adapters or light shields, refer to Instrument-specific information on page 1.)	3

Refer to [Consumable and replacement items](#) on page 4 for order information.

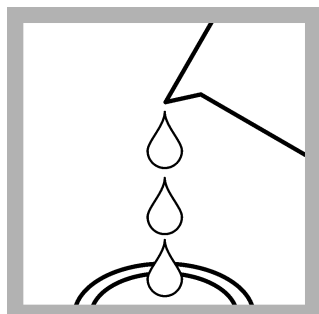
Sample collection

- Analyze the samples immediately. The samples cannot be preserved for later analysis.

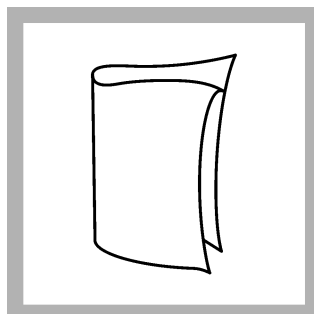
Test procedure—PAA and Hydrogen Peroxide



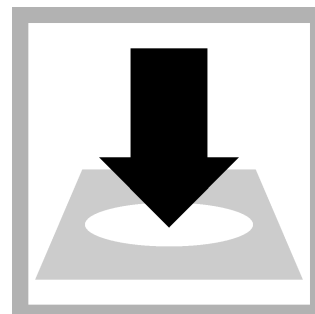
1. Start program 790 PAA. For information about sample cells, adapters or light shields, refer to [Instrument-specific information](#) on page 1.



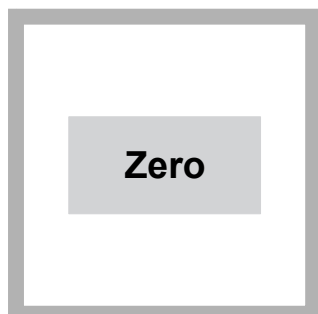
2. Prepare the blank: Fill a sample cell to the 10-mL mark with sample.



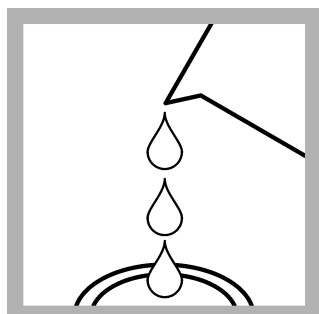
3. Clean the blank sample cell.



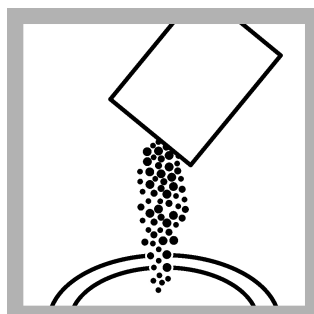
4. Insert the blank into the cell holder.



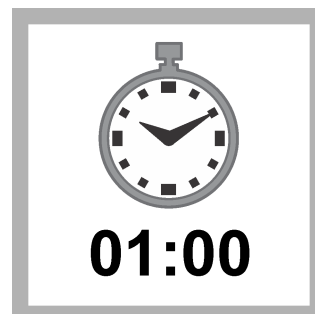
5. Push ZERO. The display shows 0.0 mg/L PAA.



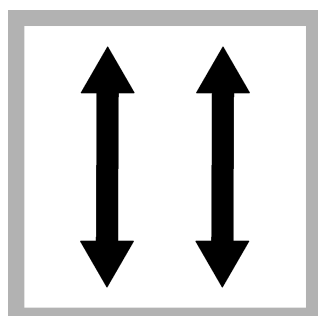
6. Prepare the sample: Fill a second sample cell to the 10-mL mark with sample.



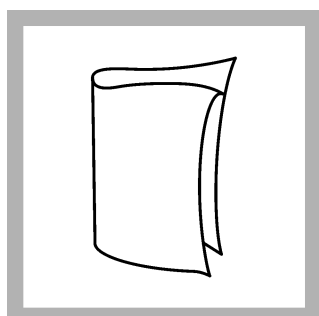
7. Add the contents of one DPD Total Chlorine Powder Pillow for 25-mL samples to the sample.



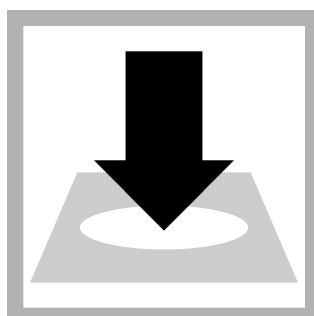
8. Start the instrument timer. A 1-minute reaction time starts. Immediately go to the next step.



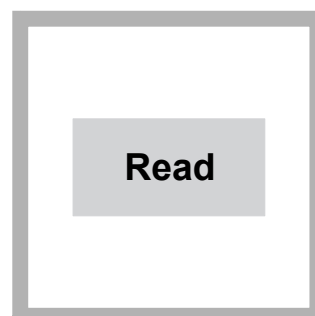
9. Put the stopper on the sample cell. Shake the sample cell about 20 seconds to dissolve the reagent. Invert slowly to remove air bubbles.



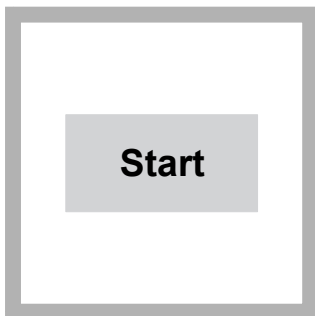
10. Clean the sample cell during the reaction time.



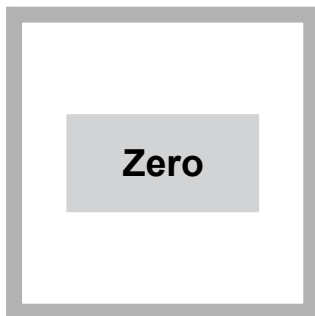
11. Insert the prepared sample into the cell holder.



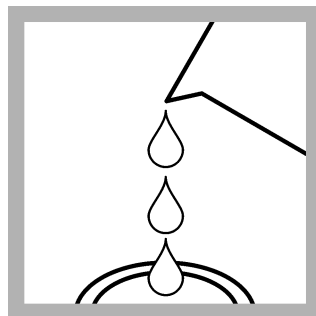
12. When the timer expires, push READ. Results show in mg/L PAA. Do not wait more than 60 seconds to read the sample. Keep the sample cell in the cell holder and continue to the next step.



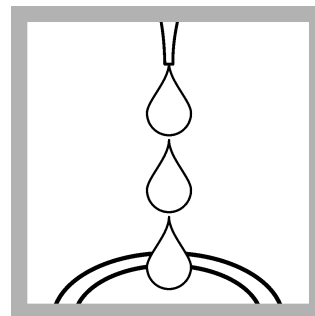
13. Start program 791 H2O2.



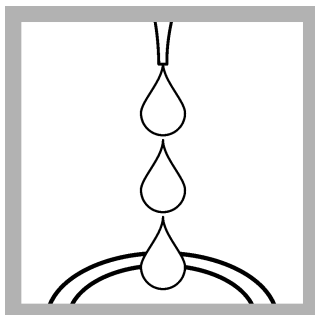
14. With the reacted PAA sample in the cell holder, push **ZERO. The display shows 0.0 mg/L H₂O₂.**



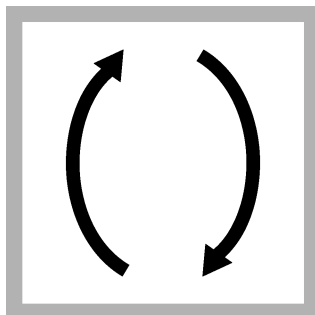
15. Prepare the sample: Fill a third sample cell to the 10-mL mark with sample.



16. Add 3 drops of the Potassium Iodide Solution.



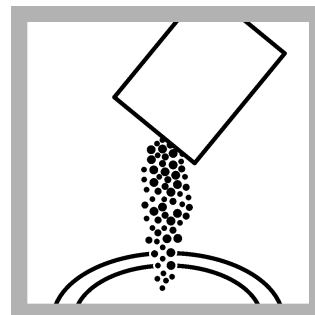
17. Add 3 drops of the Ammonium Molybdate Reagent.



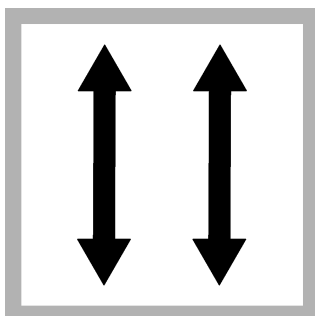
18. Put the stopper on the sample cell. Invert the sample cell to mix.



19. Start the instrument timer. A 6-minute reaction time starts.



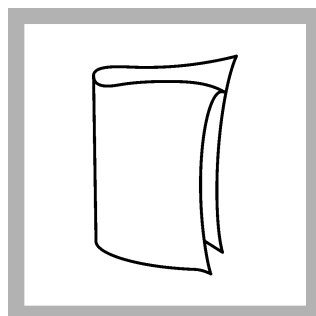
20. When the timer expires, add one DPD Total Chlorine Powder Pillow for 25-mL samples to the sample.



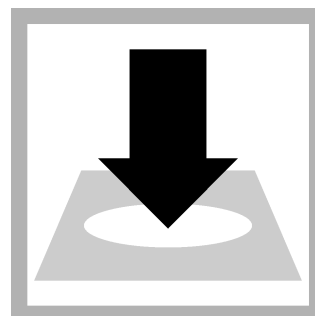
21. Put the stopper on the sample cell. Shake the sample cell to dissolve the reagent. A pink color shows when PAA and/or H₂O₂ is in the sample.



22. Start the instrument timer. A 30-second reaction time starts. Make sure that the powder has fully dissolved and that there are no air bubbles. Invert slowly to remove air bubbles.



23. Clean the sample cell during the reaction time.



24. Insert the prepared sample into the cell holder.



Read

25. When the timer expires, push **READ**. Results show in mg/L H₂O₂. Do not wait more than 60 seconds to read the sample.

Interferences

Interfering substance	Interference level
Acidity	More than 150 mg/L CaCO ₃ . The full color may not develop or the color may fade instantly. Adjust to pH 6–7 with 1 N Sodium Hydroxide. Measure the amount to add on a separate sample aliquot, then add the same amount to the sample that is tested. Correct the test result for the dilution from the volume addition.
Alkalinity	More than 250 mg/L CaCO ₃ . The full color may not develop or the color may fade instantly. Adjust to pH 6–7 with 1 N Sulfuric Acid. Measure the amount to add on a separate sample aliquot, then add the same amount to the sample that is tested. Correct the test result for the dilution from the volume addition.
Bromine, Br ₂	Positive interference at all levels
Chlorine Dioxide, ClO ₂	Positive interference at all levels
Inorganic chloramines	Positive interference at all levels
Chloramines, organic	May interfere
Hardness	No effect at less than 1000 mg/L as CaCO ₃
Manganese, Oxidized (Mn ⁴⁺ , Mn ⁷⁺) or Chromium, Oxidized (Cr ⁶⁺)	May interfere
Ozone	Positive interference at all levels
Chlorine	Positive interference at all levels
Highly buffered samples or extreme sample pH	Can prevent the correct pH adjustment (of the sample) by the reagents. Sample pretreatment may be necessary.

Summary of method

Total DPD reacts with PAA to form a pink color. Hydrogen peroxide does not interfere with the PAA reaction. The hydrogen peroxide reaction requires the addition of catalysts and a longer reaction time. The measurement wavelength is 530 nm.

Consumable and replacement items

Required reagents

Description	Quantity/Test	Unit	Item no.
DPD Total Chlorine Reagent Powder Pillow, 25-mL	2	100/pkg	1406499
Ammonium Molybdate Reagent	3 drops	100 mL MDB	193332
Potassium Iodide Solution, 20%	3 drops	100 mL	1456842

Optional reagents and apparatus

Description	Unit	Item no.
DPD Total Chlorine Reagent Powder Pillows, 25 mL	1000/pkg	1406428
Pipet, adjustable volume, 1.0–5.0 mL	each	BBP065
Pipet tips, for 1.0–5.0 mL pipet	75/pkg	BBP068
Dropper, LDPE, 0.5 –1.0 mL	20/pkg	2124720



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