Oxygen, Dissolved

Method 8166

HRDO Method

AccuVac® Ampuls

HR (0.3 to 15.0 mg/L O_2)

Scope and Application: For water and wastewater

Tips and Techniques

• Analyze samples on-site. Do not store for later analysis.

AccuVac Ampul — Method 8166

1. Touch

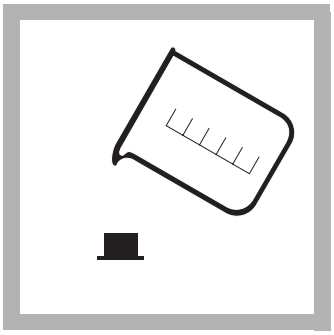
Hach Programs.

Select program

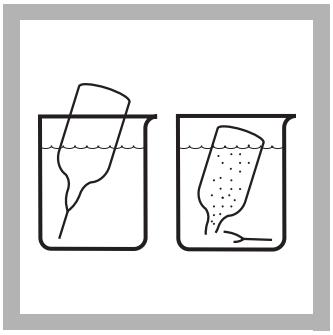
445 Oxygen Di. HR AV.

Touch **Start**.

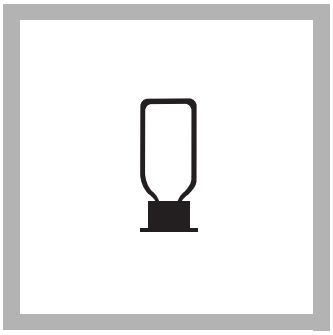
2. Fill a round sample cell (the blank) with at least 10-mL of sample.



3. Fill a blue ampule cap with sample.

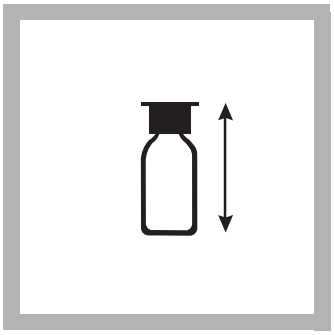


4. Fill a High Range Dissolved Oxygen AccuVac Ampul with sample. Keep the tip immersed while the ampule fills completely.



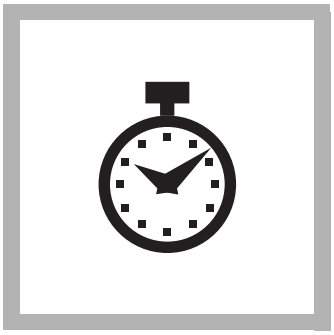
5. Hold the ampule with the tip pointing down and immediately place the ampule into the ampule cap.

The cap prevents contamination from atmospheric oxygen.



6. Shake the ampule for 30 seconds.

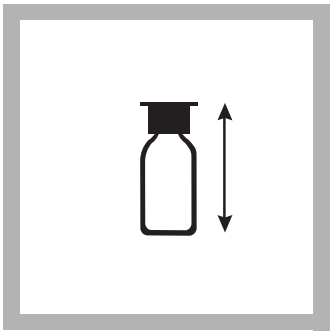
A small amount of undissolved reagent will not affect results.



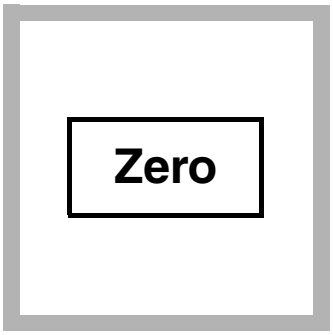
7. Touch the timer icon.

Touch **OK**.

A two-minute reaction period will begin. This enables the oxygen that was degassed during aspiration to redissolve and react.



8. When the timer beeps, shake the ampule for 30 seconds.



9. Place the blank in the cell holder.

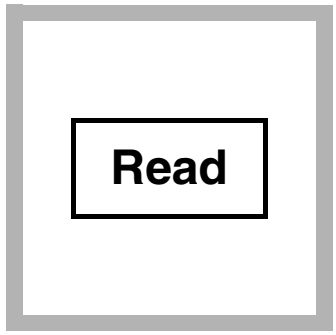
Touch **Zero**.

The display will show:

0.0 mg/L O_2

10. Place the ampule into the cell holder.

11. Wait approximately 30 seconds for the air bubbles to disperse from the light path.



12. Touch **Read.**

Results will appear in mg/L O_2.

Interferences

Interfering Substance	Interference Levels and Treatments
Cr^{3+}	Greater than 10 mg/L
Cu^{2+}	Greater than 10 mg/L
Fe^{2+}	Greater than 10 mg/L
Mg^{2+}	Magnesium is commonly present in seawater and causes a negative interference. If the sample contains more than 50% seawater, the oxygen concentration obtained by this method will be 25% less than the true oxygen concentration. If the sample contains less than 50% seawater, the interference will be less than 5%.
Mn^{2+}	Greater than 10 mg/L
Ni^{2+}	Greater than 10 mg/L
NO_2^-	Greater than 10 mg/L

Sample Collection, Preservation, and Storage

The main consideration in sampling with the High Range Dissolved Oxygen Ampul is to prevent the sample from becoming contaminated with atmospheric oxygen between breaking open the ampule and reading the absorbance. This is accomplished by capping the ampule with an ampule cap. If the ampule is securely capped, the ampule should be safe from contamination for several hours. The absorbance will decrease by approximately 3% during the first hour and will not change significantly afterwards.

Sampling and sample handling are important considerations in obtaining meaningful results. The dissolved oxygen content of the water being tested may change with depth, turbulence, temperature, sludge deposits, light, microbial action, mixing, travel time, and other factors. A single dissolved oxygen test rarely reflects the accurate overall condition of a body of water. Several samples taken at different times, locations, and depths are recommended for most reliable results. Samples must be tested immediately upon collection, although only a small error results if the absorbance reading is taken several hours later.

Accuracy Check

The results of this procedure may be compared with the results of a titrimetric procedure (request Lit. Code 8042) or *sens**ion***™*6* Dissolved Oxygen Meter (Cat. No. 51850-01).

Method Performance

Precision

Standard: 7.9 mg/L O_2

Program	95% Confidence Limits of Distribution
445	7.5–8.3 mg/L O_2

See *Section 3.4.3 Precision* on page *44* for more information, or if the standard concentration did not fall within the specified range.

Sensitivity

Portion of Curve	ΔAbs	ΔConcentration
Entire range	0.010	0.09 mg/L O_2

See *Section 3.4.5 Sensitivity* on page *44* for more information.

Summary of Method

The High Range Dissolved Oxygen AccuVac Ampul contains reagent vacuum sealed in a 14-mL ampule. When the AccuVac Ampul is opened in a sample containing dissolved oxygen, it forms a yellow color which turns purple. The purple color development is proportional to the concentration of dissolved oxygen. Test results are measured at 535 nm.

Required Reagents

Description	Quantity Required per test	Unit	Cat. No.
High Range Dissolved Oxygen AccuVac® Ampuls, 0–10 mg/L with 2 reusable ampule caps	1 ampul	25/pkg	25150-25

Required Apparatus

Polypropylene Beaker, 50-mL, Low Form, with pour spout		each	1080-41
Sample Cells, 10-mL, w/cap	1	6/pkg	24276-06

FOR TECHNICAL ASSISTANCE, PRICE INFORMATION AND ORDERING:
In the U.S.A. – **Call toll-free 800-227-4224**
Outside the U.S.A. – **Contact the HACH office or distributor serving you.**
On the Worldwide Web – **www.hach.com**; E-mail – **techhelp@hach.com**

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WORLD HEADQUARTERS
Telephone: (970) 669-3050
FAX: (970) 669-2932

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